

Module
19W

Knowledge Management Processes*

LEARNING OBJECTIVES

After completing this module, you should be able to

1. Describe the knowledge management processes.
2. Understand and differentiate between *knowledge* and *knowledge management*.
3. Explain the differences among the various kinds of knowledge.
4. Describe the stages in the development of a knowledge management system.
5. Understand how knowledge management can be used as a competitive weapon.
6. Understand the interplay among individual and corporate knowledge.

KEY TERMS AND CONCEPTS

Acquire knowledge from outside	Information
Acquiring	Knowledge
Ba	Knowledge base
Business intelligence	Knowledge creation
Case-based reasoning	Knowledge engineering
Chief knowledge office (CKO)	Knowledge management
Collective knowledge	Knowledge management center
Communities of practice	Knowledge management system
Contribute to the outside	Knowledge transfer
Discovering subsystem	Knowledge workers
Executing	Mobile workers
Explicit knowledge	Online analytical processing (OLAP)
Hoteling workers	Organizational memory
Individual knowledge	Real shop floor

*This module was contributed by James Sena, Professor of Management, Orfalea College of Business, California Polytechnic State University, San Luis Obispo, CA 93407. We are grateful to Jim for this contribution.

	Reflecting Selecting Tacit knowledge Telecommuting Transferred	Virtual office Virtual shop floor Web-based knowledge management systems
--	--	--

MODULE OUTLINE

	Premodule Preparation Activity 19–1W: The Skandia Case: Appearance and Reality Introduction What Is Knowledge Management? Definition Key Features The Second-Generation Knowledge Management System Technologies: Driving Business Knowledge Economies: Managing Change Developing the Knowledge Management System within the Organization Knowledge Creation and Acquisition Knowledge Experts and Enablers Knowledge Management Mechanisms Knowledge Life Cycle Knowledge Management Tools Knowledge Management Centers Deploying and Using the Knowledge Management System Business Intelligence Integrating Knowledge Management and Organizational Learning Job Design, Job Rotation, and Careers Managerial Challenges New Opportunities New Security Issues Summary Study Questions Endnotes Activity 19–2W: Knowledge Management: Learning from the Web Activity 19–3W: Avici Systems: A Grassroots Example	
--	--	--

PREMODULE PREPARATION

--	--	--

Activity 19–1W: The Skandia Case: Appearance and Reality	Objective: To examine the hype versus the reality of implementing and deploying knowledge management within an organization.	
---	---	--

Task 1 (Individual):

Read the following two sections. The first section describes the deployment of a knowledge management system at Skandia. The second section critiques the actual implementation. Then answer the questions at the end of the second section.

Task 2:

Class discussion.

Skandia Case: Sharing Helps Company to Change Direction

Skandia, the Stockholm-based financial services corporation, is known for valuing intangible assets. In fact, knowledge sharing is woven into its corporate structure. “We have a culture that embraces sharing,” says Jan Hoffmeister, vice president for intellectual capital management with Skandia Group, the holding company for Skandia Insurance Co. “We don’t have a chief knowledge officer or a program focused on knowledge management.”

Hoffmeister is charged with finding nonfinancial information to share across the company and with customers to facilitate decision making. Working out of American Skandia Inc. in Shelton, Connecticut, he also focuses on disclosure of intellectual capital to external sources such as the company’s stockholders. He characterizes this material as “everything that you’re not required to put into your financial reports but is so important to your organization.”

As a company that has absorbed knowledge management practices, Skandia also diffuses responsibility for them. Hoffmeister, who reports to Skandia Group’s head of business development, plays a key role in a cross-functional committee made up of the top executives in Skandia Group. “We have a flat organization, open doors, and not much of a ‘not invented here’ problem,” he explains.

A strong conviction in the value of knowledge and support for sharing it radiate from the executive team, according to Hoffmeister. “The CEO and the CFO of Skandia Group really sponsor this, and we have an executive management team that endorses these initiatives,” he says.

The effect of this structure, he says, is that knowledge management is needed less than encouragement and direction in sharing. The benefit of sharing everything from critical processes to business intelligence throughout its worldwide organization (which is spread across 25 countries) is that Skandia’s operations in one area of the world can learn from lessons or processes developed elsewhere.

Hoffmeister compares the basis for knowledge diffusion in an organization to a pyramid. The culture, leadership, and philosophy form the foundation. Next in importance are an organizational structure that supports sharing and a collection of best practices that can be used repeatedly throughout the company.

Tools form only the narrowest part of the pyramid, but Skandia deploys technology where it makes sense. “We have the Skandia Navigator, a balanced scorecard that was developed in-house,” Hoffmeister says. He adds that Skandia Group’s chief financial officer, Ulf Spang, sponsors another software tool that facilitates knowledge sharing. “It’s mandatory to use the Navigator and the software tool in all operations worldwide, and it’s now being used to report to headquarters. It embraces all of our nonfinancial capital,” Hoffmeister says.

Skandia also provides a Web portal, chat rooms, and a global intranet, but Hoffmeister insists that for the various tools to be effective, employees throughout the company must have working relationships. For that reason, management encourages face-to-face visits and site visits companywide. The tools facilitate personal relationships, he says, which in turn reinforce willing communications among key executives globally.

These factors enable Skandia to adapt to rapid shifts in the business climate, according to Hoffmeister. “We have the knowledge to reinvent ourselves and make changes,” he says. “We move into at least one or two countries a year. We couldn’t do this if we couldn’t leverage our people and our knowledge.”

OPINION: BEHIND THE HYPE*

Everything I’ve read about “knowledge capital” or “knowledge management” has devoted inordinate attention to the accomplishments, methods, and reporting practices of Skandia Insurance Co. What distinguishes the Swedish firm is its approach to measuring its intellectual capital. Its techniques have been featured in its annual reports since 1994, with details unmatched by any other firm. Skandia’s image as a proponent of innovative ideas has been reinforced by extensive publishing, public speaking, and promotions. This constitutes the centerpiece of its efforts to create the image that it’s one of the most sophisticated firms in advancing new concepts of how to increase employee productivity.

To understand what Skandia is doing requires an immersion in philosophies, metrics, and classifications. One must become acquainted with the fine distinctions of how to partition intellectual capital into human capital, structural capital, organizational capital, customer capital, innovation capital, and process capital. To steer through such subtleties, you must become proficient in using the Skandia Navigator, the Skandia value scheme, flow-based models (a PC software package called Dolphin), and, most important, the Skandia Intellectual Capital Index, which aggregates more than 100 variables into groupings such as the relationship capital index, the human capital index, the infrastructure capital index, and the innovation capital index. A sampling of this collection would lead you to discover just about every conceivable metric, such as employee turnover, average years of service, change in the company’s IT literacy, PCs per employee, and IT expense per employee.

All the inputs are then passed through a series of equations that establish such relationships as: Human capital base value = Net present value of five years’ payroll costs.

Unfortunately, how all this relates to company success isn’t explicit.

After having satisfied myself with Skandia’s intellectual concepts, I became curious about their effectiveness. Does all this inspirational thinking produce superior results?

One way of judging a firm’s performance is to compare its financial record with those of its competitors. That’s easy; analyzing Skandia’s size, revenue, and industrial classification produced a list of 19 look-alike firms in five other countries. I settled on return on shareholder equity (ROE) as the measure for assessing the productivity of people and how well their talents were deployed for shareholders’ benefit.

The top-ranking firm was German insurer Aachener und Muenchener, with a 1998 ROE of 48.4 percent. At the bottom was Victoria Holdings, also in Germany, with 7.6 percent. Skandia ranked second from the bottom, with a meager 8.2 percent—barely above the cost of capital. This isn’t an impressive performance for a firm that boasts about its leadership.

I then took a closer look at Skandia’s history to see if 1998 stood out as a bad year. It didn’t. Compared with half its peer group, Skandia has consistently underperformed in delivering superior results.

Many firms let their public relations enthusiasm exceed their accomplishments. The stock market often rewards this enthusiasm with share valuations that are higher than what their plodding-but-profitable competitors get. But in due course, the shortfalls are recognized and the firms are penalized when their market worth nosedives.

There’s no substitute for delivering above-average financial results as proof of competitive excellence.

*P. Strassman, “Opinion Source.” *Computerworld* (September 4, 2000).

Questions

1. Do some research on the Web to determine the financial health of Skandia today. Compare it with the companies cited by the “Opinion.” What would you conclude about the opinion?
2. What were the steps and processes that Skandia went about to create its knowledge management system? How do these steps contrast with those discussed in this module?

INTRODUCTION

Newspapers, television media, and all varieties of organizations tell us that we are living in a “knowledge society” or “knowledge economy.” Knowledge serves as the major production factor and determines the success of individuals, corporations, regions, and even nations. Knowledge can provide a sustainable advantage to any business. A firm’s competitors will eventually match the quality and price of their product or service. By that time, the knowledge-rich firm will have moved to a new level of quality, creativity, and efficiency. Such a knowledge advantage is sustainable because of the momentum the firm has attained. “Unlike material assets, which decrease as they are used, knowledge assets increase with use: Ideas breed new ideas, and shared knowledge.”¹ The seed for new ideas resides with any organization, especially when people within the firm are given the opportunities to think, to learn, and to talk with one another.

IBM on a regular basis holds “jam” sessions where all employees participate in a Web-based dialogue that requests all employees to put forth ideas. The ideas are then organized and placed into categories, and the employees can then provide additional input to build on the basics. IBM attributes much of their resurgence to employee empowerments such as this. At IBM, knowledge was used as a remedy for all sorts of organizational and strategic shortcomings. Communicating on the Web or in virtual workplaces is definitely the current trend in organizations. There is, though, no substitute for face-to-face communication—as we have seen in Module 10. We need to be careful not to create a divide between the knowledge seekers, users, and those workers who conduct the day-to-day commerce of a firm.

Organizations have to learn² to harness knowledge in order to compete effectively and improve their performance. A significant amount of production in today’s economy is in the form of intangibles based on the exploitation of ideas rather than material things. More and more goods, from Mercedes cars to Nike trainers have increasing amounts of knowledge embedded in them.

There seems to be little question that you and your peers will experience broad changes in the workplace at a rate even greater than what we are presently observing. Similarly, organizations in all phases of their life cycles have or will be adopting knowledge management systems in order to survive. Highly productive organizations do something fundamentally different from everyone else that enables them to successfully streamline operations, eliminate waste, exceed performance targets, and thrive even in tough economic times. Business experts and trend watchers believe knowledge integration and operations management issues will separate the winners from the losers over the next decade and beyond. Organizations can harness the power of knowledge integration to streamline their own operations and improve productivity. As digital connectivity and increased access to information are changing, we are experiencing a shift in social structures, as control of the work is moving to smaller and smaller units. Thus, we need to reexamine the emerging nature of work, the ways we design work and organizations, and the effect work has on individual and team behavior and performance.

Let us turn first to defining and exploring some relevant concepts. Next we describe strategies being used in organizations to attain a competitive edge regarding knowledge and knowledge management. We begin by discussing and defining knowledge and then move on to describing knowledge management as a means of increasing organizational effectiveness and efficiency.

WHAT IS KNOWLEDGE MANAGEMENT

Being first in innovation often means being roadkill. Visionaries all too quickly become labeled as “impractical dreamers.” Most businesses are risk averse. The banking industry, for example, is more prone than others to sticking to the tried and true (which is one reason they are losing market share). This means that management needs to be very conscious of how to frame innovation. And the rewards to embark on a new course of action have to be clearly discernable. Our knowledge is what defines who we are. It is the source of our self-respect and economic well-being. Right now, employees around the world are creating, sharing, and applying knowledge for themselves and their organizations. We have always been doing this. You are doing this right now; as you read, your knowledge has been altered.³

Definition

When you think about it, you might say that knowledge management is an oxymoron (where incongruous or contradictory terms are combined.) We’re not sure that knowledge management fully qualifies under that assertion, but we should recognize that it is a challenge to say that knowledge can be managed. “Real” knowledge is based on our experience and practice—and resides inside our heads. History is full of examples where rulers and leaders have attempted to “kill” knowledge—kings, pharaohs, and popes have often attempted to suppress the advances associated with new ideas and intellectual exploration.⁴

Knowledge management (KM) is a concept composed of two words—*knowledge* and *management*. Knowledge is “information in use.” Knowledge management is “a systematic approach to managing the use of information in order to provide a continuous flow of *knowledge* to the right people at the right time enabling efficient and effective decision making in a firm’s everyday business.”⁵ It’s true that you won’t get more out of an effort than you put into it. More and more companies are realizing that they have to turn some of their best and brightest to the critical task of managing knowledge.

Although the terms *information* and *knowledge* are often used interchangeably, there is a clear distinction between them.⁶ **Information** is a flow of messages, whereas **knowledge** centers about the beliefs and commitments created by the flow of information. Information is the foundation for knowledge. In the process of solving problems, organizations develop and apply new knowledge. In this way, an organization is not just an information processing machine but an entity that creates knowledge through action and interaction.

Knowledge is not the same thing as information, which is not the same thing as data. But it is silly to pretend knowledge management does not involve working with all three. You often see a hierarchy that looks like this: Data becomes information when it’s organized; information becomes knowledge when the manager makes decisions.

More and more jobs, regardless of what titles we give them, are what we call “knowledge work.” People at all levels of an organization have to blend the ability to work with highly specialized technical material with the ability to simultaneously work effectively in teams and form bonds with clients and customers. The nuts and bolts of management, whether the employees are software engineers or factory technicians, is about bringing these people together.⁷

Key Features

Knowledge management is not about setting up a new department or assigning titles such as the chief knowledge officer (CKO). It is about recognizing that knowledge generation, sharing, and application are the ingredients of survival—the most important activities of almost every employee in every department in every organization. Let’s look at the way organizations operate. There is a real shop floor that is visible and a virtual shop floor that is hidden.⁸

The **real shop floor** is what you think and see as a typical organization carries out its business. This is what is happening, where things get done. The **virtual shop floor** is where people’s minds meet. Here, in this hidden virtual “place,” organizational knowledge is created, shared, and used. Before we had all of these communication facilities

(first the phone and the typewriter; then the computer and the fax; then the network and the Internet, and on and on) the real and virtual shop floor would have been the same. People communicated with each other at the same time and place. Technology has changed all of this. As an employee, you can call for advice in myriad ways. Suppose you are an engineer working for British Petroleum (BP) and a problem arises. You can call on engineers in Texas or Singapore for help. In his 1964 book, *Understanding Media*, Marshall McLuhan⁹ recognized how electronic communications would free many workers from “the tyranny of place.” These workers would become “nomads of knowledge,” and he cautioned that corporations may come to need them more than these workers needed the corporation.

Ikujira Nonaka has been credited with coining the term *knowledge management* in an organizational context. In *The Knowledge Creating Company*, he and his co-author noted that a company’s performance could not be gauged by how it performs in the short or medium term, utilizing its knowledge creating activities.¹⁰ In one of the cases they describe how a researcher at Matsushita apprenticed herself to a master bread maker for a year in order to learn skills that she later mimicked to design Matsushita’s market-dominating automatic home bread maker.

Organizations all generate knowledge, so it is where we operate. Organizations hum with mental activity, even if we do not manage it as well as we could. Table 19–1W compares the characteristics of the virtual and real shop floors. What it comes down to is that the knowledge management challenge is about finding better ways to tap into and support the creative potential of the people in organizations.

The Second-Generation Knowledge Management System

There has been a tendency to think of knowledge management as an extension of information technologies. If you were to visit many companies today, the heart of most of their strategies could be found in data warehousing, groupware, document management, imaging, and data mining. To some extent this chapter is about this as well because we don’t want you to have a disconnect when you start out your career. But keep in mind relabeling yesterday’s technologies under the guise of today’s KM brings nothing new to the table. A second generation and perhaps even a third generation of KM is out there.¹¹ Unlike the first-generation KM in which technology provides all of the answers (turning us all into robots) second-generation thinking is more inclusive of people, process, and social interaction.

The increased attention given to the importance of knowledge management initiatives has spawned two distinct thought approaches: knowledge-based theory and resource-based theory. Both of these approaches view knowledge as a key competitive resource. The key assumption of resource-based theory is that intellectual capital (the knowledge of its workforce) is a core competency. The knowledge-based theory suggests that it is the knowledge management processes and the culture of the organization that fosters knowledge creation and sharing. This is the organization’s main competence. This concept recognizes knowledge to be a living asset that requires nurturing and growth.¹²

**Table 19–1W
The Real and Virtual Shop Floors**

	Real Shop Floor	Virtual Shop Floor
Place	Factory, office, or shop	In people’s heads, social environment
Participation	Formally defined roles and functions	Voluntary or ill-defined communities of practice; level and quality of contributions invisible
Communication	Face-to-face, routine, formal	Electronic or face-to-face, ad hoc
Tools	Machines, computers, stethoscopes, vehicles	Information systems, communication equipment, databases
Inputs	Defined mixture of raw materials, capital, and labor	Information that knowledge workers defined as necessary
Processes	Physical, repetitive, and linear systems	Intellectual, nonlinear, and social systems
Outputs	Common outputs in recognized form: reports, physical products, events	Unique information that may or may not be recognized: ideas, questions, solutions
Metrics	Visible, collected, and objective	Hidden, dispersed, and social

Copyright © 2009 The McGraw-Hill Companies. All rights reserved.

Technologies: Driving Business Knowledge

Having a computer and using word processing software does not make you a better writer. Similarly, just buying new information technologies does not make an organization better at managing knowledge. What is critical is acceptance and effective utilization of the technologies. KM initiatives can be as simple as setting up mailing lists between workers with specific interests or as intricate as building intranets with software that facilitates collaboration. Many large organizations are now undertaking multibillion-dollar projects to manage their customer relations, often called customer relations management (CRM), as well as smaller ones with more direct bottom-line benefits, such as sales force automation.¹³

Marcia Mitchell, the senior information systems (IS) project manager at Framingham, Massachusetts-based Staples, bought a piece of KM software, hoping to encourage technical support employees in nine different locations to share their technical know-how and best practices. She says the project, called the Enterprise Help Desk, resulted in shorter training sessions for Staples employees and faster response times by support personnel to customers.

It is not an easy task to get people to accept and use KM technologies. They need to change their work habits and attitudes. Looking at typical college students and how difficult they find it to share all of their knowledge with fellow students (sometimes we discourage this as well), we can then suppose that many employees aren't thrilled about sharing all they struggled to learn either. One solution is to create a work environment in which employees are encouraged to share their knowledge with co-workers.

One of the first things we need to do in considering KM in its second generation is to recognize that knowledge has a life cycle. The knowledge life cycle (KLC) begins with the detection of problems by agents (something out there in the mass of technology support systems) in the context of business processing. As workers are engaged in their practice of business, they experience gaps in their knowledge of how to move from the current state of events to some desired goal. This hopefully ends with the choice of newly validated knowledge "claims," beliefs, and predispositions. Knowledge *use* follows and occurs within the context of business processing. As knowledge is successfully integrated throughout the organization, it is expressed in terms of subjective and objective knowledge.¹⁴ Subjective knowledge is mentally held by individuals or groups, whereas objective knowledge is contained in documents, computer files, and so on. In the midst of knowledge use in business processing new problems arise and are detected and the cycle continues.

Economies: Managing Change

It is true that "A knowledge worker is an asset that appreciates over time." But what must be realized is that it is not just the knowledge held by these workers that is of importance, because over time that too becomes obsolete. The truest value of the **knowledge workers** is their ability to use their thought processes to combine data and information with their own experiences to produce knowledge. It is wonderful for everyone to think of him- or herself as a knowledge worker, but when discussing today's knowledge economy and knowledge workers, two levels of knowledge workers must be addressed. There are those who merely use the processes and knowledge created by others and those who actually create knowledge—the true knowledge workers.

Knowledge management is necessary for companies because what worked yesterday may or may not work tomorrow. Over time companies that manufactured buggy whips became obsolete (unless of course they read the writing on the wall and developed alternative products to manufacture). These companies may have been the best of their breed. Regardless of how efficient their processes were, though, if they didn't keep up with the changing needs of the market, they were unable to remain in business. To stay aligned with the changing needs of the business environment, organizations need to continuously review what they do. To be viable, a company must ensure that the "core competencies" of today do not become the "core rigidities" of tomorrow.

Today most companies no longer have a choice about introducing at least part of their business on the Internet. Executives must also confront the possible risks that may arise. The World Wide Web is a given for today's students. You use it to obtain information for

papers, to correspond and chat with your friends, and, for some of you who are flush with cash, you may even place an order for a DVD, CD, book, clothing, or even a computer. You take the Web for granted. But for the business manager, any new business venture brings new dangers, and the online world of e-business seems particularly susceptible to threats.

Of course, there are basic security technologies that every e-commerce engine should employ, but as important as they are, products should take a back seat to more fundamental strategic concerns. These issues can be characterized by questions about managing information, according to Steve Gold, managing director of supply chain solutions for KPMG in Chicago. “How much do I share? What do I share? How well is it protected?” he asks. Answers to these questions will have an impact on how companies manage risk.

To the extent that the KLC or knowledge processing comprises a social system it will invariably have a political dimension.¹⁵ Later we discuss key positions such as the chief knowledge officer who is delegated the tasks to oversee the entire KMS for the organization. Regardless though everyone needs to be involved. Key people need to assume the responsibility for detection of problems and opportunities in their part of the business processing environment. Knowledge claim formulation, resolution, validation, and adoption are key aspects.

Many businesses have been very successful without a Web presence and still want to hold onto their business model, which doesn’t fit the Web. For these managers, information is power. Today many organizations are finding that they must change to survive. As a case in point, a global engineering and construction firm needed to learn new behavior when its executives began searching for ways to streamline operations and build a global extranet. The new network had to support a community of engineers that included suppliers and other business partners, some of which did business with the firm’s competition. This organization, which builds power plants, highways, and dams, had a corporate culture typical of the engineering field; it maintained tight control over detailed designs and plans. In a radical departure from tradition, the executives decided to share this information with business partners over the new extranet.

DEVELOPING THE KNOWLEDGE MANAGEMENT SYSTEM WITHIN THE ORGANIZATION

Knowledge Creation and Acquisition

We defined knowledge earlier in this chapter. The question now is, How is knowledge created or acquired within an organization? Knowledge is created by social interactions between individuals both within and across organizations.¹⁶ A three-layer model was proposed by Nonaka, Toyama, and Byosiére to describe how knowledge is created. Their first layer describes the process of **knowledge creation** through socialization, externalization, combination, and internalization (SECI). Some of this created knowledge is **tacit** (inside the head of the employee—intuitions, hunches, etc.) and other is **explicit** (formal data, specifications, manuals, etc). From an organizational perspective, tacit knowledge cannot really be addressed. The second layer involves the knowledge conversion process between tacit and explicit knowledge. This process is often called **ba**—a platform or arena for dialogue that gets created for the purpose of knowledge creation. This arena can be any kind of space, either physical or virtual. The third layer deals with knowledge assets that are inputs, stored processed data, and outputs (things that the corporate information processes generate or those that are converted in the second layer) that serve to moderate the knowledge creation process.

Tacit knowledge is considered to be subjective and involves things that we experience but can’t exactly put in black and white. To convert these ideas to useful organizational knowledge, we develop mental models. Systems analysts and computer designers draw flow charts; engineers specify equipment blueprints and schematics. Many of these tasks are now in automated form using computer graphics. We need to go a little bit further when we try to bring to the surface the bits and pieces of information that are stored in the minds of individuals. Here we attempt to create a safe environment for sharing and

take into account the individual's beliefs and perceptions to define their world—articulating a mental model and, in turn, creating new knowledge.

The actual conversion of tacit knowledge starts with some form of socialization in which the various workers, even customers and suppliers, are brought together. Their experiences are shared in, possibly, a joint exercise. At some point, a degree of understanding and trust is achieved. In attempting to elicit cultural preferences,¹⁷ Rapaille employed a more in-depth use of focus groups whereby he asked the groups to remain together over a number of hours to achieve a much broader perception. The results differed significantly from group member responses at the start of their time together. The tacit knowledge can then be externalized through facilitated dialogues. New concepts are created in the business context. The next step is to take these discrete elements of explicit knowledge and combine or merge them into an explicit knowledge set that is more complex and systematic than any of its parts. This set is disseminated among the organizational members, edited, and processed to make it more useful. The final part of the conversion process is internalization. We actualize the explicit knowledge as concepts about or methods for strategy, tactics, innovation, or improvement.

Knowledge Experts and Enablers

In early knowledge management initiatives it was common for an employee, often associated with information technology, to introduce KM into the enterprise. But now, as ideas about knowledge energize business strategies, companies are having second thoughts about who should direct their KM efforts. We see a shift of responsibility for knowledge initiatives away from technologists to business executives or collaborative teams.¹⁸

How does a business decide who leads its KM initiatives? There is no one right answer, although it is clear that somebody must be empowered to lead and be supported in their decisions. Regardless of who heads it, a KM project needs to have sponsorship at the highest level—from the chief executive officer or the board of directors. Further, any knowledge leader must possess some common capabilities. Whatever title appears on that person's business card, he or she must be able to build and maintain support from top executives; have authority to command sufficient resources for the project's success; take a strategic business perspective rather than a narrow, departmental focus; enlist broad acceptance and cooperation from employees; and avoid the negative effects of corporate politics.

When an executive tries to assign KM responsibility to some person within the organization, he or she has to be aware that corporate politics will come into play—the wild card that determines how an initiative might be designed and implemented and whether it will succeed. If rising above politics and competition for resources is the most important factor in deciding where authority for the knowledge management initiative should lie, the company CEO's office is the logical place. Although the attraction for this choice is obvious, piling the responsibility on an already burdened leader may not be practical. There are a lot of details that a CEO cannot attend to, so if a position is created, the person in that position should report directly to the CEO.

In any case, getting the CEO involved from the beginning is crucial for success. “It makes a big difference if the CEO introduces KM into an organization,” says Joe Firestone, chief knowledge officer of Executive Information Systems Inc. in Wilmington, Delaware. Firestone doubts that a CEO would have time to be the knowledge manager on a day-to-day basis. Rather, the CEO should appoint someone for that purpose and have that person report to him or her. After ruling out the top boss for practical reasons, three primary candidates remain for the job of knowledge leader: the chief knowledge officer, the IS department, and the cross-functional team. Here's a look at the pluses and minuses of each.

The CKO

The *chief knowledge officer (CKO)* function has grown in direct response to knowledge management's popularity. But controversy exists even among KM consultants as to the necessity of this management position. On the one hand, if the company has a CKO, that person would hopefully assume knowledge leadership. “Knowledge should be managed by the CKO, who should be high in the organization,” Firestone advises. Carla O'Dell,

The IS Group

president of the American Productivity & Quality Center (APQC) in Houston, takes the opposite view. “The CKO title is going away because it was faddish,” she says. “Knowledge management is now being run by business leaders.” In the end, some firms select someone who will succeed in the company’s political environment rather than appointing a person who really understands knowledge management. What is really needed is a person with both people skills and clout.

For any organization the purpose of information technology (IT) is to increase productivity in the workplace. To that end IT departments and the IS group now assemble complex systems of specialized hardware and software applications to serve the varied and distinct information needs within the company. Some of these applications are designed to work together or to share standard interfaces, but many are not.

Frequently the roots of KM are found in a company’s IS group. Traditionally information systems initiatives have resided in the IS area, but we may question whether KM is just an IS initiative or a much broader, companywide thing. It might come down to whether a firm sees KM initiatives as technology- or business-based processes. When an organization chooses to base knowledge management projects in the IS department, the senior knowledge executive (the CKO, for example) may report to the chief information officer (CIO). This structure ensures technical support, but the risk is that everyone except IS employees will chalk off KM as a purely technical pursuit. Knowledge management can be viewed as too narrowly defined when it is put under the CIO or the IS function—it could become just a document management system, a best practices database, or some Web portal for employees to search.

According to Susan Hanley, executive director for enterprise collaboration and content management at Plural Inc. in Bethesda, Maryland, identifying knowledge management with IS can be a problem for some companies. “You get enamored with technology and forget about the process, but every solution is at best 20 percent technology,” she says. “People think that the first thing you need is a place to work together online. Actually, you need a relationship and a business reason first.”

Not everyone thinks it’s a mistake to place KM responsibility in the technology establishment. “In terms of who is accountable or gets things done, it’s not bad for the IS function to be in charge,” says O’Dell of the APQC. “You’ve got to have a center of excellence somewhere, and if you don’t have it in IS, you’re going to struggle for IS budgets.” Even so, O’Dell stresses that knowledge management should not be left solely to IS. “If there’s not a cross-functional steering committee, it will not be seen as a business solution,” she adds.

The Team

A team can be strategically important for the formal process required to implement a knowledge management system. In a cross-functional team a firm can overcome the pressure of having any one part of the company be in charge of knowledge management. To remain independent from domination by any single influence, the team must be sponsored at the highest level. At the same time, the group must agree on the reason for managing knowledge in the first place and keep the organization focused on that objective. Keep in mind, though, that unless you’re starting with a business objective, it doesn’t matter who is sponsoring it, because it could easily fail anyway.

The Right Option

There is no single answer to the question of who should lead KM. Each company has a unique set of circumstances when it faces the challenge of sharing and profiting from what it knows. “How these projects are managed depends on the corporate culture,” says David Loshin, president of Knowledge Integrity Inc. in Silver Spring, Maryland. “Cooperative efforts sometimes fail because individuals compete for the rewards, making for less incentive to cooperate” any information that can further an organization’s goals. If managing IT can be compared to herding cats, managing knowledge is comparable to ranching fleas on a cat herd. We all would agree that those organizations best able to collect, index, store, and analyze knowledge have an advantage over their competitors. We also differentiated earlier between information and knowledge. Let us now consider what happens when one interprets data logs. Looking only at the logs, a twice-daily drop in

bandwidth usage at a particular office may be quite mysterious; only by checking in with on-site managers can we discover that those lulls mark the arrival of the office coffee cart.

Although it is more a business model than a technology, knowledge management incorporates new technologies as they appear. Organizations networking their PCs in the late 1980s and early 1990s enabled more employees both to use and contribute to early knowledge management systems—perhaps even creating a glut of information. These systems depended on centralized databases in which employees entered information about their jobs and from which other employees could seek answers; at the same time, a discrete set of unrelated data/information was being stored on the hard drives of all these PCs. A lot of this is changing as companies move to incorporate all data storage into a single repository accessible in a grid or networked environment. In these situations the knowledge worker accesses the system using some kind of network appliance. Today also the use of iPhones, Blackberries, or some other form of virtual, remote device to access corporate data be it e-mail, voice mail, or other salient Internet/intranet data display on the Web browser.

Knowledge management systems have always relied on data management technologies such as relational database management systems, data warehousing, and other technologies to attempt to bring these dissimilar data together. For centralized databases, management could track and analyze how knowledge management systems were being used: Who accessed what? When did they access it? How frequently was it accessed? It hasn't been as easy to harness the data content of all of those PC hard drives. Thus, there just may be a gap in what is considered to be part of the knowledge management system.

The advocates and disciples of knowledge management have been quick to adopt advances in groupware tools, too. Distinguishing between knowledge management and groupware can be difficult: Knowledge management systems often rely on groupware technologies to facilitate the exchange of organizational information. One telling difference is a knowledge management system's emphasis on identifying knowledge sources, knowledge analysis, and managing the flow of knowledge within an organization—all the while providing access to knowledge stores (the place where knowledge is stored, sort of a database of databases). We could think of the knowledge store as the sum of all knowledge within the organization and call it "intellectual assets." We could even provide tools for managing those assets. However, we still need to keep in mind that we are missing some critical informal data, information, or knowledge that resides in the personal databases of the organization's members.

As a management tool, knowledge management systems require technology as well as consultants who advise on how to handle knowledge audits, analysis, and flow. Over the past few years, groupware applications shifted from proprietary client-server models to a platform-agnostic Web model. These are some pretty big words here—let's just say knowledge management has embraced Web technologies to extend its usefulness and cut costs. **Web-based knowledge management systems** require no (or minimal) change to users' desktops and can be simpler to install and administer. In addition, they may just be the way to harness all of the untapped knowledge residing on the PCs.

What IT managers need to know about the knowledge culture is that, like programmers and systems administrators, knowledge workers converse through the Web about their special interest as they explore and experiment. They fill disk space with their discourse, their writings, relevant documents, and information that they gather and collect. These form the basis for shared work. Through their activities they discover the need for new software features, changes in the online design of their work environment, and even the composition of their teams. The idea is to put knowledge to work, and the best way to do that is through the Web by creating a trusted communication framework.¹⁹

A brief lesson in html syntax (the language of the Web browser, the engine that makes the Web work) might suffice here. Recently, knowledge management systems started using html tags to identify relevant data elements and extract knowledge from them both in and out of the organization. By marking parts (meta-information) on the Web page, the search engines (readers) can locate specific pieces of information. For example, in a Web-based KM system an engineer at one location can determine (search for) solutions arrived at or by other engineers and scientists at other locations within the company. These systems

use knowledge portals. The portals are like intranets in that they provide online interfaces that bring a variety of resources together in one place. Of note the intranet is usually available in some form to all employees in the company. A portal, on the other hand, is a series of Web pages devoted to serving the needs of more specific interest groups.

Knowledge management requires buy-in at the very highest levels of an organization. Costs can be quite high, because off-the-shelf products are unlikely to solve the typically massive and complex challenges facing large organizations. For the large organization, high costs for software and hardware may be dwarfed by consulting fees for customizing knowledge management software or creating customized in-house applications. Ultimately, whether you build or buy, creating a knowledge management system represents a significant management decision—one that must have support throughout the organization.²⁰

When we think of a knowledge management system, we need to consider how to use knowledge to solve problems. There are three phases to knowledge in this context: Phase 1 corresponds to understanding the problem or diagnosing the problem; this includes gathering the knowledge necessary to make a decision or propose a solution. Phase 2 corresponds to choosing and defining one or more potential approaches to a solution. Phase 3 involves selecting and presenting the solution and perhaps managing the progress of the implementation of the solution.

The decision-making process often involves making decisions based on incomplete information. It may include requests for new information, so there is an interplay—an iterative process—between the initial stage of requesting knowledge (information gathering) and the completion of the decision-making process. Between the two phases there is a lot of jumping back and forth.

KNOWLEDGE MANAGEMENT MECHANISMS

Recent studies on organizational learning and organizational learning mechanisms have sharpened the focus on design principles and processes. Learning mechanisms for knowledge management are core concepts for designing and sustaining knowledge management processes and performance. Knowledge management mechanisms are formal configurations—structures, processes, procedures, rules, tools, methods, physical, and technological-based for developing, enhancing, and sustaining knowledge creation, knowledge management, and enhancing the company's performance.

Practical methods (such as models and corresponding practices and tools) are needed to support an organization's learning capabilities.²¹ Writers in innovation management and organizational learning have identified many problems that established organizations face in recognizing breakthrough opportunities. Christensen provides some examples of leading companies that have been unable to recognize novel *technologies*, developed in or external to their organizations, for the future of their own industries and markets.²² Van de Ven notes that the more successful an organization is, the more difficult it is to *motivate* people to attend to new ideas, needs, and opportunities.²³ Tushman and O'Reilly note the need to *manage current operations* and simultaneously develop dramatically new and different ones to cope with turbulent environments.²⁴ These writings focus on the dual importance of the individual and the organizational context, that is, the role of the creative individual in seeing and championing an opportunity and the role of organizational context to ease and support creativity.

An organization's learning system is embedded in its human resources, structure, process, policy, and culture. The greater an organization's learning capability, the greater the possibility that it will maintain sustainable existence and development. Based on this definition nine organizational learning subsystems were proposed by Chen.²⁵ These subsystems are (1) discovering, (2) innovating, (3) selecting, (4) executing, (5) transferring, (6) reflecting, (7) acquiring knowledge from the environment, (8) contributing knowledge to the environment, and (9) building organizational memory. In this chapter the system model was modified to include *acquiring* and

contributing knowledge to and from the company's business partners along its supply chain and customer interface (CRM). Figure 19-1W depicts the steps in this model. The various data banks, depicted as cylinders, show deployment and subsets about and from the Enterprise Information System. The steps contribute to the building of organizational memory. The databases are the repository of this memory. The demilitarized zone (DMZ) is the secure database available to the firm's partners but separate from the internal systems of the organization.

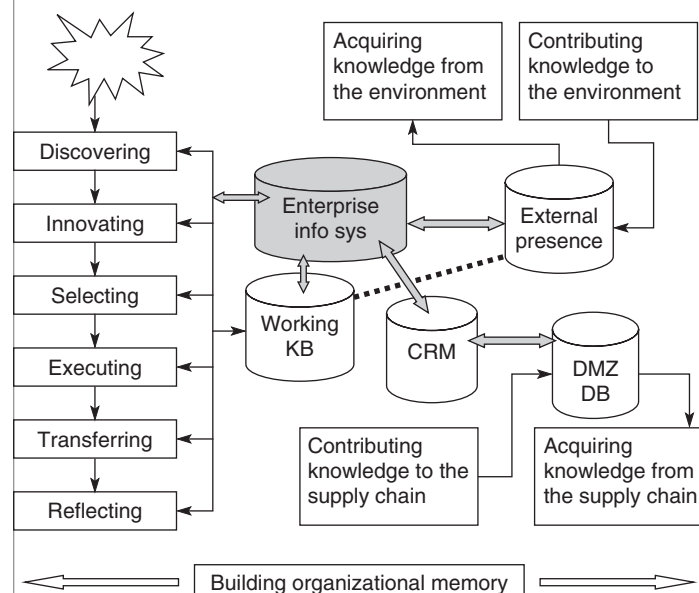
The KLC was developed by members of the Knowledge Management Consortium International (KMCI), a U.S.-based nonprofit association of knowledge and innovation management professionals from around the world (www.kmci.org)

Changes in the firm's external and internal environment drive organizational learning. Organization members may not be aware of these changes. The organization needs to build a **discovering subsystem** enabling it to sense and monitor changes, problems, challenges, and opportunities in its internal and external environment; and to provide early warning signals of shifting trends (Morgan 1996). Only through conscious and systematic monitoring and analysis can an organization retain its sensitivity to environmental changes. From a security perspective this discovery system needs to be shielded from outside forces that could compromise the organization.

In order for an organization to develop and thrive, it must focus on its core competencies and develop new products and services. This is accomplished by improving management process and systems.²⁶ According to Nonaka and Takeuchi,²⁷ companies should be knowledge-creating—becoming innovation factories. Introducing breakthrough innovation projects requires a commitment of financial and human resources. Investment is often staged, rather than committed for the entire development path. Higher-level technical and business managers along with external partners frequently engage in opportunity recognition, as a triggering mechanism for the opportunity evaluation process leading to decision making about commitment of resources. The research manager, as the first to identify the opportunity, acts as the catalyst to set off this chain reaction in which technical and business managers engage in the opportunity recognition process.

Discovering and innovating, an organization must construct a system enabling it to make the right choices among innovative ideas. An organization should develop sound **selecting** methodologies, processes, activities, and capabilities, so that better business decision can be made and more qualified and suitable people recruited and promoted.

Figure 19-1W Organizational Learning Model



Electronic information seeking can be a highly complex and ill-defined decision process. Information seekers are faced with a wide array of information sources and options which they must access, reject, or interrogate during their selection of information sources. Cues drawn from these information sources, and from other motivational sources, such as self-regulatory responses, performance feedback, and environmental influences, may all lead to changing strategies as the task is continued.

Organizational learning not only includes changes of perception and thinking (such as discovering, innovating, and selecting), but also changes of behavior. No action means no real learning. Executing new ideas is not easy. The **executing** subsystem is important for organizational learning. The successful organization is the one that can make things happen and use knowledge learned to make a difference. Individual and team learning best ideas, practices, and experience achieved by individuals, teams, or departments should be **transferred** to the rest of the organization. From a security perspective the social network needs to be managed to filter these transfers.

The reason to build a **reflecting** subsystem is for an organization to learn from past experience. It doesn't matter whether the experience was successful or unsuccessful, the organization can use the formal reflecting subsystem to make better decisions for the future. Reflecting is derived from "learning from failure" and "learning from success." To survive, an organization should be an open system with a continuous exchange of energy, information, and knowledge within its environment. This **acquiring** system is crucial for an organization's ability to learn faster and build competitive advantage, especially in a new environment.

An organization should build its own **knowledge base** where documents, work reports, academic journals, magazine, books, and newspapers are stored electronically and mechanically. An organization should design its intranet system to accommodate individual and organizational knowledge. Not only should an organization **acquire knowledge from outside**, but also **contribute to the outside** especially sharing and exchanging information with its business partners along its supply chain. For some organizations, such as universities, schools, and consulting companies, providing knowledge services is the reason for their existence. Other organizations such as manufacturing companies do this as well. Contributing knowledge can improve an organization's reputation and, from the perspective of learning, can give the organization feedback opportunities about its management and performance.

With the growing complexity of the environment, **organizational memory** is increasingly needed for continuous learning. When knowledge generated by the other subsystems is stored in organizational memory, the stored knowledge also affects these subsystems. If an organization fails to set up organizational memory to retain knowledge, the loss means that great organizational learning cannot be constantly upgraded and further learning cannot occur. Good experience cannot be exploited and failure may be repeated.

Most organizational knowledge is stored in digital form "somewhere" as depicted in the data banks in Figure 19-1W. Beyond these formal corporate mechanisms are data stored in a wide variety of places and media. A company often has data stored on the workstations of all workers in and beyond the boundaries of the company. Work group and collaboration teams have data stored on local and virtual networks. Communication occurs in a wide variety of modes such as e-mail, messaging, voice mail, the telephone, and direct contact. Most of these data sources can also be saved in digital form—the company's digital assets. Without the knowledge to defend its digital assets, the company is lost, and these potential losses can grow every day as employees, suppliers, and customers continue to pour the contents of their personal and business lives into databases, PDAs, personal computers, and Web servers, through routers, hubs, switches, cell phones, gateways, copper, coax, the air itself. The paradigm has shifted in recent years to the seemingly ever expanding distributed Internet and the World Wide Web (WWW).

Recent events have led companies to regard security, especially information security, as a significant focus in the way they conduct their business. Most businesses today have at least a rudimentary security program in place, and many programs are growing in

Knowledge Life Cycle

maturity. As these programs mature there is a need to move beyond the view that security is just a technical issue. *Security* today should be part of the fabric of a business.

Until recently, KM's basic assumption has been that "valuable knowledge exists"—one needed only to capture, codify, and share it. Learning and knowledge creation was not considered a major factor. As evidenced by Chen's model²⁸ discussed in the previous section, the notion of collectively held knowledge and group learning to feed organizational memory. Figure 19-2W depicts the knowledge life cycle (KM Consortium). The cycle describes a two-phase model—knowledge production and knowledge integration. The knowledge production phase generates new knowledge through interactions among individuals and groups leading to the formal adoption of new knowledge at the organizational level expressed in declarative and procedural rules. The knowledge integration involves distributing and sharing new knowledge. A new business process may not immediately be embraced—getting a large number of workers to follow new processes calls for willful transformation by both the workers and the sponsor.

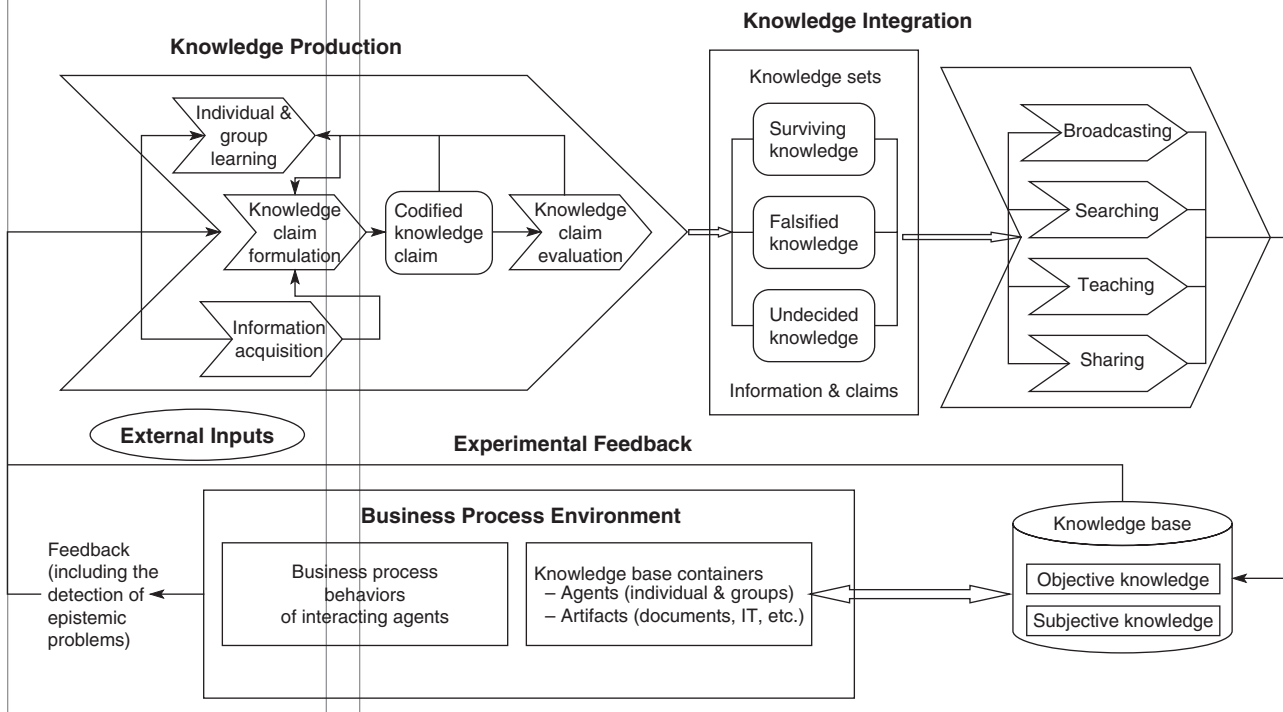
Knowledge processing is precisely the cycle referred to in the preceding, through which people in organizations, in response to problems arising in business processes, collectively engage in knowledge production and integration. Knowledge processes, therefore, are social processes through which organizations make and share their knowledge. Knowledge management, on the other hand, is a management activity that seeks to enhance knowledge processing. Not all organizations support formal knowledge management functions²⁹—but all organizations appear to engage in some form of knowledge processing. Knowledge processing is a social affair—people in organizations tend to self-organize in an emergent fashion.

Knowledge Management Tools

There are several well-established technologies and tool sets that can be used for developing a system to support this type of activity. One is known as **knowledge engineering**, which has been used extensively to develop expert systems by conducting structured

Figure 19-2W

The Knowledge Life Cycle (KLC)



Knowledge Management Centers

interviews with experts in the field. The second technology is called **case-based reasoning** (CBR), in which a system automatically stores a history of cases, that is, problem definition or questions, together with successful answers from the past.

Knowledge management is not just a technology or simply a set of computerized tools; it involves human interaction as well. The idea is to establish a set of **knowledge management centers**, which are akin to guidance counselor centers in school, in religious institutions, libraries, and other locations. One of the goals could be to bridge the so-called digital divide so that the people who are most in need of guidance and counseling will have easy access to these facilities.

The human part of the knowledge management system has several layers. At the top layer we have the experts—these are real, not pretend, experts, meaning that for most organizations there are few workers who fit this category. These gatekeepers set the policy and serve as the governing body, providing guidelines for and review of material entering the knowledge system. They provide supervisory experience and consulting advice for the lower layers. At the next layer are the intelligent users of the knowledge system. These are people who are not quite professionals but have more than the layperson's knowledge in those areas. At the bottom layer are people who are employed to operate the centers. The lowest level, then, will be volunteers who also operate the centers. These lower levels are advised or counseled by accessing the system (the general public might also have direct, but limited, access to the system depending on how much the organization wants to share). The theory is that ordinary people, who are not experts, will be able to provide expert counseling to the people in need.

Initially the knowledge base of the system is relatively sparse in terms of handling specific problems and questions. Over time it grows and becomes able to handle many problems. Some of these problems are repetitious of other problems that the system has seen in the past, and over the course of time “knows” what works best and what does not. The general term in the information technology world for this process is *best practices*.

There are many examples of this type of knowledge collaborate on the Internet. For example, when you search for a particular book or for all the books on a particular subject, you also get access to reviews of the book by others who bought them as well as other books bought by the people who bought the book for which you searched. In the stock market, there is an amazing amount of information on the Net of people asking and answering questions regarding virtually every stock on the market.

There is always the ownership issue in knowledge creation, or the question of what the corporation “owns” and what the users “own.” The concept of “compliance with choice” suggests that corporations own the compliance part of the formula and that the choice of what knowledge is needed and what format it is in belongs to the users. For example, Ford production engineers define the parameters for the best practices that are entered into the system, such as requiring that any practice offered needs to already be up and running in a plant or that video is necessary as well as print.

Nancy Dixon in her book addresses the complex business of **knowledge transfer** and where to start by offering a series of steps.³⁰

1. *Select a unit that has an interest in knowledge sharing.* Most of the effective knowledge transfer systems focused on a specific organizational goal and a specific audience; starting in a unit or division has considerable advantage. When Ford's BPR system proved itself in vehicle operations, it then spread across other Ford divisions, including body, stamping, quality, finishing, HR, and central engineering.
2. *Establish a steering committee.* Grassroots efforts may work sometimes, but in reality those that direct the organization at the top must be involved. However, don't expect top management to participate in the nitty-gritty work of running the system; instead expect them to engage in the policy work of establishing the framework,

identifying the critical knowledge for the unit, building the connection between organizational goals and specific knowledge, and procuring the necessary resources. A steering committee, consisting of a significant number of representatives from the whole unit or division, is needed to perform these strategic tasks. The committee needs to be made up of people who are at a high enough level in the organization to make policy decisions about these issues that will stick. It is important that this not be a committee chaired by someone from the technology or information systems group. Regardless of the reality, if IS is prominent, the perception will be that IS owns the effort, which may well work against your efforts. The steering committee itself may need some education and preparation for its task. It may want to make site visits to other organizations, read the growing literature on knowledge management, and sponsor an assessment of the current state of the organization's knowledge activities.

3. *Conduct a knowledge assessment.* A knowledge assessment needs to address some key questions: What knowledge already exists in the organization that could be usefully leveraged? What do knowledge teams need in order to improve their performance? What critical processes have the most variance across parts of the organization, making sharing valuable? What knowledge-sharing efforts already exist that could be built on? What knowledge provides the highest leverage for cost savings? Which teams are most ready to share and receive knowledge? What policies or practices in the organization facilitate and constrain knowledge sharing? Who are the stakeholders and what are their interests? How does the organization's knowledge capability compare with that of other organizations? It is useful to build a team of internal and external members to conduct a knowledge assessment. The answers to this assessment should provide the steering committee with the information necessary to create a business case that includes lost opportunity costs, potential dollar savings through knowledge transfer, and the costs involved in creating and maintaining a knowledge transfer system.
4. *Establish a framework for knowledge transfer.* Without a framework, well-intentioned people can establish rules and put processes into place that prevent the system from succeeding. The all-too-familiar assumptions about such things as expert models and individual knowledge can too easily affect critical decisions.
5. *Identify organizational goals and their corresponding knowledge components.* This task requires an in-depth understanding of where the organization is headed and what goals are of critical importance for its future. Building the relationship between the organizational goals and specific knowledge components is a way to tailor the knowledge transfer process for the organization or unit. It is not effective simply to replicate what other organizations have done. What worked elsewhere, why it worked, what the reasoning was for the choices made, and how the knowledge was used to inform the design of a unique transfer for the organization are important. Keep in mind, though, that most knowledge transfer efforts in an organization begin at the unit or division level—it is important for other units to be able to learn from how the steering committee in that unit has done its work.
6. *Identify the appropriate transfer process for each type of knowledge.* Once high-leverage knowledge has been identified, the committee needs to select the appropriate transfer process for that type of knowledge. A number of different kinds of knowledge may be identified, each of which will require a different transfer process. The identification of the most effective transfer systems involves asking questions such as, Who is the intended receiver of the knowledge in terms of similarity of task and context? How routine and frequent is the task? Is the knowledge tacit or explicit? The answers to these questions determine whether the knowledge would be most effectively transferred through five kinds of knowledge transfer: (a) *serial transfer*—the knowledge a team has learned from performing its task that can be transferred to the next time that team does the task in a different setting; (b) *near transfer*—the explicit knowledge a team has gained from performing a frequent and repeated task that the organization would like to replicate in other teams that are

doing very similar work; (c) *far transfer*—the tacit knowledge a team has gained from performing a nonroutine task that the organization would like to make available to other teams that are doing similar work in another part of the organization; (d) *strategic transfer*—the collective knowledge of the organization needed to accomplish a strategic task that occurs infrequently but is of critical importance to the whole organization; and (e) *expert transfer*—the technical knowledge a team needs that is beyond the scope of its own knowledge but that can be found in the special expertise of others in the organization.

7. *Locate current informal systems that can be enhanced.* All organizations have ways in which knowledge currently gets shared. Members send off a package of blueprints to a colleague, call a buddy who has faced this same computer glitch, drop by an unusual construction site to see how the work is progressing, or observe a surgical team in action. It is possible to build on these informal systems, using the design guidelines, rather than starting from ground zero. Often a few people at the center of a loose network to whom others turn to get their questions answered can form a nucleus to understand what others are asking for and how it is of assistance to them. The production engineers in Ford vehicle operations plants devised a paper method of exchanging practices long before their electronic database was developed. When the electronic database was created, it was designed to provide the same type of knowledge the production engineers had been sharing in the paper format and was structured in a way they felt to be most useful.
8. *Identify resources.* Obviously, costs are going to vary depending on the type of system you implement, but every knowledge transfer system has associated costs. The question is whether the anticipated gain is worth the costs, and that is a question that a knowledge assessment can help address. The task for the steering committee is to assess the potential gain and to identify the costs, including personnel needed to collect knowledge or monitor systems, equipment costs, travel costs to move tacit knowledge, the cost of benchmarking and site visits, and consulting costs. Identifying resources also includes decisions about who will play what knowledge roles and whether those roles are made a part of current responsibilities or personnel are added to fill the roles.
9. *Develop an integrated system for knowledge transfer.* The type of transfer system, the current informal efforts, and the organizational goals all need to be combined to create an integrated system. Each element has to support and reinforce the other elements and all must represent the framework the committee has established. The initial knowledge effort in an organization does not need to start large, but it does need to start as an integrated system.

DEPLOYING AND USING THE KNOWLEDGE MANAGEMENT SYSTEM

Business Intelligence

Business intelligence has become a critical element of information technology. It is an old term with a general or even ambiguous meaning. It has been used synonymously with decision support, analysis, and data warehousing, but today business intelligence has a more specific definition and a better understood application. Taken literally, **business intelligence** is just that—intelligence or understanding of a business.

Analysis is accomplished by collecting information that represents the company's marketing, sales, and service activities; the behavior of its customers responding to these activities; and the behavior of its internal systems and its suppliers' systems when responding to its customers' behavior. Once this information is collected—and its collection is a continuous process, not a one-time event—it is organized and stored in a manner to facilitate its access, processing, and presentation through a broad range of techniques including reporting, query and analysis, **online analytical processing (OLAP)**, and data

Integrating Knowledge Management and Organizational Learning

mining. Finally, the results can be used to improve the business operations and start the analysis cycle all over again.

This business intelligence process can deliver significant, bottom-line results. Implementing its technologies and applying its process can help make any business more effective and more efficient, increasing revenue, decreasing costs, and improving its relationships with customers and suppliers.

Business intelligence technologies and business intelligence usage have also become better understood. They have been more efficiently implemented and more effectively applied as well. It wasn't so long ago that business intelligence was implemented by a loose collection of technologies, deployed only by those companies that seem always to install the latest technologies and used by only a few individuals who were interested enough to develop the skills necessary to use and apply these technologies. We saw pockets or silos of business intelligence technologies and their applications. Benefits achieved were narrow, but potential benefits appeared quite broad.

Today, business intelligence technologies are more tightly integrated and more easily and widely deployed and used. Business intelligence applications reach to the edges of corporations and beyond corporate boundaries to customers and suppliers. The current economy has been the major driving force for these improvements in business intelligence. We are operating in an economic climate that demands more careful justification of technology investments and accelerated returns on them. Companies want to use technology tactically to make their operations more effective and more efficient. Business intelligence can be the catalyst for that efficiency and effectiveness. In addition, business intelligence has become so much easier to justify and demonstrate accelerated returns.

Corporate knowledge is now being viewed as the last and only sustainable untapped source of competitive advantage in business. Unlike other forms of capital—land, equipment, labor, and money—knowledge is theoretically infinite. There is always an idea out there somewhere—new ways of doing things, new products, new markets, and so on. The business key is to discover these *first*. Enabling these discoveries are KM communities, advocates of organizational learning and complexity theory as applied to business applications.³¹ Both KM and organizational learning struggle with the sustainable, creation, transfer, and dissipation of organizational knowledge.³²

Today, business intelligence technologies are more tightly integrated and more easily and widely deployed and used. Business intelligence applications reach to the edges of corporations and beyond corporate boundaries to customers and suppliers. The current economy has been the major driving force for these improvements in business intelligence. We are operating in an economic climate that demands more careful justification of technology investments and accelerated returns on them. Companies want to use technology tactically to make their operations more effective and more efficient. Business intelligence can be the catalyst for that efficiency and effectiveness. In addition, business intelligence has become so much easier to justify and demonstrate accelerated returns. These communities enable companies to capture tacit or experiential knowledge while providing a forum for collaboration and for sharing best practices. With the help of e-mail, chat rooms, message boards, databases, and search engines, it is possible to have a community of practice made up of hundreds or thousands of members linked around the world.

Of course, not every group in an enterprise is a community. It is important in starting out to recognize how communities of practice differ from others. They tend to last over time, unlike project teams that disband when the project is complete. They often cut across business units, unlike formal work groups or departments. Yet they have more of a mission than an informal network of acquaintances.

Practitioners of organizational learning see a difference between what an individual knows—**individual knowledge**—and the knowledge held collectively by a group of individuals—**collective knowledge**. Conflict between the two in most organizations is bound to happen. Senge³³ argues that this serves as a stimulant for innovation and creativity. These tensions can serve as a prerequisite for organizational learning and innovation in human social systems—we want to learn faster than our competitors.

Communities of practice (COP) need to serve the organization’s strategic and business goals. A company doesn’t establish a program simply because it sounds like a good idea; instead a COP comes about when there is a purpose centered around the members’ work activities. When deciding what communities should be developed, the first place to look is at those parts of the business that provide the best opportunity for a return. Because support resources are limited, says Eric Lesser, an executive consultant and research manager at IBM’s Institute for Knowledge Management in Cambridge, Massachusetts, “An organization should be sure that the communities it provides resources to have a clear business impact.” Therefore, planners should ask two questions early in the process, according to Etienne Wenger, an independent consultant on communities based in North San Juan, California: “What knowledge do we need to share? What kinds of activities will facilitate sharing it?”

Many companies form communities of practice around their core competencies, which are the basis of the goods or services they provide to customers. For example, in the early 1990s, American Management Systems Inc. (AMS) of Fairfax, Virginia, formed an initial community of practice around advanced technology. At the time, it was the systems integration and consulting company’s forte, according to Susan Hanley, then director of knowledge management at AMS. As the company’s core competencies grew, that initial community evolved into six or seven, says Hanley, now executive director for enterprise collaboration and content management at Plural Inc. in Bethesda, Maryland. These included communities on systems development, project management, business process reengineering (BPR), organizational development, and change management. Companies also form communities of practice to develop new core competencies or to acquire and proliferate skills they don’t have already.

First, communities need the support of senior management, particularly an influential executive who sees the value of the project. This support, consultants say, provides the “political cover” under which a community can garner resources. These resources can include conference spaces, travel costs for the occasional face-to-face meeting, IT access, and freedom during work hours for members to devote time to the community.

The second addition should be experts in the community’s field from within the organization. Besides the obvious means of identifying experts, such as targeting people who have published articles and received academic or business awards, analyzing existing informal communities may reveal other potential members. The added value of this method is that if experts are already part of a prototype community, they are likely to be receptive to joining the more formal one (see Table 19–2W).

Typically, core members are a mix of volunteers from the ranks and those whom upper management appoints to participate. Once core members are on board, one of their first duties should be to network throughout the enterprise, seeking others who are interested in their topic area. Expanding beyond the core group requires marketing. IBM’s Lesser suggests posting paper notices on bulletin boards, passing out fliers, speaking personally with potential members, and spreading the word through e-mail and other online means. Not only is this necessary when initiating the community, the effort must be repeated to

Copyright © 2009 The McGraw-Hill Companies. All rights reserved.

Table 19–2W		Communities and Other Groups		
At the conceptual stage it is important to differentiate a community of practice from other groups that come together in an enterprise.				
	Mission	Members	Driving force	Duration
Community of practice	Develop members’ capabilities, build and exchange knowledge	Self-selected volunteers	Identification with subject and expertise	As long as members remain active
Formal workgroup	Deliver product or service	All who report to group manager	Job requirements and common goals	Until reorganization
Project team	Accomplish specified task	Employees assigned by management	Project milestones and goals	Until project completion
Informal network	Collect and pass on information	Friends and business acquaintances	Mutual needs	As long as members wish

Source: E. Wenger, *Community of Practice: Learning, Meaning and Identity* (Cambridge, MA: Cambridge University Press, 1998).

refresh the membership throughout the community’s life cycle, according to Lesser. “Marketing a community is a continuous, ongoing process,” he says.

The third necessary position is the community manager, also called the knowledge manager. This person performs many of the operational duties of running and monitoring the community’s online venue and its content, such as keeping its database updated.

Like other civic organizations, online communities of practice have rules that govern their operations. As one of its first acts, observers say, every community should draft a charter or constitution that defines its purpose, states its goals, and sets rules or guidelines for how it is to be governed or managed and how members will interact. But no universal template exists for this document, they add. Every community is different and should be.

Typically, when new communities of practice are launched, senior managers or members of the knowledge management team choose the leaders who will govern those communities. But Schlumberger, the oil drilling company, takes a different approach. Its communities are democratic, according to McDermott, who helped Schlumberger to launch its first communities. Each community of practice writes a constitution rather than a charter and elects its community leaders, he says. This choice, Edmundson, an executive of Schlumberger, says, “provided a complete break with the existing management structure of the organization.”

Job Design, Job Rotation, and Careers

Knowledge workers have what employers need, and most feel no qualms about moving on to a more satisfying or better-paying job as soon as possible. That means companies must focus on attracting and retaining the most knowledgeable people, or at least extracting vital knowledge from them before they move on. While compensation, work structure, professional development, and other aspects of the human resource function can no longer be one-size-fits-all, some things remain true for all employees: They are people who want to be valued for what they know, most want to increase their knowledge, and all want a rewarding life outside of the office. Wise managers will keep those needs in mind as they think about custom-tailoring their future work environments. People want to be assigned to projects that stretch their skills, provide access to training programs, and enable them to work with other top-notch employees. A company that wants its employees to contribute and participate has to nurture their intellectual growth. The opportunity to learn adds an intriguing intangible to any job offer. Employees want to build wealth in a way that is different from the traditional salary structure or even the standard stock option. The key is to give people the chance to grow. Some consulting and financial services firms, for example, offer employees investment funds and even staff and other resources to help them spin off new companies (this is called the industrial venture capitalist model). But if the venture fails, the employee can return to full-time staff status. Because not everyone can become a partner, this is an innovative way to invest in and grow talent that would otherwise leave.

The Virtual Office

Today’s **virtual office** is not only possible but desirable and a reality—especially after the events surrounding the 9/11 terrorist attacks. There can be possible drawbacks, however. Telecommuters can become detached from their organization and their colleagues. Technology responds to this problem with instant messaging, group interaction, and even virtual conferencing. With wireless technology and mobile computing, we are already on our way to enabling person-to-person audio/video capabilities. Companies that think of these technologies as connection builders and not as time-wasters will be in the forefront of building a real community that supports the freedom people desire to do their jobs better. “In order to build a learning environment that can leverage knowledge, companies need a social environment that encourages the continual creation and sharing of knowledge,” IDC’s Boyd notes. “You need environments where people can have discussions, not just task-force meetings.”

To achieve their business objectives many companies are exploring varying degrees of virtuality or remote working (away from the office location), facilitated by technology.³⁴ Managers have to decide when, where, and for whom such virtuality is appropriate to ensure that rewards are maximized for the staff and for the organization. There are varying degrees of virtualness. At one end of the spectrum some Internet-based companies are

Empowering Employees

100 percent virtual—all other functions are outsourced to appropriate agencies. Amazon.com (one of the largest Internet retailers) has used structure to define its strategy. Technically it's just a mass of computer servers and a distributed network. It does carry some inventory. So, Amazon is somewhere in between—a semivirtual company.

Location is becoming less important to organizations as work becomes something you do, not some place you go. Just as there are varying degrees of virtuality, there are also a variety of mobile and remote work environments to understand.³⁵ **Telecommuting** is the most common virtual arrangement. Workers with fixed company offices occasionally work at home. The benefits include flexibility and increased productivity. The downside is you don't save much. *Hotel-based* or **hoteling workers** may come into the office frequently, but they most likely don't have a fixed office space. They have to reserve a cubicle (hotel room) at some location specified for mobile work. They just plug in their laptops or use the resident system, and they are up and running in the company system. When you think about it, staying in a hotel is kind of a cold environment—workers don't have a sense of belonging unless they can have some consistency.

Then there is the untethered—the peanut butter and jelly group or the *home workers*. To make this work the company has to “outfit” the home worker with proper furniture, computing equipment, and a secure, high-speed connection. Moreover the connectedness needs to extend to management incorporating frequent face-to-face contact to maintain a sense of belonging and a commitment to the firm's objectives and goals.

Lastly, there is the guy with the Corona on the beach—the *fully mobile worker*. They don't have an office at home or at the company facility. They are expected to be on the road or at the customer site at all times during the workweek. Their office is their car (or their plane for the elite), and they are connected with their Blackberry or iPhone, their laptop, and their secure wireless connection.

Outsourcing and Contract Workers

Empowered employees think of themselves as volunteers, not captives. They know that they can no longer rely on employers to steer their careers or guarantee their financial security. The era of womb-to-tomb job security is no longer a reality (unless of course you're a tenured professor!). For students emerging into the workplace today, responsible for securing their own fiscal and professional futures, it behooves all companies to facilitate this process. It is not about doling out benefits and bonuses as a treat or withholding them to keep underlings in line; it is about recognizing that employees are equal partners in the quest to get the job done.

As the baby boomer generation nears retirement, we see a shift in the workforce demographic. There are fewer employees to go around, and many early retirees now work on a consulting or contracting basis. Companies have to rely increasingly on outsourcing. But these “outsiders” often can't be left to work alone. By putting free agents on company teams, they can work side-by-side with employees who can observe their thought processes and methodology. In that way, knowledge that otherwise would be walking out the door at the end of the contract could be captured.

Encouraging employees to hook up with outside peers also enables cross-corporate communities, which may seem like a way to lose employees but, in fact, may be a beneficial way to draw them in. Companies need to change their perspectives about those networks and use them for education and even for recruiting. Oftentimes, these free agents will choose to become employees, but many more will choose to remain freelance agents, so companies have to extract value from them even after they're gone.

Companies may have to give employees what they want—be it summers off, flexible schedules, job sharing, stock options, or just the freedom to hang out and chat around the water cooler for a little while every day. Begrudging them those perks isn't just short-sighted, it can be fatal—you either partner with them so they can get the work done, or they go somewhere else.

The New Knowledge Positions

Even more difficult to define and pinpoint are a host of new knowledge positions emerging at the organizational level in communities of practice. As companies begin to realize that some of the most valuable knowledge originates in the informal groups of workers linked

by a common set of practices, they are formally acknowledging the need for people who can facilitate knowledge sharing among the group members or between disparate groups. These positions are hard to track and define because many are not designated as actual knowledge jobs or considered full-time responsibilities—they are like shadow jobs that emphasize social and facilitation abilities rather than technical or business strategy skills.

These communication and facilitation skills are being formally recognized by upper-level and midlevel managers anxious to tap into the tacit knowledge of the communities and departments. Their new designations as knowledge facilitators, brokers, or change agents often come as add-ons to existing responsibilities because their connections with the community are usually dependent upon being working members. Formal recognition generally means that the facilitators are given the time and tools to record and organize information from other group members, but without as much regulation so as to spoil their standing within the group. Other positions or skill sets expected to turn into full-fledged knowledge careers include certain technology specialists; library science professionals, journalists, researchers and other information gatherers; and even some social anthropologists, ethnographers, and organizational psychologists.

Technical professionals with solid understandings of software ergonomics and what makes effective information design will find that their abilities to create effective knowledge-sharing application environments will be especially relevant for meeting the demands of knowledge architects and other midlevel knowledge workers. As stated earlier, Web, Internet, and intranet facilities will be critical to many KM jobs, as well as necessities for newly emerging content managers.

MANAGERIAL CHALLENGES

New Opportunities

The newly empowered human lives in a world of abundant choices that often implies living with substantial risks and returns. The knowledge worker's choice of "what to do," "where to do," and "when to do" in the "anything, anytime, anywhere" economy results from incarnation of what we currently know as flex-work, telework, and virtual knowledge work. The choices are not easy for most who have been traditionally ensconced in the increasingly mythical shell of stability and security as they suddenly find that they are traveling at warp speed into a future of infinite choices. The feeling can be simultaneously exhilarating and unnerving—the joy of freedom to choose blended with the apprehension of making your own choices and having to live with them.

We are leaving the world where competence was based on "information" as the strategic asset and the emphasis was on controlling the behavior of informational agents to fulfill prespecified organizational goals and objectives. Information and control systems have been used in this world to achieve the alignment of the workforce with predefined "best practices." The assumption is that such best practices retain their effectiveness over time.

We are entering a new world characterized by high levels of uncertainty and the inability to predict the future. Use of information and control systems and compliance with predefined goals, objectives, and best practices may not necessarily achieve long-term organizational competence. This is the world of "re-everything," which challenges the assumptions underlying the accepted way of doing things. This world needs to develop the ability to understand problems with a fresh outlook, given the changing environmental conditions. The focus is not only on finding the right answers but on finding the right questions. This world is contrasted from the old world by its emphasis on doing the right thing rather than doing things right.

New Security Issues

There is a difference between the knower and the known. Or to put it in less grandiose terms, having knowledge is not the same thing as being a knowledge worker. And just as there is a difference between the knowledge that exists in a knowledge management system and knowledge that exists in the mind of the knowledge worker, there is also a

difference between the kind of knowledge that exists in the mind of the knowledge worker and that which exists within a community of knowledge workers.

Making this distinction between knowledge and the knowledge worker makes it easier to account for knowledge assets. A knowledge worker is an asset that appreciates over time. Knowledge itself is more often a depreciating asset. Patents, for example, quickly lose their value if not productized or licensed quickly. A sales lead company for another job. Unlike other resources, however, knowledge is not subject to the law of diminishing returns; it is not depleted through use.

Another reason the difference between tacit and explicit knowledge is more than academic is that, by and large, the distinction determines who owns the knowledge. Explicit knowledge is most likely the property of the firm. One way or another it is either data or work product. But because tacit knowledge cannot be codified, it effectively remains the property of the knowledge worker. Companies have certainly tried to own this knowledge. While they are employed by the company, knowledge workers are ethically—and sometimes contractually—prohibited from sharing their knowledge with competitors. But if the knowledge worker leaves the firm, they take that knowledge and its inherent value with them.

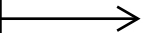
SUMMARY

In this module we have examined the knowledge management process that begins with knowledge that employees either brings to their workplace or have acquired in the course of their work activities. This knowledge is shared with fellow workers, ultimately giving their firm its competitive edge. We defined and distinguished knowledge and knowledge management systems. A nine-step transfer process was discussed to create and transfer knowledge. Ultimately, knowledge management is a way to better utilize the potential that resides within and outside the firm’s boundaries for the success and sustainability of the firm. Yet, realizing the potential by creating the context and the mechanisms that facilitate knowledge creation and knowledge management are complex and difficult to manage.

Endnotes

1. T. Davenport and L. Prusak, *Working Knowledge: How Organizations Manage What They Know* (Boston: Harvard Business School Press, 1998), p. 17.
2. C. W. Choo, *The Knowing Organization* (New York: Oxford, 2006); S. Kermally, *Effective Knowledge Management* (West Sussex, England: John Wiley and Sons, Ltd., 2002).
3. B. Gladstone, *From Know-How to Knowledge* (London: The Industrial Society, 2000).
4. C. Figallo and N. Rhine, *Building the Knowledge Management Network* (New York: Wiley Technology Publishing, 2002).
5. S. Ward, Northrup Grumman, *Newport News* (July 18, 2002).
6. I. Nonaka and H. Takeuchi, *The Knowledge Creating Company* (New York: Oxford University Press, 1995).
7. C. Argyris, “Teaching Smart People How to Learn,” *Harvard Business Review* (May–June 1991).
8. Y. Malhotra, “Knowledge Management in Inquiring Organizations,” *Proceedings of 3rd American Conference on Information Systems* (August 15–17, 1997), pp. 293–95.
9. M. McLuhan, *Understanding Media* (1964).
10. I. Nonaka and H. Takeuchi, *The Knowledge Creating Company* (New York: Oxford University Press, 1995).
11. M. W. McElroy, “The Second Generation of Knowledge Management,” *Knowledge Management* (October 1999), pp. 86–88.
12. M. Helms and F. Raiszadeh, “Virtual Offices: Understanding and Managing What You Cannot See,” *Work Study* 51, no. 5 (2002), pp. 240–47.
13. Malhotra, “Knowledge Management in Inquiring Organizations.”

Au: Include Study Questions here?



14. K. R. Poppler, *Objective Knowledge* (Oxford: Oxford University Press, 1972), Chapter 3.
15. K. R. Poppler, *The Open Society and Its Enemies* (London: Reprinted by Routledge, 1998).
16. I. Nonaka, R. Toyama, and P. Byosiore, "A Theory of Organizational Knowledge Creation: Understanding the Dynamic Process of Creating Knowledge," in M. Dierkes, A. Antal, J. Child, and I. Nonaka (eds.), *Handbook of Organizational Learning and Knowledge* (Oxford, UK: Oxford University Press, 2001), pp. 491–517.
17. C. Rapaille, *The Culture Code* (Broadway Books, 2007).
18. T. Thatchenkery, and D. Chowdhry, *Appreciative Inquiry and Knowledge Management: A Social Constructionist Perspective* (Cheltenham, UK: Edward Elgar, 2007).
19. Figallo and Rhine, *Building the Knowledge Management Network*.
20. P. Loshin, "Quick Study: Type," *Computerworld* (October 22, 2001).
21. G. Chen, "Management Practices and Tools for Enhancing Learning Capabilities," *SAM Advanced Management Journal* 70 (2005).
22. C. M. Christensen, *The Innovator's Dilemma: When New Technologies Cause Great Companies to Fail* (Boston: Harvard Business School Press, 1997).
23. A. H. Van de Ven, "Central Problems in the Management of Innovation," *Management Science* 32, no. 5 (1986), pp. 590–607.
24. Tushman, "Ambidextrous Organizations: Managing Evolutionary and Revolutionary Change," *California Management Review* 38, no. 4 (1996), pp. 8–30.
25. Chen, "Management Practices and Tools for Enhancing Learning Capabilities."
26. C. K. Prahalad and G. Hamel, "The Core Competence of the Organization," *Harvard Business Review* 68 (1990), pp. 181–96.
27. L. A. T. H. Nonaka, *The Knowledge Creating Company: How Japanese Companies Create Dynamic Innovation* (New York, Oxford University Press, 1995).
28. Chen, "Management Practices and Tools for Enhancing Learning Capabilities."
29. J. Firestone and M. McElroy, *Key Issues in the New Knowledge Management* (Burlington, MA: Butterworth-Heinemann, Elsevier Science, 2003), pp. 96–98.
30. Dixon, *How Companies Thrive by Sharing What They Know*.
31. P.M. Senge, *The Fifth Discipline* (New York: Currency Doubleday, 1990).
32. W. Karlenzig, "Senge on Knowledge," *Knowledge Management* (July 1999), pp. 22–24.
33. Senge, *The Fifth Discipline*.
34. Helms and Raiszadeh, "Virtual Offices: Understanding and Managing What You Cannot See."
35. T. Davenport and K. Pearlson, "Two Cheers for the Virtual Office," *Sloan Management Review* (Summer 1998), pp. 53–64.

Other Futuristic References

MindMaps: <http://www.innovationtools.com/resources/mindmapping.asp>.
 Stories & Narrative, and Tools Dealing with Complexity: <http://www.cynefin.net/kbase.php>.
 The US Energy Visualization: <http://eed.llnl.gov/flow/>.
 The Wisdom of Crowds: <http://blogs.salon.com/0002007/2004/11/15.html>.
 EcoLanguage: <http://ecolanguage.net/>.
 Open Space Technology: <http://www.openspaceworld.org/wiki/wiki/wiki.cgi?AboutOpenSpace>.

<p>Activity 19–2W: Knowledge Management: Learning from the Web</p>	<p><i>Objective:</i> Reflecting on knowledge management systems in organizations by learning from information on the World Wide Web.</p> <p><i>Task 1 (Individual):</i> First go to your favorite search engine and type “knowledge management.” You will see myriad websites. Try classifying them into such categories as companies offering knowledge management consulting services, knowledge management software products, and so forth. Next, let’s view what the academic world uses to examine systems topics by searching on “Brint”—what do you get there?</p> <p><i>Task 2 (Team):</i> Each team is to share its learning and prepare a three-minute presentation based on its collective learning.</p>
---	---

<p>Activity 19–3W: Avici Systems: A Grassroots Example</p>	<p><i>Objective:</i> To develop an appreciation for the complexity of knowledge creation and knowledge transfer processes.</p> <p><i>Task 1 (individual):</i> Read the case and answer the questions at the end of the case.</p> <p><i>Task 2 (team):</i></p> <ol style="list-style-type: none"> 1. Share the individual answers. What were some of the advantages and disadvantages of the processes used? 2. Based on your insights from Modules 13 through 16, design a planned change process that will develop the knowledge creation and knowledge sharing within the Avici system. Be specific about the planned change process, key phases and activities, and possible outcomes. <p><i>Task 3 (Class):</i> Each team is to share their insights, and the instructor will facilitate a class discussion.</p>
---	--

	<p style="text-align: center;">AVICI SYSTEM CASE</p> <p>Some knowledge management projects start with top-down mandates from senior executives. Others quietly emerge from grassroots practices. At Avici Systems Inc., the implementation of KM practices converged from both directions. Avici Systems sells routers and planning services for operating advanced fiber-optic networks to</p>
--	--

telecommunications companies. These are complex products whose use is not intuitive. No matter how advanced its technology may be, Avici's business success depends on how well its customers understand how to use these products and services—and how well its employees, including the sales force, can explain the offerings to potential clients. Since the company's founding in 1996, it had trained employees as the need arose, without a formal system. That approach worked when Avici was a small start-up, but when it grew to more than 300 employees, executives realized that the company needed a more structured training effort. To begin the shift, they created a new position called "knowledge specialist" to implement and manage a system that could register and track technical training.

In July 2000 Avici hired a team of three experts to oversee all technical training within the company and to develop and implement customer training. Team members Rob Montgomery, Pete Perron, and Jessica Rivkin began by looking at database products, but they soon decided they needed more than a centralized registration system. They began to consider knowledge management tools, which could help to capture what employees knew and make it accessible to others.

Grassroots Growth

Looking at KM tools spurred the knowledge system specialists to broaden their focus beyond training registration and tracking. While working on their initial programs for technical and customer training, they developed plans for an extensive employee knowledge-sharing initiative. It would include a system for finding expert employees who could share their know-how and experiences with others in the company. The team's goal was to save employee time—and company money.

Without consulting their supervisors, the knowledge specialists began to build a case for knowledge management at Avici. Introducing KM practices wasn't part of their job description. But they theorized that along with improving employee training, it would provide a way to deal with customer questions more quickly and accurately and ultimately help Avici to boost sales of its new router.

"We were hired to train support engineers and customers," Perron says. "But we saw that this was a perfect place to roll out a comprehensive training program for the entire company."

Perron and Montgomery, who had previously worked together for another telecommunications company, knew they wanted training centralized instead of dispersed throughout the organization. After researching three or four training tracking software packages, they chose Human Capital Manager from Entrinsik Inc. of Raleigh, North Carolina. The application would help the company to create and update job descriptions, assess employee performance, and establish and maintain a training schedule. In addition to managing and tracking employee and customer training, it could work with intranet- and Internet-based training courses and corporate knowledge databases.

From the Top Down

At the same time, unknown to the team, Steve Kaufman—then chief operating officer and now Avici's president and chief executive officer—was thinking along similar lines. Two months after they were hired, the three knowledge specialists met with Kaufman during a meeting he held to get to know his employees. Kaufman told them that Avici had so many new staff members that he wanted to hire someone to oversee knowledge transfer. Especially concerned with retaining employees, he hoped to offer workers training that could

Knowledge Unveiled

enable them to improve their skills and advance in the company. He also wanted to make sure they stayed on top of technological changes in the industry.

In the meeting, Kaufman talked about the need to hire a manager who would oversee the company's knowledge initiatives. "We already had the plan sketched out; we just hadn't unveiled it yet," Perron recalls.

Instead of sharing their ideas with Kaufman, the knowledge specialists turned to Jim Graham, vice president of worldwide customer service and support. They wrote a formal business plan to incorporate knowledge sharing and employee expertise location into the company's training program. It included integrated employee and customer training and also addressed Kaufman's desire to be able to disseminate information quickly throughout the organization.

Specifically, they proposed building onto Human Capital Manager a system called the Avici Knowledge Network. It would offer employees centralized access to Web-based video training seminars, white papers, and other resources. The knowledge specialists would manage the system, but employees could suggest additional articles and information to include. Contributors would be recognized by having their name posted in a prominent place in Avici's offices or getting a star on their employee identification badge.

Graham says that after seeing the plan, Kaufman quickly agreed that he didn't need to hire someone new because his knowledge specialist team had the expertise and willingness to take on the additional role. He appreciated the fact that they had already written a proposal that incorporated a formal means to capture and share employee expertise. He approved the team's plan along with the expenditure of roughly \$1 million for the technical equipment it would require.

Kaufman notes that keeping KM efforts in the hands of the knowledge specialists made sense. "With an organization already in place, the logical choice was to expand the role of that group," he says. "The organization was well positioned and ready to take on the additional responsibility of knowledge management. This saved time and the expense of putting a new group together to develop this program."

Jan Bourret, an e-learning analyst at L3 Consulting in Napa, California, says companies can benefit from turning software designed mainly for tracking and managing employee training into a system that encourages workers to share knowledge. In Avici's case, Bourret says, Web-based training videos that allow employees to hone in on specific information through a table of contents help to facilitate sharing. Such a feature can turn training into personalized learning.

Avici's new training and knowledge sharing system has been in place for 10 months. Although the company has not assessed how financially beneficial the system has been, Perron says 90 percent of employees are using the Avici Knowledge Network. That acceptance didn't come all at once. Initially, he and executives had to convince staff members to use the network. They also pushed it during employee orientation, with the result that new employees would use the system and pass along their experiences to colleagues who had been at Avici longer.

Avici's knowledge specialists aren't through yet. They're working on additional Web-based training courses and will extend beyond technical training to include courses for managers and general business courses for all employees. And by the end of the year, Avici plans to offer its customer.

Discussion Questions

1. Given what you have learned about the knowledge creation and transfer process and the steps to create a knowledge management system, how would you contrast these with what is being done at Avici?
2. Now further contrast from an overall organizational management perspective. How do you think you would react if you were Steve Kaufman to the activities of the three knowledge specialists?
3. Did you find Avici on the Web? If so, how is its performance today?