Research Note:

What is a Knowledge Management Project?

by David De Long
Tom Davenport
& Mike Beers

The term "knowledge management" is increasingly finding its way into the management lexicon as concepts such as knowledge-based competition, knowledge-intensive businesses and products, and knowledge assets creep into strategy discussions. There is growing consensus about the importance of knowledge as a basis of competition and operational effectiveness, but surprisingly little research has been done to understand what firms are actually doing to identify, capture, and leverage their organization's knowledge.

The purpose of this paper, which is an interim product of an ongoing research effort by Ernst & Young, is to describe the knowledge management project, which is the basic unit of activity that firms use to derive greater value from knowledge assets. Ultimately, the goal of most of these projects is to create some kind of ongoing process or system for leveraging knowledge, but very few have reached that stage yet. Drawing from an examination of more than 20 knowledge management initiatives in 10 companies, we address key questions for any organization planning a knowledge initiative. For example, what are the different types of knowledge management projects? What are their business impacts? What resources are required to begin?

Our study of early adopters in this field reveals that knowledge management is being approached at two levels in organizations. Some firms like Skandia, Bank of Montreal, and Dow Chemical are pursuing corporate-wide knowledge management initiatives. These firms have created new roles, such as director of intellectual capital and chief knowledge officer, to lead their efforts. But because knowledge is most easily managed in a local context, the majority of knowledge initiatives are undertaken at the business unit, function, or operational process level where they have the most immediate impact on performance. Even some corporate initiatives, such as Dow Chemical's, may be focused on better management of a functional knowledge resource, e.g. patents generated in the research and development function.

These knowledge management projects appear in a variety of forms:

- A satellite communications company seeks to reduce its cycle time for producing new satellite launch vehicles by reusing relevant pieces of its existing product designs.

- Recognizing that project management is a core competence in Hewlett-Packard, a group is set up to improve the quality of project management in the firm's IT function

by capturing and sharing best practices, and by facilitating "lessons learned" sessions at the conclusion of individual projects.

- Threatened by a Japanese competitor that was underpricing them by 50%, a major auto parts supplier creates a competitive intelligence system that captures information related to elements in a predefined cost model of the business. The information is synthesized and interpreted by company analysts and internal experts before being loaded into a data base which is easily accessed by company managers.

We will elaborate on the different types of knowledge management initiatives below. First, however, it is important to address the somewhat slippery definitional issues involved in the concepts of knowledge and information.

Difference Between Knowledge and Information Management

Most managers of knowledge initiatives concede their organizations lack a clear, widely-shared understanding of what knowledge is and how it can be distinguished from information. A consensus view is that, while information is defined as a flow of messages, knowledge is the combining of information and context in a way that makes it actionable. In reality, most projects we studied are a mixture of knowledge and information management. But knowledge management projects have several characteristics that differentiate them from traditional information management or information systems projects. These characteristics include:

Knowledge Management Project	**Information Management Project**
Goals emphasize value-added for users	Goals emphasize delivery and accessibility of information
Support operational improvement and innovation	Support existing operations
Adds value to content by filtering, synthesizing, interpreting, pruning content	Delivers available content with little value added
Usually requires ongoing user contributions and feedback	Emphasis on one-way transfer of information
Balanced focus on technology and culture issues in creating impacts	Heavy technology focus
Variance in inputs to system precludes automating capture process	Assumes information capture can be automated

Whether they defined the content of their initiatives as knowledge, information, or a mixture of both, the managers of the initiatives we studied have one characteristic in common. They are constantly trying to add more value to the content they provide, i.e.,

to transform it from information into knowledge. They do this through a variety of means, including filtering the content for timeliness and relevance, adding context and comparisons, and grouping important information into lists and frameworks. We believe that these efforts to add value are more important to knowledge initiatives than dwelling on whether it is knowledge, information, or something else that is being managed.

Types of Knowledge Management Projects

In our research, we found seven different types of knowledge initiatives. Each of these is described below, along with an example of the business context in which it appears:

Capturing and reusing structured knowledge. Leaders of these projects recognize that knowledge is often embedded in component parts of organizational outputs, such as product designs, project proposals and reports, documented implementation procedures, and software code that can be reused to reduce the time and resources needed to produce a new output. For example, Skandia, a Swedish-based financial services company, has cut its start up time for operating units in new countries from seven years to seven months by packaging its cumulative experience into administrative modules that enable it to reduce costs while expanding international operations much faster.

Capturing and sharing lessons learned from practice. This type of project captures softer, more experiential knowledge that must be interpreted and adapted by the user in a new context. These efforts often involve sharing learning through a data base like Lotus Notes, and they may also take on a more interpersonal approach, using face-to-face sharing of stories and experiences. For example, the US Army's Center for Lessons Learned is now at the heart of an elaborate infrastructure developed for capturing and sharing new knowledge gained from field operations

Identifying Sources and Networks of Expertise. Instead of trying to capture and deploy knowledge content, some projects are designed merely to make expertise more visible and accessible to employees. The underlying strategy here is to facilitate connections between those people who possess and those who need knowledge. For example, Teltech, a small firm based in Minneapolis, has created a network of external experts for clients who seek technical expertise in a specified domain.

Structuring and Mapping Knowledge Needed to Enhance Performance. Another type of project impacts efforts like new product development or process redesign by making explicit the specific knowledge needed at particular stages of the initiative. One project at Hoffman-LaRoche created a "knowledge map" of the new drug application process. This map made clear what knowledge would have to be developed and packaged to answer the questions that customers -- in this case, FDA regulators -- wanted answered before approving a particular new drug.

Measuring and Managing the Economic Value of Knowledge. Virtually all firms possess structured intellectual assets, such as patents, copyrights, software licenses, and

customer data bases. Recognizing that these assets create both revenues and costs for the firm, another type of project seeks to manage these assets more judiciously. Dow Chemical, for example, set up an infrastructure to organize and classify its patents to determine which ones represent strategic advantage, which present revenue opportunities from licensing, and which patents should be abandoned to reduce the company's tax burden.

Synthesizing and Sharing Knowledge from External Sources. A turbulent business environment increases the importance of organizational intelligence systems. Traditionally, these systems have been little more than information delivery "clipping services" that routed articles and reports to executives. But the electronic information avalanche, combined with increasing complexity, specialization, and the speed of market changes has raised the knowledge component of these systems. External intelligence systems are an easily overlooked type of knowledge management project. Hewlett-Packard, for example, is currently developing systems to provide marketing intelligence for both domestic and international business units. These systems will require editors, reporters, and analysts to synthesize and provide context to the tremendous volume of market information available.

Embed Knowledge in Products and Processes. Finally, another type of project seeks to enhance or create new knowledge-intensive products, services, and processes. By recognizing the potential market value of knowledge that the firm is generating, the value of existing offerings can be enhanced or new revenue sources created. For example, AutoDesk recognized that the engineering designs created by customers using its product AutoCAD was source of potential design knowledge. It is buying these designs from its customers and will re-sell them to other firms wanting a "head start" on designs in similar areas. In another case, many high technology companies are working together in the Customer Support Consortium to capture and leverage knowledge in customer support processes.

Business Objectives of Knowledge Management

Deciding which knowledge management opportunities to pursue is largely determined by the sponsor's position in the organization, resources available, and the business objectives. To be effective these initiatives should be closely linked to a core business process or critical competency of the firm. We found a number of significant business impacts in the projects we studied.

Reduced cycle time. Hoffmann-LaRoche is engaged in several knowledge management projects designed to produce significant reductions in time-to-market for new drugs in an industry where every day's delay can represent $1 million in lost revenues. Hewlett-Packard has shaved months off the time it takes to implement information systems projects by sharing project management best practices throughout the IT organization.

Reduced costs. One initiative at a satellite communications company focused on reducing the costs of repeated mistakes. (Anything that enables an organization not to repeat costly errors represents knowledge.) In documenting errors avoided, savings from the initiative already represent millions of dollars.

More efficient use/reuse of knowledge assets. Ernst & Young's Center for Business Knowledge tries to track the number of consulting engagements won where knowledge captured from previous projects is reused. And one performance dimension for the firm's different consulting practice areas is the amount of reusable knowledge they create.

Enhanced functional effectiveness. The technical support function in one computer firm undertook a number of knowledge management initiatives that succeeded in reducing the volume and cost of support calls from the firm's dealers. By paying close attention to the actual problems experienced by dealers as revealed in their phone calls, the team preempted many potential problems by alerting its customers to most frequently asked questions and providing solutions through a Lotus Notes database. Dealers have continued to give the company high ratings for its support services.

Increased organizational adaptability. Knowledge management projects can improve effectiveness in several ways here. They can be used to support new competitive strategies or process designs. For example, Astra Merck, a pharmaceutical company, is attempting to use knowledge to transform its sales process from one involving traditional sales techniques (e.g., free samples, lunches for physicians) into one in which physicians view sales professionals and knowledgeable resources on health care management. Filtering, synthesizing, and interpreting competitive intelligence is another way these projects can improve a firm's ability to react to the marketplace. The auto parts supplier mentioned earlier was able to use its new insights into the competition's cost structure to quickly reposition itself in the marketplace in response to this strategic threat.

Increase value of existing products and services. Depending on the market context, using knowledge to improve existing products and services can significantly differentiate an offering from its competitors. For example, in a strategy designed to enhance the value of its generic computer-aided design software, Computervision has begun selling industry-specific CAD applications for process industries such as energy and chemicals. Embedding specific industry knowledge into the software promises to reduce design time for customers. In another example, Kraft, a large manufacturer of dairy and processed foods, has developed a "micro-merchandising" system which combines data from retailers' POS systems with Kraft's extensive marketing experience to provide supermarkets with more timely, accurate insights into optimal product mixes and sales promotions.

Create new knowledge-intensive products, processes, and services. By managing its patents more effectively, Dow Chemical saved $4 million in its first year of a review program, and expects to generate more than $100 million in licensing revenues that might otherwise have been forgone. Teltech has developed an entire new service business in

both its expert network business, and in complex data base searches assisted by knowledge analysts.

Of course, all knowledge management initiatives in commercial firms have the ultimate objective of making or saving money. Only a small percentage of the projects we studied, however, have any formal measures of savings or increased revenues.

Resources Required for Knowledge Management Projects

While some of the resources needed for a knowledge management initiative are context specific, all the of the projects we examined had certain elements that are necessary for success. These included:

Knowledge project sponsors and managers. As with any project involving organizational change, these initiatives require a relatively high level management sponsor who has budgetary control over the resources that will be needed. Finding sponsors and keeping them committed can be one of the biggest challenges for project managers because of the abstract nature of knowledge and the difficulty many executives have in seeing a direct link to bottom line concerns. Knowledge managers must particularly strive to avoid intellectual arrogance; when managing knowledge we observed a tendency to begin to feel that one knows more about the domain under management than anyone else. This syndrome has been called, "the dark side of knowledge management."

New knowledge management roles. Managing knowledge projects demand a sophisticated set of competencies that include (1) strong interpersonal and facilitation skills to get people in diverse roles working together; (2) a hard-nosed business orientation to continually assess the project's value added; and (3) sufficient technical knowledge to manage the infrastructure development.

Depending on the specific project, managing organizational knowledge can also require new skills sets not commonly found in organizations. Editors, reporters, analysts, group facilitators will be needed on many projects as capacities to elicit, interpret, and synthesize information from a variety of sources, and communicate it in ways that add value for the end user take on added importance.

Setting up the technological infrastructure. Most of the knowledge management initiatives we found had an information technology component. The most popular technologies involved databases, information bases, or knowledge bases that are accessed by desktop computing and communications infrastructures. For many projects, the choice of technology to be used is influenced by higher level organizational standards. In other cases, the project leader must make technological choices that will influence the unit's capacity for managing knowledge for some time to come. A very common technical decision in early 1996 is between Lotus Notes and WorldWideWeb-based "intranets" for knowledge capture and distribution.

Dealing with broader cultural and human issues. While organizations often focus on technology for knowledge management, it is more frequently cultural and human factors that differentiate successes from failures. Perhaps the most critical cultural issues involve creating an organizational climate in which knowledge is valued and shared. Specific human resource programs, e.g., performance evaluation and incentive programs, can help in this regard, though they must be consistent with the broader culture. It may also be necessary to create some level of shared meaning around knowledge categories. Because of the breadth and depth of efforts necessary to make cultural changes stick, it may be more effective to undertake them at a level higher than that of an individual project. In fact, we believe that creating a knowledge-oriented culture is a key responsibility of corporate-level chief knowledge officers or chief learning officers.

Money. Like virtually all corporate initiatives, knowledge management projects require financial resources. The costs go for people, technology, the logistics involved in face-to-face knowledge creation and transfer, and in some cases the purchase of external information. The costs of the projects we observed ranged from several hundred thousand dollars to several million dollars. Because of these costs, knowledge initiative managers should make significant efforts to capture the benefits of their projects.

Conclusion

It's too early to judge the success or failure of most knowledge management projects, but pioneers in this area do provide some insights into where firms should begin thinking about leveraging their knowledge, and what business impacts they should expect. Firms can look to:

(1) Synthesize and distribute knowledge about the competitive environment.
(2) Improve operational performance by sharing existing knowledge (e.g., structured knowledge, lessons learned) more effectively.
(3) Make knowledge resources and shortages more visible to facilitate use and increase attention on areas of special need.
(4) Measure intellectual assets to enhance strategic focus.
(5) Create more knowledge intensive products, by either adding value to existing ones or creating entirely new revenue streams.

The purpose of this paper has been to sketch out different types of knowledge management projects. As our research continues in this new field, our next paper will address the problems of implementing these initiatives in more detail, and suggest ways managers can tackle these emerging issues