TenStep, Inc.

TenStep Supplemental Paper

25 January 2004

Knowledge Management

An efficient knowledge management program helps companies to gain a competitive advantage. It supports an open culture that encourages employees to share their ideas. In today's business environment, this is essential for innovation and growth.

Many knowledge management programs have failed due to poor implementation. Consultants have handled many of these initiatives. As a consequence, companies have remained in the dark about the details of implementation, and ventures have gone haywire. Some companies have decided to rethink their plans. To create competitive advantage, companies have to carefully consider 'what the key activities are' and 'where the knowledge lies.'

Key activities
Knowledge lies in the assets of the company, whether it is equipment, tools, processes or intellectual property. Despite many forms of knowledge, the problems encountered by each of them are similar. Hence, companies have to efficiently manage the following key activities to achieve success.

Initiate knowledge management programs: Cultivating a culture that facilitates knowledge sharing among employees, and making available the required information throughout the organization, is the basic function of knowledge management. Processes have to be restructured to assist the collection and integration of the data contributed by people. Besides, an atmosphere that is conducive to identifying and sharing ideas inside and outside the organization is critical. But above all, companies need to monitor the advancements made in operational activities and in individual learning through the initiative.

Concentrate on key initiatives: The purpose of knowledge initiatives is to serve customers better. Therefore, the focus ought to be on key plans that can bring functional improvements.

Knowledge sharing is essential in each activity of business, from selecting people and technology to developing processes and measuring systems. Companies can post good results by focusing on key initiatives. Results are the driving force for change.

Identify great ideas
Companies also have to be aware of changes that take place outside the company. They have to identify and analyze them in the best interests of customers.

Personal characteristics
To establish a successful knowledge management program, companies require the commitment of employees. The following are a few aspects to consider:

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Passion for knowledge: Companies should be enthusiastic about acquiring and sharing knowledge. They must be ready to learn from the experience of their peers, and to use it in their area of work.

Passion for people: Employees are pivotal to creating and using knowledge. Companies should provide incentives that motivate them to do so.

Passion for results: Such initiatives should focus on results.

KMS provides a framework by pre-defining the objectives of your organization. Better still, KMS enhances your chances of emerging as an organization with an unbeatable competitive advantage. KMS does not replace or substitute a business strategy (BS). It is a part of overall BS, which facilitates KM implementation with higher success rates.

A BS is formulated using Michael Porter's SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis method. SWOT analysis involves describing and analyzing a firm's internal capabilities (its strengths and weaknesses) relative to the opportunities and threats of its competitive environment. Lately, more emphasis is being put on the 'resources and capabilities' of the firm.

The traditional SWOT framework provides a basis for describing a knowledge strategy. In essence, businesses need to perform a knowledge-based SWOT analysis. Map their knowledge resources and capabilities against their strategic opportunities and threats.

Organizations must use this knowledge map to strategically direct their KM efforts. Bolster their knowledge advantages and reduce knowledge weaknesses. Identifying which knowledge-based resources and capabilities are valuable and unique, and how these resources and capabilities support the firm's positions, is essential for a knowledge strategy.

Mapping Knowledge

Assessing an organization’s knowledge position requires organizing existing intellectual resources. This process is commonly called cataloguing. Such catalogues are also known as taxonomies. Taxonomies distinguish between the following types of knowledge:

- Tacit and explicit knowledge
- General and contextual knowledge
- Individual and collective knowledge

Knowledge can also be categorized by types, such as:

- Declarative (knowledge about)
- Procedural (know-how)
- Causal (know-why)
- Conditional (know-when)
- Relational (know-with)

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Categorizing and describing what an organization knows and must know about its industry is not a simple task. However, there are two underlying premises behind this taxonomization.

- General awareness and orientation of knowledge that is available (this equips the strategist with a first glimpse of the competitive advantage already in place).
- Helps the strategist graduate to classifying knowledge more specifically into core, advanced and innovative knowledge (Discussed in the next issue).

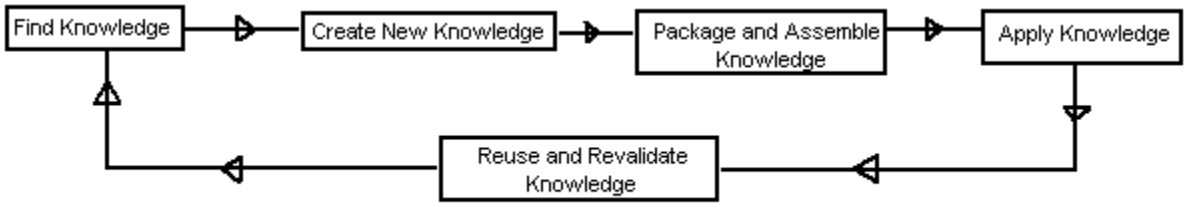
Gap Analysis

The loose ends or lapses visible on the knowledge map represent the Knowledge gap (KG). In the SWOT framework, strengths and weaknesses represent what a firm can do. On the other hand, opportunities and threats represent how a firm ultimately balances its competitive 'cans' and 'musts' to develop and protect its strategic niche.

Based on BS requirements, an organization can identify the extent to which its various categories of existing knowledge are in alignment with strategic requirements. Such an analytical and strategic evaluation of knowledge-based resources and capabilities determines which knowledge should be developed or acquired.

The KM initiative should be directed towards overcoming the analyzed and identified KG. Care must be taken when aligning KG with the strategic gap. This simultaneous alignment is a crucial element of an organization's KMS. Lack of care at this point could lead to a KM initiative failure.

Mapping knowledge and gap analysis are the first two steps of KMS formulation. Before we continue, we need to understand how knowledge is processed in an organization. The diagram below illustrates this knowledge process:



Knowledge Process

Professor Nonaka, founding member of the Graduate School of Knowledge Science at the Japan Advanced Institute of Science and Technology, devised a model explaining the 'knowledge creation' aspect in the knowledge process. In his SECI model, he talks about how knowledge in different forms - explicit and tacit - is created, stored, recalled and utilized. Nonaka's SECI model, however, is not an alternative to the knowledge process, but is in fact a subset of the latter.

Let us now look at what really constitutes the SECI model:

- Socialization (From Tacit to Tacit)
- Externalization or Articulation (From Tacit to Explicit)

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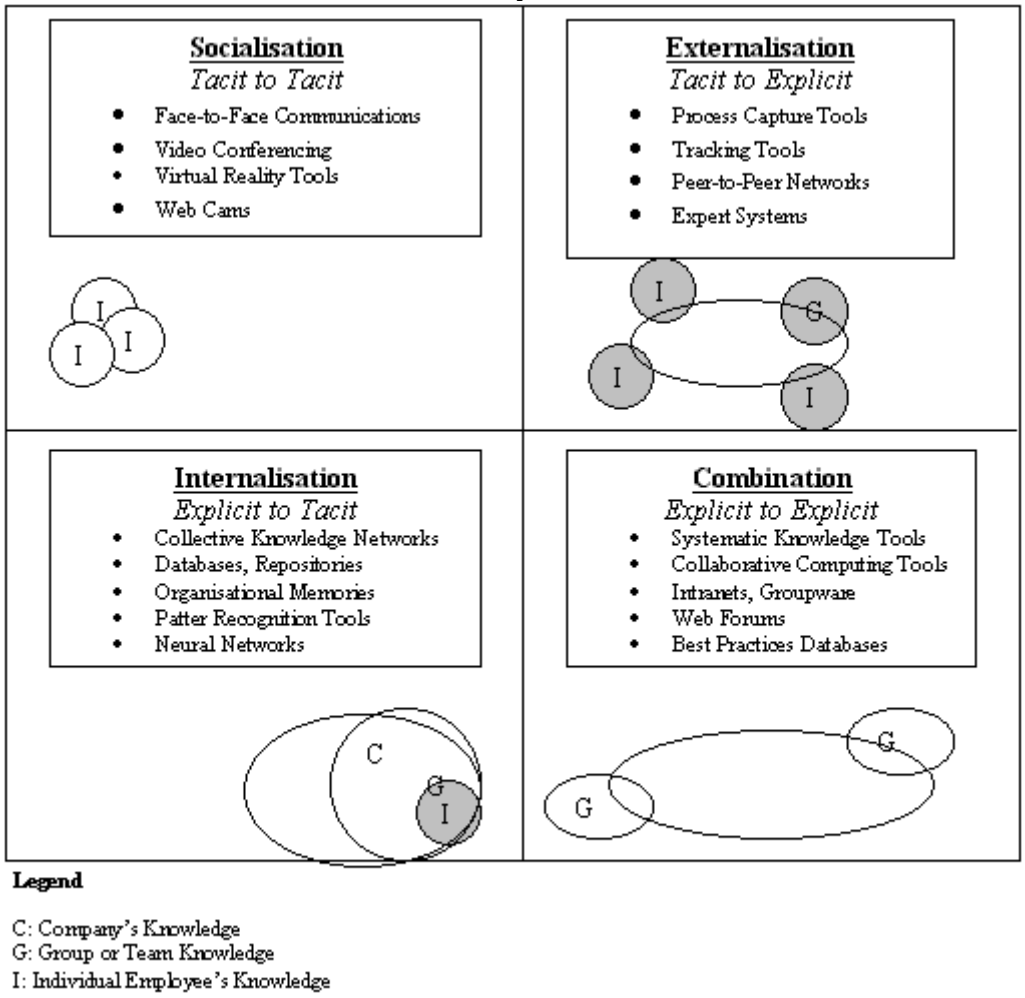
- Combination (From Explicit to Explicit)
- Internalization (From Explicit to Tacit)

In a knowledge-creating company, all these four patterns exist in dynamic interaction. The elements of the SECI model act as a knowledge spiral. The figure below illustrates this cycle:



Nonaka's SECI Model and the places where IT support fits in

Grasping the process aspect of KM helps us design KM architecture. There is no set of rules that must be followed. However, this article hopes to ease KM efforts.

Let us now take a look at how a typical KM system looks. We begin by putting KM technologies in layers. Each layer enables one or more elements of the knowledge process. These technology layers define and designate appropriate technologies and software for the purpose for which they are to be used.

The best working model is a comprehensive seven-layer one. Each layer includes all the components of the knowledge process. Layer variants are possible depending on

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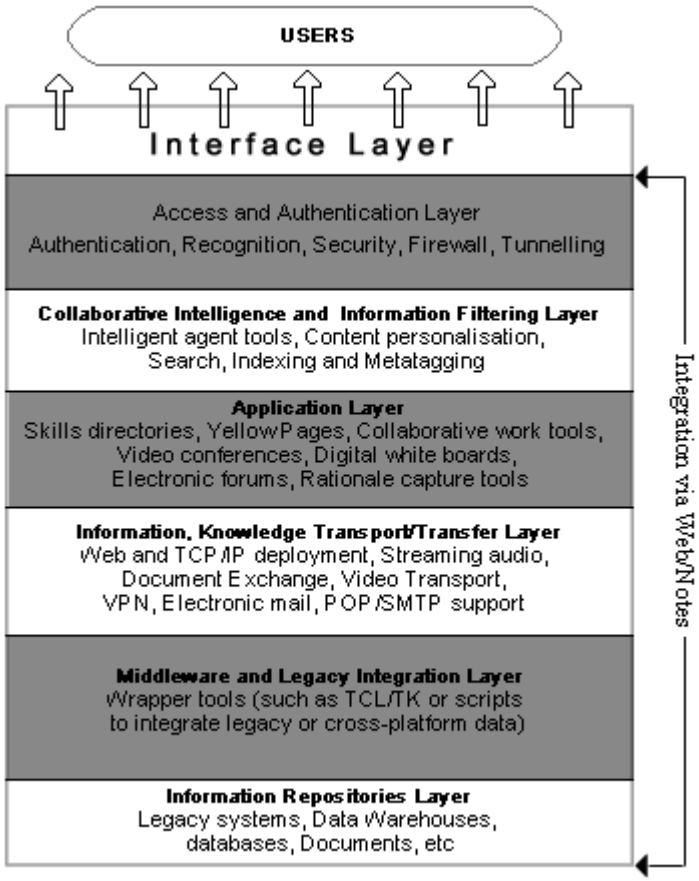
organizational needs. However, in an ideal situation, a typical KM system architecture has these technology layers:

- User interface layer
- Access and authentication
- Collaborative intelligence and information filtering
- Application
- Information, knowledge transport/transfer
- Middleware and legacy integration
- Information repositories

The figure below better illustrates this ideal.



The seven Layers of Knowledge Management System Architecture

The next logical step is to select technologies that cater to knowledge needs. When it comes to their selection, you need to clearly define your objectives, needs and the expected outcomes. Although, this may appear to be a Herculean task, Step Four (Knowledge Audit and Analysis) will be of great help.

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Knowledge mapping helps in rediscovering what the organization already knows. It also helps identify any gaps in the resident knowledge base. The visible gaps, when analyzed, give the true picture of an organization's intellectual richness or poverty. Often, organizations are found to be information-rich and knowledge-poor.

Knowledge strategy formulation is therefore an exercise to overcome knowledge poverty. This can be done by:

- Overcoming knowledge gaps
- Identifying opportunities that resident knowledge can provide
- Determining sources of knowledge, whether internal or external, in order to:
    - Overcome knowledge loss
    - Increase inflow of knowledge

But these points only contribute to the creation of a knowledge momentum. However, there is more to this, specifically the 'time' factor. Now the concept of Knowledge Velocity (KV) enters the scene. Organizations need to maintain a certain KV to remain competitive. They also need to formulate knowledge strategies in accordance with KV.

Determining KV requirements is difficult, as it is based on factors like industry type, market needs, management styles, etc. The 'balanced scorecard' approach helps make progress. However, this is long and tedious, and at times even confusing!

We instead suggest a more simple, two-step approach. First, identify knowledge types and their sources. Second, assign attitudes to the knowledge types.

There are primarily three types of knowledge:

1. **Core Knowledge.** The minimum level of knowledge required by an organization in order stay in business. Having core knowledge does not, however, assure a long-term competitive viability. It only qualifies an organization to continue in business.
2. **Advanced Knowledge.** Makes an organization 'competitively viable.' Such knowledge allows the organization to differentiate itself from its competitor through knowledge supremacy. It also enables organizations to face the competition head on.
3. **Innovative Knowledge.** Enables an organization to lead its industry and competitors. It also significantly differentiates an organization from competition. A common observation is that innovative knowledge often enables an organization to change the rules of the game.

Knowledge is not static. Innovative knowledge today becomes core knowledge tomorrow. Therefore, an organization's ability to constantly learn, accumulate and reapply knowledge is in itself a skill of competence. While devising a knowledge strategy, one must always keep this point in mind.

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Attitudes
The following attitudes only pre-assign managements to ambulate flexibly according to knowledge needs.

In an ideal case, various departments within an organization need to change their attitudes frequently. This adds to the complexity of the business. It is the job of the Knowledge Chief and Knowledge Managers to smooth out such complexities.

There are six dominant attitudes that can be talked about.

- **Explorer**
  This attitude is to be adopted at all times. Organizations need to be exploratory in nature because an organization's knowledge needs must never pause. Such pauses can lead to losing out to the competition.
- **Exploiter**
  Again, this is an attitude that must not be ignored. It is something that the organization should do naturally, because those that don't exploit their knowledge can soon become vulnerable, losing out eventually.

(***NOTE****: The 2 attitudes are required for any knowledge strategy to work. Ignorance or neglect of either can bring an organization back to square one.)*

- **Introvert/Extrovert**
  Many companies tend to seek knowledge within their set-ups. Although this is a good trait, there are certain disadvantages to it. The greatest is that organizations don't realize that seeking knowledge from within can be very difficult. This requires a system or process embedded in the organization to facilitate tacit knowledge transfer.

This is a challenge in itself. We recommend that heavy dependence on internal knowledge must be balanced with (possible) external sources of knowledge. Companies that already practice KM might have an affinity for internal knowledge. But, if you are just beginning your KM Initiative, we suggest that your KM strategy should have an inclination towards external resources. Typically, such sources include publications, university research centers, government agencies, vendors, and consultants.

- **Knowledge Aggressiveness or Conservativeness**
  Organizations cannot be both. This makes the decision to be aggressive or conservative a crucial one. In light of the explorer or exploiter, introvert/ extrovert attitude, organizations need to decide be aggressive or conservative.

Firms exploiting internal knowledge adopt a conservative attitude. On the other hand, businesses constantly at the mercy of customers need an aggressive attitude. A vendor of electrical components needs a conservative attitude, while a manufacturer should have an aggressive one.

Our understanding of KM has led us to conclude that technology that is employed in a KM system caters merely to the following two super functions:

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- Storage and Retrieval
- Communications.

The table below lists down the common KM technology components:

Table 1: KM Technologies their functions and super functions

KM Technology	Functionality	Super Functionality
Intranets	Information Distribution Information Connectivity Publishing	Communication
Groupware	Informal Information Capture Document Exchange Collaboration	Storage & Retrieval, Communication
Data Warehouses	Data Mining Data Cleansing Validating	Storage & Retrieval, Communication
Digital White Boards	Tacit Knowledge Capture	Storage & Retrieval
Decision Support Systems	Problem Solving	Communication
Mind Maps	Tacit Knowledge Capture	Storage & Retrieval
Telephones/Fax	Informal Conversation	Communication
Web Conferencing/Messengers	Dialog Conversation	Communication
Workflow	Information Routing Electronic Information Conversion	Communication
Document Management	Information Publishing Information Control Information Distribution	Storage & Retrieval, Communication

Going by the technology list in the above table, it is clear that 70-80 percent of KM technology already exists in an organization. If you take an inventory of your organizational infrastructure, it is likely that you are already using the technologies mentioned here, or have them but are using them for purposes other than KM.

So the question now is: How can these technologies be integrated to enable effective KM? The KM technology framework may just be the answer.

This framework provides a thorough understanding of the role of technology in a KM system. It is based on the following five components:

Knowledge Flow: Components that facilitate knowledge flow within the KM system.

Information Mapping: These components link the flow of information across the enterprise.

Information Sources: Here the components include data sources, which feed raw data and information into the system.

Information And Knowledge Exchange: These components comprise tools and non-technical facilitators that enable the exchange of information across tacit and explicit sources. It helps to create and share a context and facilitates sensemaking (Sensemaking

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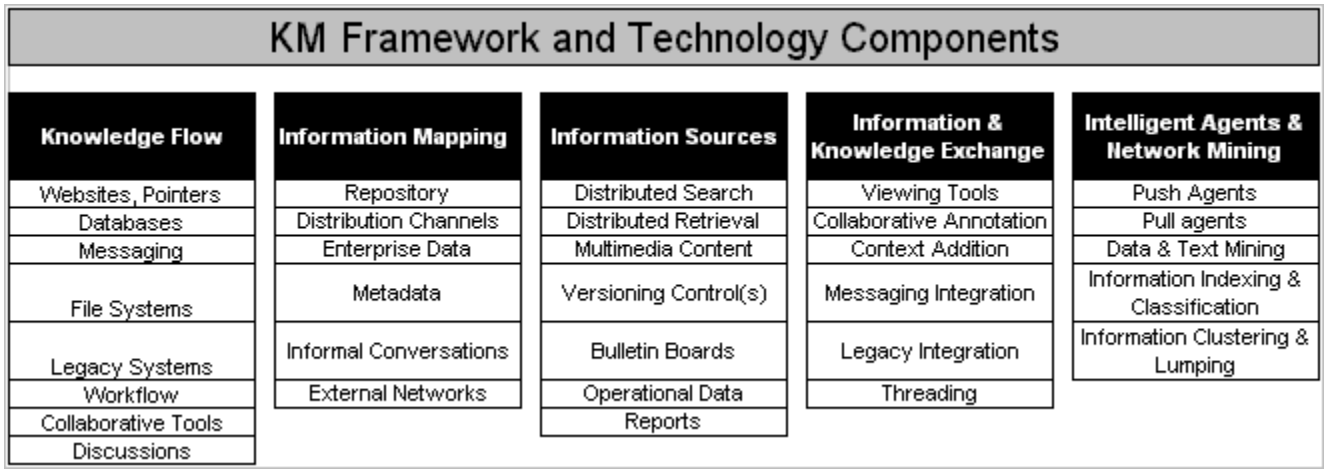
refers to the ability of a person or group to comprehend knowledge and interpret it in its context.)

Intelligent Agent and Network Mining: This category consists of knowledge mining, linking, retrieval, and intelligence tools. This is done by using intelligent agents and pattern recognition and mining tools.



Undoubtedly, all these components can be integrated to create synergy. However, all KM operations need to have a backbone or a central controller- a Knowledge Server.

The concept of a knowledge server is very similar to the library card cataloging system. It performs two major functions:

- Maintains existing enterprise information
- Handles all new information that is generated within the organization daily

To perform these two functions effectively, it needs to integrate and connect 'information islands.' So, it creates a reference to each new document (similar to a library card). The reference captures relevant pointer information, which in turn facilitates the server to access the information from the respective repository. The image below will help you understand the integration system.

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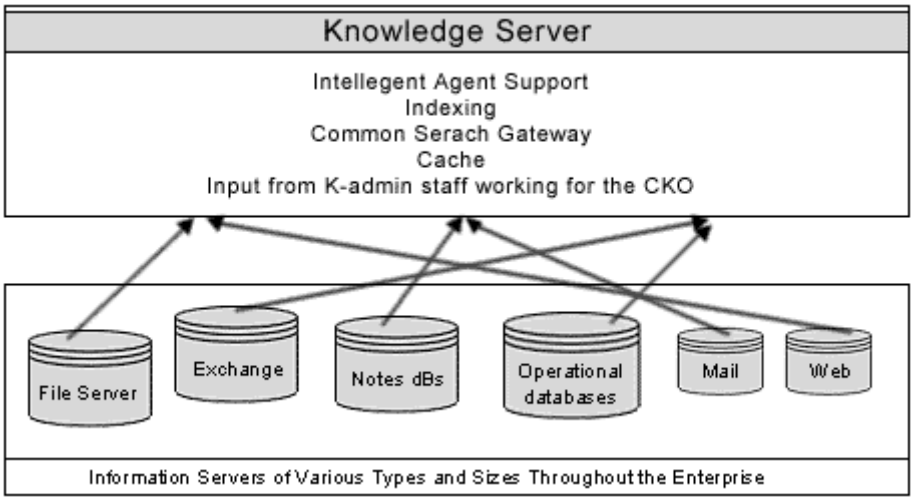

The knowledge server can integrate existing repositories without forcing you to start from scratch. This is what makes it unique and necessary, and why it is a great boon to knowledge workers also. As the knowledge server takes care of the explicit knowledge, knowledge workers can concentrate on managing tacit knowledge, which is more difficult.

An understanding of KM technology (step two of the KM implementation series) will give you the advantage. You can stay clear of the mistakes that other businesses make.

The key is to first 'leverage' technology that is within the organization and only then look at fresh investments in terms of technology. For this, you need to do the following two things:

- Take a complete inventory of technological infrastructure in your organization
- Have a clear idea of how your knowledge needs will increase in the near future (at least in the next 18 - 24 months)

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