
Practical Knowledge Management: A Model That Works

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Working with executives in several industries, the author has created a practical approach to knowledge management that has proved useful in a variety of organizations. This article discusses the eight building blocks on which this approach is based, from knowledge goals to knowledge acquisition to knowledge preservation. It also gives examples of successful knowledge management programs and notes possible pitfalls.

The goal of knowledge management is a practical one: to improve organizational capabilities through better use of the organization's individual and collective knowledge resources. These resources include skills, capabilities, experience, routines, and norms, as well as technologies.

Astonishingly, despite the now-solid consensus on the importance of knowledge or "intellectual capital" to every company's success, most companies actually manage knowledge very badly. Very few have clearly defined management roles, such as a Chief Knowledge Officer (CKO), or organizational structures for the management of knowledge as a resource. Few even have a shared knowledge language that allows efficient communication.

However, attention to knowledge management is growing. Companies are recognizing that they compete in increasingly knowledge-intensive markets. To thrive—and even to survive—they are forced to rethink the management of their organizational knowledge bases.

A Practical Model

To build a solid base for the development of a practical model of knowledge management, in June 1995 we founded the Swiss Forum for Organizational Learning and Knowledge Management at the University of Geneva. This Forum is a platform for practitioners who consider knowledge a strategic resource and a central tool for protecting their competitiveness. One of the activities of the Forum has been to hold theme-oriented roundtables (organized by the Geneva Knowledge Group) addressing such knowledge-related topics as strategy, training, and global knowledge networks.

At the same time, we have worked with our members to define standards for a knowledge management concept or model that will work in practice. The following are basic aspects of such a model:

Compatibility. Knowledge management requires both a shared language and a good fit with concepts that already exist in the organization, such as Total Quality Management or Business Process Reengineering.

Problem Orientation. Knowledge management has to make a contribution to the solution of concrete problems; it must not be allowed to remain theoretical. The ultimate test of ideas is their usefulness in practice.

Comprehensibility. The company must choose terms and ideas of knowledge management that are relevant to its success and readily understood across the company.

Action Orientation. Analyses in the field of knowledge management should enable managers to evaluate the impact of their instruments on the organizational knowledge base and should lead to focused action.

Appropriate Instruments. Focused interventions need proven instruments. The final goal of a knowledge management concept is to provide a range of such instruments. But the kinds of tools employed are less important than their skillful use.

While there is no single "right" model of knowledge management, there is a simple criterion for evaluating any model: how useful is it in relation to a chosen question?

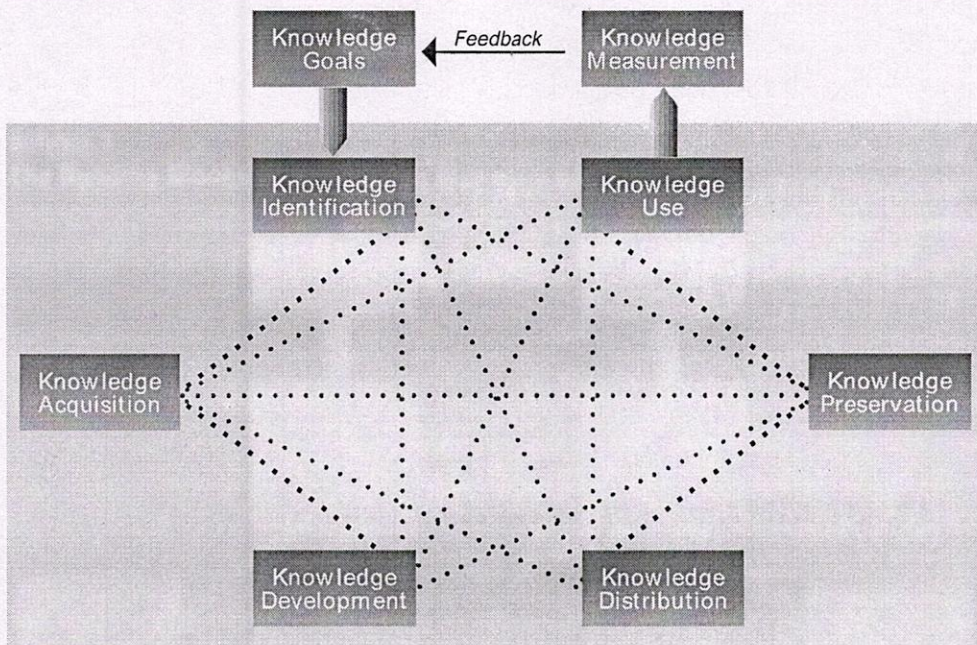
A number of models of knowledge management could meet the above standards. While there is no single "right" model of knowledge management, there is a simple criterion for evaluating any model: how useful is it in relation to a chosen question? Our model, which we think of in terms of building blocks of knowledge, was developed with this criterion firmly in mind, in close dialogue with practitioners (Exhibit 1). It has proved its usefulness in many kinds of organizations (see Probst/Raub/Romhardt 1997).

The building blocks of knowledge management represent activities that are directly knowledge-related. Their arrangement in the model follows certain principles. An inner cycle consists of the building blocks of identification, acquisition, development, distribution, preservation, and use of knowledge. An outer cycle consists of all these activities plus goal-setting and measurement. This feedback cycle clarifies the importance of measuring the measurable variables in order to focus on goal-oriented interventions.

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Many knowledge problems occur because organizations neglect one or more of these building blocks and thus interrupt the knowledge cycle. For example, if the research results of the Market Research Department are not available to Product Development, this knowledge cannot be used in the process of product development. If the steps of an important problem-solving process are not documented, they may disappear from the organization's memory, making successful repetition of the process impossible.

Exhibit 1
The Building Blocks of Knowledge Management



Defining the building blocks of knowledge management in this way has several advantages:

- It structures the knowledge management process in logical phases.
- It suggests effective points for interventions.
- It provides a tested framework for diagnosing the sources of knowledge problems.

At the same time, the framework stresses the interdependence of the building blocks. Knowledge management activities should never be conducted in isolation from one another. Unfortunately, in many organizations today the processes of internal knowledge development are not related either to corporate goals or to future requirements.

These building blocks are a pragmatic language meant for practitioners. They can help managers categorize their knowledge problems, deepen their understanding of the fundamental processes, assess suitable instruments, and put their vision into operation. The results are hands-on activities with measurable results. Let's address the building blocks one by one.

Knowledge Goals

Knowledge goals point the way for knowledge management activities. They determine which capabilities should be built on which level. *Normative knowledge goals* deal with the creation of a "knowledge-sensitive" corporate culture, in which sharing and development of know-how create the preconditions for effective knowledge management.

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Strategic knowledge goals define organizational core capabilities and describe the future knowledge needs of the company. They determine the desirable competence portfolio for the future and are therefore an extension of the company's traditional planning processes.

Operational knowledge goals make sure that normative and strategic knowledge goals will be translated into action. For example, a typical operational knowledge goal might be the

accessibility of all internal documents in the company via a suitable intranet, or the definition of a level of English-language skills that must be met by certain employees.

Daniel Vasella, CEO of Novartis (the recent merger of Ciba and Sandoz) sees the new company as a merger of knowledge. He formulated the following mission statement: "Our success in building a high performance organization will be substantially based on the capability of sharing and exploiting our professional knowledge better and faster than our competition."

From this mission statement follow knowledge management objectives and activities, including creation of a knowledge manager role, advisory committees, networks, and an internal "market" for knowledge. The company's main objective is "transmutation of accumulated knowledge into a corporate asset, by:

- Exploiting the vast amount of knowledge across organizational boundaries
- Providing easy, rapid access to a global knowledge base
- Eliminating time and space constraints in communications
- Stimulating associates to experience the value of knowledge sharing"

Knowledge Identification

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Before investing heavily in the development of new capabilities, companies should know what knowledge and expertise exist both inside and outside their own walls. Most big companies lose track of their internal and external data, information, and capabilities. This lack of transparency leads to inefficiency, uninformed decisions, and redundant activities. Restructuring, downsizing, and reengineering activities have increased this organizational opacity in many cases by destroying effective informal networks. Effective knowledge management creates sufficient internal and external transparency and supports employees in their knowledge-seeking activities.

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One way to increase internal knowledge transparency is by creating knowledge maps, which support systematic access to parts of the organizational knowledge base. Today's advances in the field of information technology enable radical new ways of accessing the internal electronic knowledge base and of connecting various types of data. And the dramatic development of the Internet will revolutionize our use of and access to information. But no purely technological approach will solve transparency problems. Knowledge management must integrate human beings, and human beings do not externalize their knowledge in computer systems, but need personal contacts and discussions. To enable these talks between knowledge suppliers and knowledge demanders, the knowledge management system must include opportunities for personal contact.

Many companies do not yet have systems that support the identification of critical knowledge or the sharing of this knowledge. One company that does have such a system is Holderbank, one of the largest cement producers in the world. Holderbank discovered some critical issues related to its decentralization strategy. In particular, the company found that it often "reinvented the wheel." Units involved in product development had little or no knowledge about product development in other units, and there wasn't much cooperation or concentration of resources. In response, Holderbank designed a new system and used personal direct contacts to identify the objectives, activities, status, and results of 283 projects in product development. They also devised a matrix to be used as a coordinating and visualizing tool for different phases of the development process.

Knowledge Acquisition

The explosive growth and simultaneous fragmentation of knowledge have made it all but impossible for companies to build up all the know-how they need for market success by themselves. Instead, they have to buy critical capabilities, often from many knowledge markets, using focused acquisition strategies. We distinguish four "import channels":

Knowledge Held by Other Firms. Acquiring other people's knowledge can build a company's competencies fast. One option is to take over highly innovative companies in the desired field of competency. Another is to enter into joint ventures. For example, the Ericsson/Hewlett-Packard joint venture explicitly identified not only financial and market-based goals, but also knowledge-based goals. This joint venture saw its success factors from four perspectives: economic (ROI, cash flow); strategic (competitive advantage); behavioral (identity); and learning (knowledge transfer, problem-solving capacity).

Stakeholder Knowledge. This is an inexpensive way to get ideas for new and improved products and services. For example, involving customers early in the product-development process can generate valuable information about their needs.

Experts. Companies can recruit specialists either as full-time staff members or for temporary employment, which is becoming an increasingly interesting alternative.

Knowledge Products. Unlike experts, knowledge products such as software, patents, and CD-ROMs do not automatically create organizational capabilities. In most cases, their potential can be realized only through human action. Therefore, the "fit" of acquired knowledge products is extremely important. New ideas and new knowledge can take effect only if they are at least somewhat compatible with the old. The less familiar a new idea is, the more likely that it will be rejected. We strongly advise that companies pre-test interesting products.

In addition, it's important to be clear about whether an acquisition is an investment in the future (potential knowledge) or an investment in the present (directly usable knowledge). Integrated knowledge management has to deal with both areas and support their management with the right tools.

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Knowledge Development

Knowledge development consists of all the management activities intended to produce new internal or external knowledge on both the individual and the collective level.

The process of *individual knowledge development* relies on creativity and on systematic problem solving. Creativity may be called the *chaotic component* of the knowledge development process and the capability of problem solving the *systematic component*. The knowledge management system must support both components, for example through traditional tools such as corporate proposal systems that may be revitalized or reused.

There must be an atmosphere of openness and trust to allow the intensity of communication that makes collective learning results superior to individual ones.

Collective knowledge development involves the learning dynamics of teams. Management must ensure that team members have complementary skills and that each group as a whole has defined realistic goals. Moreover, there must be an atmosphere of openness and trust to allow the intensity of communication that makes collective learning results superior to individual ones. The establishment of internal think tanks, learning arenas, internal centers of competence, or product clinics may support these processes. In a process of self-reflection, every team should identify critical "lessons learned" at the conclusion of each project and pass the information on to future teams in the form of a short, clear report that allows others to learn from that experience.

Hewlett-Packard's Professional Service Organization has created several tools to realize its knowledge management strategy. Three of these tools—knowledge-sharing forums, knowledge capture, and learning communities—help to establish a strong sense of community and link people together to develop and integrate knowledge. These institutionalized vehicles develop knowledge through orchestrating events for large-scale knowledge exchange, mobilizing cultural change, capturing lessons learned, leveraging knowledge from few to many, and collaborating across project boundaries.

Knowledge Distribution

In making knowledge available and usable across the whole organization, the critical questions are: Who should know what, to what level of detail, and how can the organization support these processes of knowledge distribution? Not everyone needs to know everything.

Technical knowledge distribution infrastructures can support efficient knowledge exchange within organizations and connect formerly separated experts through an electronic network. Relevant technologies are groupware, modern forms of interactive management information systems, and all instruments of computer-supported cooperative work.

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Efficient knowledge distribution can generate not only time and quality advantages, but a direct rise in customer satisfaction. Distributed organizational knowledge stocks make knowledge available at various places in the company and support fast reactions.

Holderbank, the cement group, learned that it is not enough to assess learning needs, develop plans, etc. Often knowledge is not shared because unwritten rules drive people's behavior in another direction. For example, unwritten rules that did not fit with the corporate vision, strategic goals, and plans included these: "As long as the kiln runs, everything is OK." "Don't rely on management; it's a nonaligned group." "They pay us for working and not for having ideas." Such rules had to be discovered, made explicit, and discussed to overcome barriers and change the culture. Holderbank runs an ambitious project to increase the pace of learning across the conglomerate. It is attempting not only to implement learning processes in each of its autonomous companies, but also to promote the transfer among them of relevant knowledge and useful lessons learned.

Knowledge Use

Knowledge use—meaning the productive deployment of organizational knowledge in the production process—in

fact is the purpose of knowledge management. The successful identification and distribution of critical knowledge does not ensure its daily use. And without consistent use, there is a high probability that new knowledge systems will decay in quality, and the investment will be wasted. The potential user of knowledge has to see a real advantage in order to change his or her behavior and "adopt" the knowledge.

The newly formed Novartis came up with the following tool kit to enhance its use of knowledge: knowledge fairs, advisory boards, champions communities, internal media channels, and electronic platforms on groupware/intranet. Under the banner "The Knowledge Marketplace," the latter includes profiles of internal experts (*The Yellow Pages*), profiles of external experts (*The Blue Pages*), and bulletin boards and virtual meetings (*The Triangulum*).

Knowledge Preservation

After knowledge has been acquired or developed, it must be carefully preserved. Many companies complain that in the process of reorganization they have lost part of their corporate memory. This collective amnesia is often the result of the unthinking destruction of informal networks, which steer important but little-observed processes. To avoid the loss of valuable expertise, companies must shape the processes of selecting valuable knowledge for preservation, ensuring its suitable storage, and regularly incorporating it into the knowledge base.

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When the pharmaceutical company Hoffmann-LaRoche realized that market approval for new products was causing significant delays, it recognized that knowledge has a major financial impact. Each day of delay costs \$1 million in sales. The firm undertook a project to make this process efficient; to acquire, store, and share knowledge; and make things "right the first time." The following tools helped:

- Collective writing to contribute to mutual understanding of each project's development
- Knowledge maps that define key customer questions and requirements and store experience and lessons learned

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- “Yellow pages” that make it easy to find relevant experts and expertise

Clearly, companies can't save every project report or the minutes of every meeting. But they should identify core areas of their organizational knowledge base and establish a pragmatic selection process for knowledge to be saved. The guiding rule should be to preserve only information that will be usable for a third party in the future. Everything else just costs time and erodes trust in the quality of the documentation system. Less is more.

Storage processes include individual, collective, and electronic versions—all of which are subject to “unlearning.” On the individual level, experts with key know-how should be bound to the company by material or nonmaterial incentive systems. On the collective level, an organization can try to make explicit the capabilities stored in the procedural memory of the company and try to build a conscious picture of the company's past. Electronic storage, in which more and more expert systems play the role of intelligent protectors of organizational experience, ensures future access to central knowledge documents in a systematic way. A word of caution: preservation is a continual process. Outdated storage systems are dead storage systems.

Knowledge Measurement

The evaluation and measurement of organizational knowledge presents the biggest challenge in the field of knowledge management. In contrast to finance managers, knowledge managers have no tested tool box of accepted indicators and measurement processes. They are pioneers. And the subject they need to measure is particularly elusive. Knowledge and capabilities can rarely be tracked to a single influencing variable. Furthermore, the cost of measuring knowledge is often seen as too high or socially unacceptable. Nevertheless, knowledge measurement holds considerable potential value, as has been demonstrated in a related field by human resources managers, who have had to prove the impact of training investments.

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Dow Chemical says, "If you can visualize it, you can measure it, and if you can measure it, you can manage it for continuous improvement." Dow is not alone. Companies and individuals at the forefront of measuring their knowledge bases or intellectual capital include IC Services (Intellectual Capital Index), Kaplan/Norton (Balanced Scorecard), Dow Chemical (Success Factors), Celemi (Intangible Asset Monitor), and North/Probst/Romhardt (Multidimensional Knowledge Measurement System).

Methods of measurement must reflect the organization's normative, strategic, and operational dimensions. Here the organization's formal knowledge goals can be enormously helpful, provided that they are concrete. Examples might include knowledge-oriented cultural analysis, capability balance sheets, or the intensification of training evaluations. Only by simplifying the measurement of central indicators within the knowledge management process can knowledge managers win solid acceptance of their activities and useful feedback.

A Word to Managers

Many actions in the field of knowledge management can be successful only if the undertaking has full top-management commitment.

Knowledge management is highly political and needs top-management commitment. Knowledge management reevaluates the existing competency portfolio of the company and sets new priorities. In this process, current experts may lose their special standing. Knowledge transparency reduces information lead-time, which is often important in political games. This reduces the power base of the currently better-informed person. Clearly, knowledge management has natural enemies. Many actions in the field of knowledge management can be successful only if the undertaking has full top-management commitment.

Knowledge management must be rooted in organizational structures and in the corporate culture. It is an organization-wide task. Unfortunately, knowledge management often runs up against "turf" issues in the Human Resources, Production, Research and Development, Information Technology, or Corporate Planning departments.

Knowledge goals must be integrated into corporate strategy and project planning. And employees must get infrastructural support in order to handle the information overload.

The decision to use the company's knowledge resources more effectively must shape long-term organizational structures and corporate culture. Knowledge goals must be integrated into corporate strategy and project planning. And employees must get infrastructural support in order to handle the information overload.

The building blocks of knowledge management as described above have served many companies as a practical reference frame and tool kit for design and best-practice analysis related to knowledge management. But as interest in knowledge management grows, we still need much more experimentation, research, and experience in fields such as knowledge-based understanding of organizational capabilities, individual knowledge management, and management of knowledge-related risk. The next few years should generate much new knowledge about knowledge management.

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