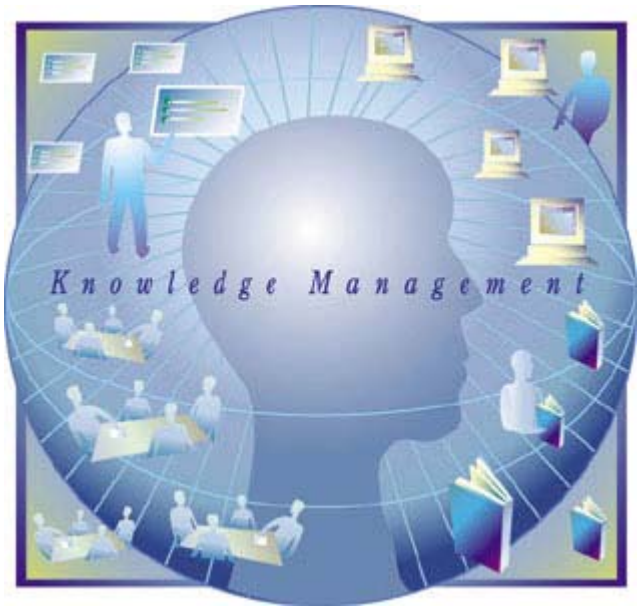
Knowledge Management Model Guides KM Process

By Cynthia Taylor Small and Jean Tatalias



Imagine you are based in Seoul, Korea, with corporate headquarters located in the United States. You have just received a task from a customer that requires expertise in sensors and signal processing. Your team in Korea has knowledge in this area; however, a better solution can be provided to the customer if the knowledge and expertise of the entire corporation can be leveraged. What do you do? You can call for help, but it's 10 p.m. on the East Coast. Aha! You decide to access the corporate intranet to try and find a document, or, even better, a list of experts that you can e-mail for help. Sound familiar? Being able to find information or expertise quickly to satisfy customer needs is just one of the reasons that knowledge management (KM) at MITRE is a business requirement.

Are you trying to reap the benefits of KM in your organization but finding it difficult to get started? MITRE developed a KM model, a KM assessment approach, and a framework for continuous KM improvement. This article describes our techniques and provides valuable insights that can be used by any organization about to embark upon a KM program or assessing how they stand with regard to KM.

KM at MITRE

KM principles are not new to MITRE. We understand that our success, quality of work, and value to our customers are directly related to the degree to which we share knowledge, leverage the corporate expertise, and provide an environment in which new knowledge is created. While

KM is not new at MITRE, we continue to investigate and employ new management and information technologies that allow us to meet the changing needs of our customers.

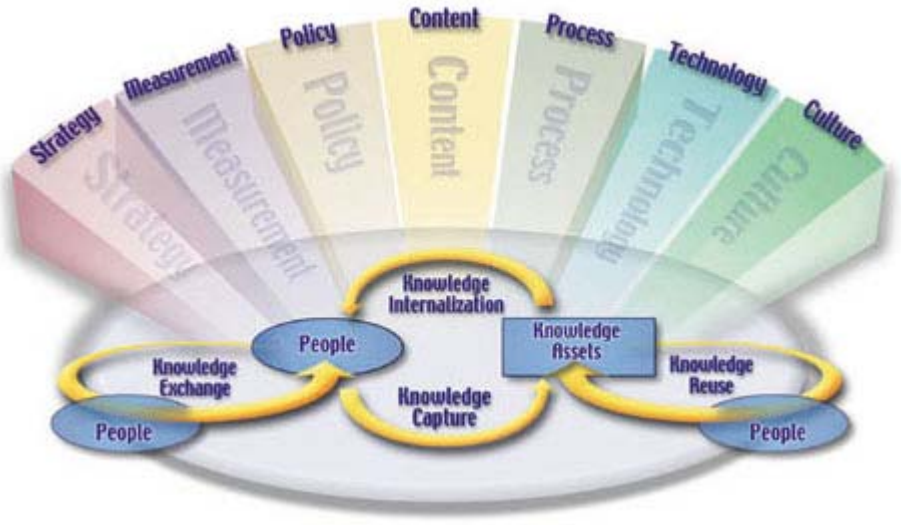
In March 1998, MITRE's Innovation Team (I-Team), a group comprised of senior managers who focus on positioning MITRE as an information technology leader, chartered a subteam to assess the state of KM at MITRE and to determine if there were areas where the corporation could continue to improve. Those of you who have already embarked on a similar initiative realize this was no easy task. Immediate questions come to mind: What is KM? Where do we start? How do we achieve this task within the resources allocated? What technology do we need to deploy? Aren't we already doing it? These questions, along with many others, led MITRE to develop a descriptive model for KM.

KM Definition and Model

MITRE's survey of industry and academic literature uncovered many KM definitions and models. Our goal was not to create yet another definition, but to define KM within the context of MITRE's mission and goals. The working definition -- "corporate strategies employed to foster innovation, knowledge transfer, improved business process, and enhanced learning" -- was adopted along with a very simple vision. The vision states "Create a learning environment to continually enhance MITRE's value to its customers. In that environment, knowledge creation, sharing, and reuse are explicitly valued, expected, supported, and rewarded."

In order to guide our KM assessment and future activities (from a practitioner's perspective), we developed a descriptive KM model. The model supports a holistic approach that includes organizational, cultural, and technological aspects.

The components of the model were derived from KM research performed in MITRE's technology program and a survey and comparison of KM models (e.g., Ernst & Young, American Productivity & Quality Center, and DataWare) being used in industry or described in the literature.



Knowledge Management is viewed from a two-dimensional perspective. The first dimension (bottom) consists of

activities that are critical to knowledge creation and innovation. The second dimension (top) consists of elements that enable or influence knowledge creation activities.

As illustrated, KM is viewed from a two-dimensional perspective. The first dimension consists of the activities that are critical to knowledge creation and innovation: knowledge exchange, knowledge capture, knowledge reuse, and knowledge internalization. Collectively, these processes build a learning organization -- one skilled at creating, acquiring, and transferring knowledge as well as adapting its actions to reflect new insight and innovation.

The second dimension consists of those elements that enable or influence knowledge-creation activities. These include Strategy -- the alignment of corporate and KM strategies; Measurement -- the measures or metrics captured to determine if KM improvement is occurring or if a benefit is being derived; Policy -- the written policy or guidance that is provided by the organization; Content -- the subset of the corporate knowledge base that is captured electronically; Process -- the processes that knowledge workers use to achieve organization mission and goals; Technology -- the information technology that facilitates the identification, creation, and diffusion of knowledge among organizational elements within and across enterprises; and Culture -- the environment and context in which KM processes must occur (often described in terms of values, norms, and practices).

KM Assessment Approach

MITRE used its KM model as the framework for the assessment. The goal of the KM assessment was to identify strengths and weaknesses (from an enterprise perspective) in our knowledge-leveraging capability, to benchmark the corporation against other KM leaders, and to recommend next steps.

To identify strengths and weaknesses, we assessed or reviewed each of the components of the enabling dimension. A rating of green, yellow, or red was given, depending on whether the goals were being met, partially met, or not achieved. The methodology for each assessment was tailored to the component target state. A variety of techniques were used during the assessment including surveys, metrics capture and analysis, observation, and interviews.

To address the benchmarking goal, MITRE compared its KM practices with other KM leaders. The following summary of the assessment components is provided to help the reader more fully understand the assessment.

The Policy assessment used a proposed policy framework for information sharing and information stewardship. Policies assessed included collaboration and teamwork, responsibility for information products, publishing and dissemination, information protection, and roles and responsibility in information policy. The MITRE environment was then examined to determine if a policy (interpreted to include mission statement and performance evaluation criteria) existed and whether the intent of the policy was being followed.

Content was assessed to determine if it satisfied MITRE's business needs and if the information was accessible through the company's intranet. We established a top-level value chain to identify major processes in which MITRE staff participated and gathered data on content sufficiency,

quality, and existing intranet metrics. The state of content was assessed as follows:

• Red -- insufficient for business needs

• Yellow -- available to some degree but exhibiting less consistency or currency than desired

• Green -- available, maintained, and accessible

The Process assessment examined a subset of mission-oriented processes that staff use on a routine basis in support of MITRE's customers. These processes involved tasks such as technology/product assessment, task leadership, prototyping, and strategic planning. Interviews were conducted with staff from across MITRE's operating centers to obtain a picture of the extent of integration and the level of knowledge at which the activities of knowledge exchange, knowledge capture, and knowledge reuse are being performed. For example, knowledge exchange at all levels of the organization would receive a rating of green, whereas exchange at only the department level would receive a yellow rating.

The Technology assessment evaluated MITRE's use of KM technologies based on a review of benchmarking studies, conference proceedings, Web resources, and KM journals identifying these technologies and the best practice features for each. A rating was given in each area depending on whether a technology was operational and exhibited best practice features (green), operational or in prototype with some best practice features (yellow), or had no operational capability (red).

In its Alignment with KM Leaders assessment, MITRE identified and captured KM practices in each of these areas and then compared MITRE practices in each area to the practices of other KM leaders. A rating was given depending on whether the best industry practice was widely evidenced at MITRE (green); evidenced, but not at the enterprise level (yellow); or showed minimal or no evidence of practice (red). During the assessment, no attempt was made to determine if the practice should be a priority to MITRE; this judgment occurred during the consolidation and recommendation phase.

The Strategy, Measurement, and Culture elements were not directly assessed. The Strategy and Measurement elements were addressed in the Alignment with KM Leaders assessment. Having a KM strategy was cited by the KM leaders as critical to KM implementation. Many KM leaders had initiated measurement activities, but recommended that it not be the focus of initial KM efforts. Culture was addressed in the Alignment and Process assessments. The identification of cultural barriers was identified by KM leaders as an important step to KM improvement.

KM Continuous Improvement

MITRE's approach to KM improvement is twofold: enhance the state of corporate enablers and pilot solutions to key knowledge challenges. The assessment resulted in a list of strengths and weaknesses, as derived from the green, yellow, and red rating, and a list of recommendations. One of the recommendations was the appointment of Center Knowledge Managers (CKMs). A primary responsibility of each CKM is to identify knowledge challenges of their operating center

and to pilot solutions. KM pilots currently underway are focusing on the following topics:

• Development of portals for the direct-funded work program and research

• Capturing and transferring of knowledge for improved strategic resources alignment

• Utilization of an extranet and process support to stimulate knowledge sharing with customers

• Development of process and tool support for the organization and knowledge capture of Technical Exchange Meetings

Summary

Assessing the current state of KM in your organization is an important step toward achieving the organization's vision. It is important not to just focus on the ratings (i.e., red, yellow, green), but to capture and share the KM practices discovered along the way. The assessment process must be tailored to the mission and goals of the organization. Assessment is an iterative process that must be revisited on a recurring basis. The target of MITRE's first assessment was enterprise-wide knowledge enabling; future assessment will focus on domain and Center-specific needs.

Measurement, while not discussed in this article, is an important part of MITRE's KM program. During our assessment activities, MITRE identified metrics by using the Goal/Question/Metric paradigm originated by Professor Vic Basili of the University of Maryland. An enterprise KM measurement framework is currently under development.

For more information, contact

Cynthia Taylor Small
at 703-883-6639 or
csmall@mitre.org