Knowledge Management: The Metamorphosis of Data into Knowledge

About

This paper summarizes the proceedings of the KM World 2000 Conference and is intended for use internally by employees of Mindware and BDrive.com, and its client Ford Motor Company. Most of the text in this paper are actual quotes from presenters in the conference and wherever possible, the names of the authors have been included. This document is intentionally non-technical, and does not discuss programming tenets and methodologies.

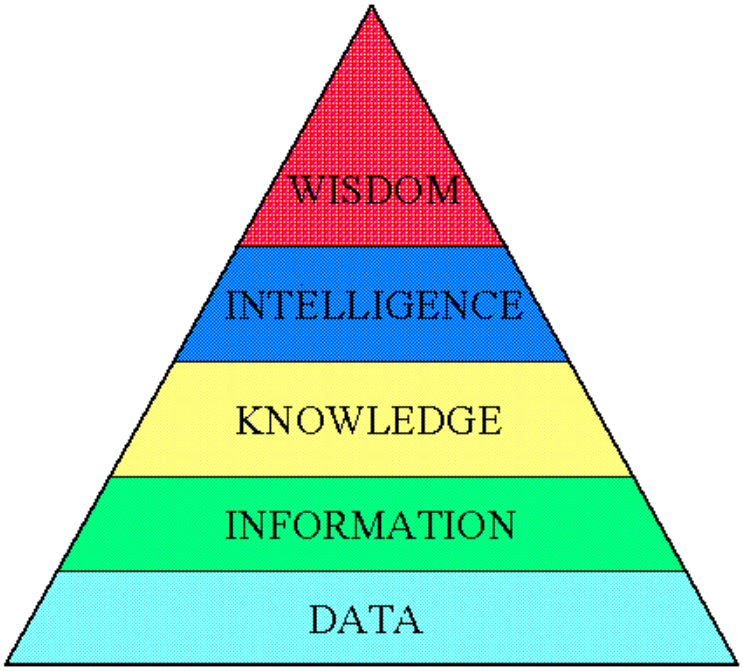
Data, information, records, documents and knowledge are all terms of art used throughout information technology (IT) professions. The technology to manage these entities are evolving from managing discrete elements -- such as data, to managing composite ideas -- such as knowledge. These maturing common sense techniques allow IT technology professionals to efficiently satisfy increasing information expectations.

Background

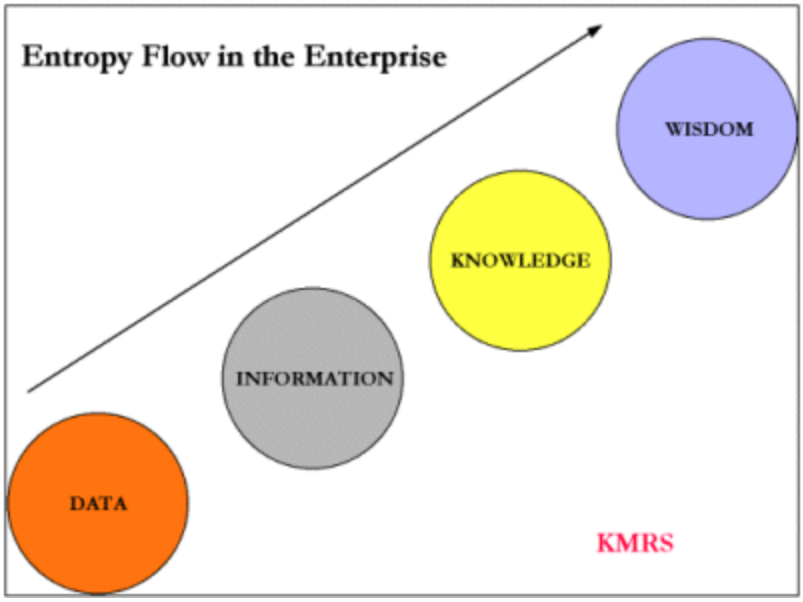
In my speech, I talked about our "five rules for change":

1. *the customer determines everything;*
2. ***knowledge is becoming more important than physical assets;***
3. *companies cannot depend on stand-alone products; growth will come from products that are wrapped in services;*
4. *technology and networks determine the shape of business; and*
5. *business no longer runs in parallel or vertical paths; all parts of the business cascade over each other.*

Jac Nasser at Dell DirectConnect Conference 2000



Knowledge is information that changes something or somebody -- either by becoming grounds for actions, or by making an individual (or an institution, or an enterprise) capable of different or more effective action. Knowledge Management caters to the critical issues of organizational adaption, survival and competence in face of increasingly discontinuous environmental change.... Essentially, it embodies organizational processes that seek synergistic combination of data and information processing capacity of information technologies, and the creative and innovative capacity of human beings. Knowledge Management and Information Strategies enable organizations to improve customer relations and service delivery, standardize business processes, increase workflow efficiencies and ensure synergy across multiple organizations. Organizations accomplish these goals by creating, capturing, cataloging, and exploiting knowledge capital to achieve business objectives. The metamorphosis of data to information and knowledge is typically represented by the flow indicated below:



In terms of studying, for example, history, the memorization of dates and facts are the data of history. However, understanding the significance and relationship of past events is the information of history. Using historical events as a foundation to explain current events is the knowledge of history. Using historical events as the basis for telling stories that convey to others the values society holds is the myth of history. Using philosophy to place a value on historical events is the wisdom of history.

Data

Data is the foundation upon which information systems build. Accuracy is an important criteria in the evaluation of the validity of data. In business transactions, data is usually originated from a Source Document - the original formal record of a transaction. Common Data Elements include:

- Field - characteristics representing specific attributes
- Record - a collection of interrelated fields relating to a common object
- File - a collection of interrelated records related to a common topic

Data is said to be made up of either structured or unstructured elements.

- Structured Data is explicit and describes facts, objects, or shapes. In computing systems, structured data is presented in the form of transactions recorded by accounting systems and analyzed using statistical methods
- Unstructured Data is subjective and amorphous, may be tactical in nature, and may be based on conjecture. In computing systems, unstructured data is presented in the form of video clips, audio files, images, and documents.

From a computing systems standpoint, transaction data is first entered into the system's database via a Transaction Processing System. Once data is entered into the system, it may be manipulated and turned into information.

Information
Information is data organized in a way that makes it useful for an end-user to make decisions. In terms of an information system, data may be thought of as raw materials that are transformed into information. Part of the process of creating information is generalizing the base data.

- Information is a statement about the structure of an entity that enables a person to make a decision or other commitment.
- It is often times the structure and the presentation of data in an understandable way that transforms data into information.
- The usefulness of the information to the end-user is an important criteria in the evaluation of the effectiveness and validity of information.

Structured Data is often converted into information through the use of

- predefined reports created on a regularly scheduled basis that categorize and/or summarize data; for example monthly profit & loss statement (Management or Reporting Information Systems)
- statistical or "What-If" reports created on an on-demand basis (Decision Support Systems)
    - On-Line Analytical Processing
    - DataWarehousing and DataMining
- Unstructured Data is often managed through the use of
- Content Management and Collaboration Tools
- Advanced Search Tools

Knowledge
Knowledge is a combination of instincts, ideas, rules, and procedures that guide actions and decisions. The success of knowledge in explaining the way things work is an important criteria in the validity of knowledge. The transfer of knowledge is important in the maintenance of any organizational structure.

Knowledge is the "Capacity to solve problems, innovate, or otherwise create value on the basis of previous experiences, skills, or learning."

- Some knowledge may be codified and explicitly laid out, such as procedures and instructions to accomplish tasks. This knowledge is based on past experiences applied to similar current problems.
- Some knowledge is intuitive and based on socialization. This knowledge is learned from others by mentoring (people working side by side, or children mimicking their parents) based on people working together, not strictly codified in the sense that it can be written down. Used when problems to be solved are unique.

Any organization thinking about downsizing, needs to also think about how to ensure that knowledge transfer that had been accomplished by middle-managers will continue in their absence. People using an information system must have enough knowledge to use the information that the system produces.

Knowledge can be built directly into the system's procedures, forcing the people using the system to conform to certain standards. Expert Systems, Neural Networks, Fuzzy Logic, Natural Language Processing and other types applications classified as artificial intelligence can be described as narrowly focused knowledge systems.

Wisdom
Wisdom is the application of a philosophical framework to value Knowledge; the power or faculty of forming the fittest and best judgment in making decisions

What is Knowledge Management?

Knowledge Management means creating a thriving work and learning environment that fosters the continuous creation, aggregation, use and re-use of both personal and organizational knowledge in the pursuit of new business value. Knowledge Management is:

- A business model embracing knowledge as an organizational asset to drive sustainable business advantage
- A management discipline that promotes an integrated approach to create, identify, evaluate, capture, enhance, share and apply an enterprise's intellectual capital
- Bottom Line: Getting the right information, to the right people at the right time

Story Techniques

This section consists of excerpts from the keynote address by David Snowden, European Director of the Institute of Knowledge Management, a subsidiary of IBM. David is recognized worldwide as an authority on how to leverage trusted communities and relationships to link thinking and practice in B2B e-business. The technologies of B2B maybe new, but the behaviors and practices are as deeply rooted as the notion of commerce itself. Co-founder of 'Organic Knowledge Management', he is an acknowledged expert on the management of tacit knowledge and has developed a series of pioneering methods including the use of anthropological techniques for knowledge disclosure through the ASHEN model, the use of stories as an advanced form of knowledge repository and the Cynefin model of formal and informal communities. He leads two Institute programmes: The further development of Story Techniques; Using Complexity Theory to link concepts from Learning and Knowledge Management. He has authored many articles on the subject and contributed commissioned chapters to two forthcoming books. He is currently working on his own book "Uncertain Knowing" Dave Snowden has an MBA from Middlesex University and a BA in Philosophy from Lancaster University. He is ho-nary fellow in knowledge management at the University of Surrey and teaches on MBA programmes at Watwick, Sophia Antipolis and Piacenza.

Story Techniques, which is building on a prior two-year research program conducted by David Snowden, is focused on the use of the age-old art of storytelling to effectively communicate knowledge and associated learning in organizations. Drawing on modern technology, script writing skills, and the storytelling cultures of all five continents, the research has delivered a practical and proven method for handling some of the most difficult areas of knowledge disclosure and transfer. IKM members are now taking advantage of the methods and training programs.

Types of Knowledge

"Knowledge is a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowers. In organizations, it often becomes embedded not only in documents or repositories but also in organizational routines, processes, practices, and norms." Knowledge can be divided into 3 basic types:

1. Explicit Knowledge
2. Implicit Knowledge
3. Tacit Knowledge

Explicit Knowledge

Explicit knowledge, as the first word in the term implies, is knowledge that has been articulated and, more often than not, captured in the form of text, tables, diagrams, product specifications and so on. In a well-known and frequently cited Harvard Business Review article titled "The Knowledge Creating Company," Ikujiro Nonaka refers to explicit knowledge as "formal and systematic" and offers product specifications, scientific formulas and computer programs as examples. An example of explicit knowledge with which we are all familiar is the formula for finding the area of a rectangle (i.e., length times width). Other examples of explicit knowledge include documented best practices, the formalized standards by which an insurance claim is adjudicated and the official expectations for performance set forth in written work objectives.

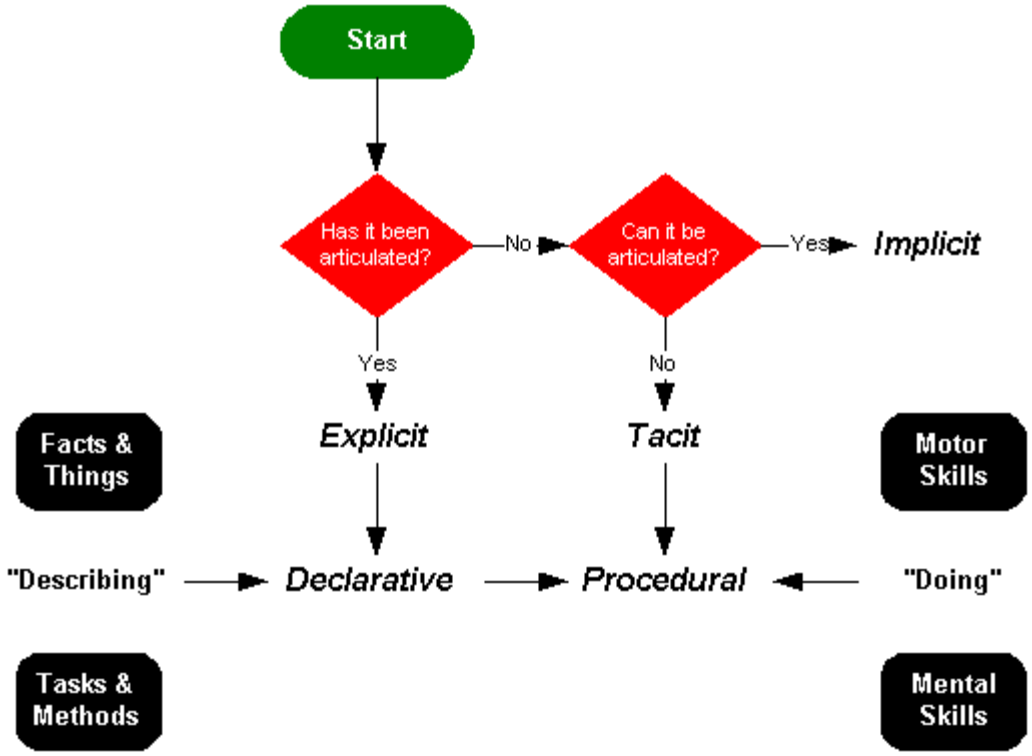
Implicit Knowledge

If the knowledge in question can be articulated but hasn't, it is implicit knowledge, that is, its existence is implied by observable behavior or performance but it has not yet been made explicit. This is the kind of knowledge that can often be teased out of a competent performer by a task analyst, knowledge engineer or other person skilled in identifying the kind of knowledge that can be articulated but hasn't. In analyzing the task in which underwriters at an insurance company processed applications, for instance, it quickly became clear that the underwriters really had only three basic options: they could approve the policy application, they could deny it or they could counter offer. Yet, not one of the insurance underwriters was able to identify these options at the outset of the analysis. Once these basic options were identified, it was a comparatively simple matter to identify the criteria used to make the sort. In any event, once articulated, implicit knowledge becomes explicit knowledge.

Tacit Knowledge

Tacit knowledge, or the "private" knowledge of experts is knowledge that cannot be articulated. As Michael Polanyi, the chemist-turned-philosopher who coined the term put it, "We know more than we can tell." Polanyi used the example of being able to recognize a person's face but being only vaguely able to describe how that is done. This is an instance of pattern recognition. What we recognize is the whole or the gestalt and decomposing it into its constituent elements so as to be able to articulate them fails to capture its essence. Reading the reaction on a customer's face or entering text at a high rate of speed using a word processor offer other instances of situations in which we are able to perform well but unable to articulate exactly what know or how we put it into practice. In such cases, the knowing is in the doing.

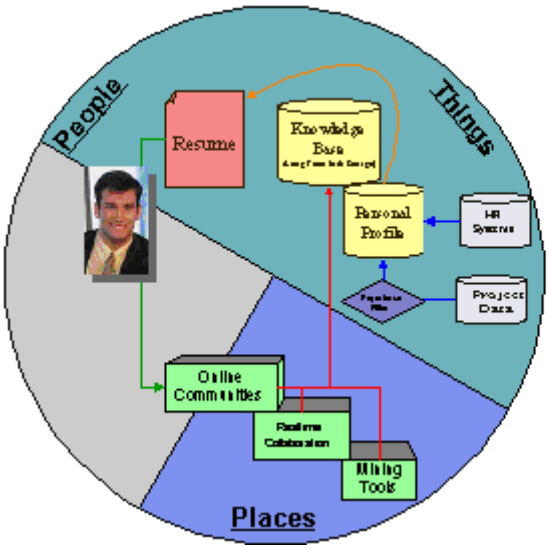
Knowledge Frameworks



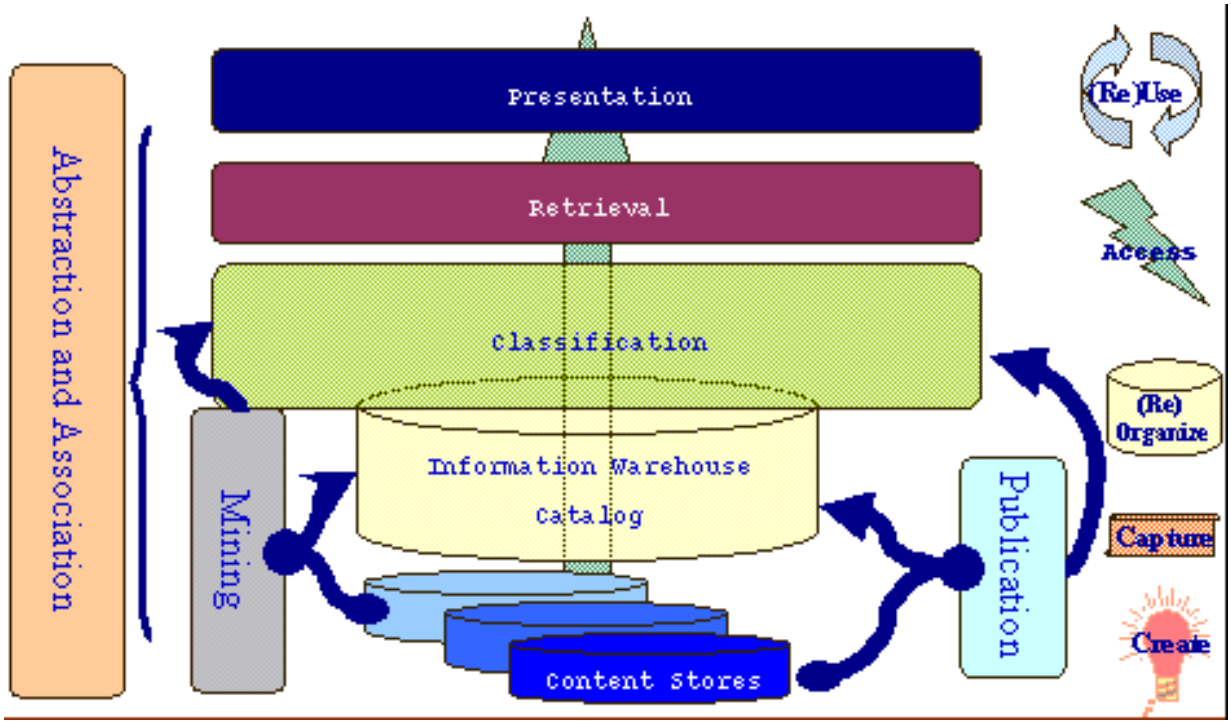
The following is an excerpt from Robert Pratt-Corner, Senior Principal Scientist at Mitrek Systems, The whole presentation is here:

A Knowledge Framework should realize capabilities thru technical architecture:

- Identify logical layers and interfaces
- Map the layers and interfaces
    1. To existing pools of content
    2. To existing and proposed business processes
    3. To existing technologies with high investment
- Perform gap analysis within and between layers
- Evaluate and prototype products
- Determine implementation and leadership
    1. Needs central coordination
    2. Needs business sponsorship
    3. Needs time to beat the Metcalfe curve
- Integrate people, places and things
- Have embedded security features
- Have Browse and Retrieval Capabilities
- Generate Reports
- Have Data Mining Capabilities
- Associate Resources



A conceptual architecture framework of a knowledge management system is depicted below:



Knowledge Based Systems

A knowledge based system may employ any number of approaches to knowledge representation and manipulation from the AI world including:

1. **Rule-based Systems** capture knowledge in the form of structured if-then statements.
2. **Model-Based Reasoning** uses software models (simulations) to capture knowledge or to emulate real processes.
3. **Neural Nets** are a network of nodes and connections used to capture knowledge, they can "learn" by using examples.
4. **Fuzzy Logic** is used to represent and manipulate knowledge that is incomplete or imprecise.
5. **Decision Trees** capture decision-making knowledge that can be expressed as sets of order decisions.

Rule-based Systems

A rule based system uses "rules" as the knowledge representation for knowledge coded into the system. Rules typically take the form of if-then statements. This is a popular and intuitive knowledge representation. Constraint knowledge which identifies a set of conditions or a limit is easily represented using rules. Another form of knowledge, pattern matching, is also a good candidate to be implemented using rules.

The term business rules and rule-based system are often confused. Business rules typically refer to knowledge important to operating a business, in contrast a rule-based system refers to a type of knowledge representation. A rule based system may be an effective way to capture certain types of "business rules" (i.e. business knowledge) although, depending on the type of knowledge, other representations may be more effective.

Model Based Reasoning

Model based reasoning was initially developed to support industrial processes such as oil refining or chemical processes. This technology uses a mathematical model that mimics the real process. Possible control actions can be applied to the model and the resulting effects can be observed. The model is used to predict the outcomes of various control actions thus providing a basis for selecting the best control action.

The model-based technique is a very powerful knowledge representation. This concept can also be applied to the business domain. Models can be constructed to capture the gist of business processes. These models can then be manipulated to predict the effects of various actions. Built as part of a knowledge base system, the models can predict outcomes based on different business scenarios. This type of reasoning is very useful as part of a sophisticated decision support system.

One of the key challenges with this technique is ensuring the model has the proper fidelity and captures the important characteristics of the process being modeled.

Artificial Neural Nets

Artificial neural nets were developed from experiments to model the behavior of brain tissue using software. These experiments were some of the earliest forms of artificial intelligence software.

Neural nets are good at associative problems. Given partial information, an associative problem is to find items that "fit with" (i.e. are associated with) the given information. For example, birds are small animals with feathers that fly. Given a feathered animal that flies, we can find associated information - namely that this animal is likely to be a bird and is probably small.

A key advantage of neural nets is that they can be trained by example. To encode knowledge into a neural net many examples of the desired information can be presented to the neural net. Each example causes the neural net to alter its structure and store the new information. After training, the knowledge is stored in the neural net as a pattern of weights distributed across all the connections between individual neurons. These connected neurons make up the neural net. This easy training is off-set by the difficulty in identifying the knowledge stored in the neural net. There is no descriptive form of the knowledge captured in a neural net. The knowledge is only a distribution of connection weights.

Fuzzy Logic

Fuzzy logic has its roots in set theory. It was developed to handle situations where membership in sets is not clearly defined.

This technique is very useful for handling imprecise information. For example, what if we are looking at the P/E ratio of an internet company and wish to assess if the ratio is "high"? In this case, we might consider a ratio of 500 to be high, but what about a ratio of 200? Fuzzy Logic could use a number to represent the membership of our specific P/E ratio in the set of high P/E ratios -- a P/E ratio of 200 might be considered 0.5 high. This technique helps avoid problems with hard constraints. A hard constraint with the lower bound for high P/E ratios of 200 would disqualify a P/E ratio of 199 from the high category. Using fuzzy logic this same P/E ratio would be considered about 0.5 high.

Fuzzy logic can often be combined with other knowledge representations. For example, rules can use fuzzy logic expressions to allow them to more effectively handle imprecise information. [back to top]

Decision Trees

Decision trees predate computer-based artificial intelligence. This technique has been used for many years to lay out the conditions and steps required for decisions.

Decision trees are useful for capturing structured decision-making processes. This technique is useful for troubleshooting and configuration applications. The knowledge for these applications is often structured into a set of steps and decision points.

One problem with this technique is lack of flexibility. Decision trees must be defined ahead of time thus limiting their flexibility. It is possible to combine decision trees with other AI techniques to lessen this problem. Despite this limitation decision trees can be very effective representations for specific types of knowledge.

Expert Systems

An expert system is a computer program designed to simulate the problem-solving behavior of a human who is an expert in a narrow domain or discipline. An expert system is normally composed of a knowledge base (information, heuristics, etc.), inference engine (analyzes the knowledge base), and the end user interface (accepting inputs, generating outputs). The path that leads to the development of expert systems is different from that of conventional programming techniques. The concepts for expert system development come from the subject domain of artificial intelligence (AI), and require a departure from conventional computing practices and programming techniques. A conventional program consists of an algorithmic process to reach a specific result. An AI program is made up of a knowledge base and a procedure to infer an answer. Expert systems are capable of delivering quantitative information, much of which has been developed through basic and applied research (e.g. economic thresholds, crop development models, pest population models) as well as heuristics to interpret qualitatively derived values, or for use in lieu of quantitative information. Another feature is that these systems can address imprecise and incomplete data through the assignment of confidence values to inputs and conclusions. One of the most powerful attributes of expert systems is the ability to explain reasoning. Since the system remembers its logical chain of reasoning, a user may ask for an explanation of a recommendation and the system will display the factors it considered in providing a particular recommendation. This attribute enhances user confidence in the recommendation and acceptance of the expert system.

Need for Taxonomies

Taxonomies are ways to structure vast amounts of information e.g. Dewey system, animal kingdom etc... We need taxonomies:

- To manage our collections
- To search
- To index
- To add value to our collections of data

Taxonomies can be defined as a classification of elements within a domain where:

- Domain can be defined as a sphere of knowledge, influence or activity
- Classification is the operation of grouping elements and establishing relationships between them (or the product of that operation).
- Elements are objects or concepts

Taxonomic classifications create structured "knowledge bins", that are:

1. Orthogonal - Can classify in multiple unrelated ways
2. Dynamic - Can create new classification axes on the fly
3. Constrained - Can manage choices to keep values meaningful

These bins serve different purposes

1. Retrieval
2. Management
3. Security ?

- Bins must be well-mapped to business process
- Bins can be derived from data by visualization and analytical tools
- Taxonomies and reference data are often resident in same repository as InfoWarehouse and may be considered part of it
- Taxonomies considered distinct from publishing and association that put knowledge in bins

Taxonomies are applied to items (resources or individual pieces of information) by the use of metadata which may or may not use values from a vocabulary to create content. They are used in:

1. Content Creation - TAGGING
2. Site navigation - CATEGORIES
3. Information Retrieval - SEARCH
4. Personalization - DELIVERY

A way to categorize the knowledge of a certain field is called a thesaurus. It can be more specifically defined as "a controlled vocabulary of terms in natural language that are designed for post coordination".

Metadata

Metadata or "data about data" describe the content, quality, condition, and other characteristics of data. Metadata is machine understandable information about web resources or other things

The phrase "machine understandable" is key. We are talking here about information which software agents can use in order to make life easier for us, ensure we obey our principles, the law, check that we can trust what we are doing, and make everything work more smoothly and rapidly. Metadata has well defined semantics and structure. Metadata was called "Metadata" because it started life, and is currently still chiefly, information about web resources, so data about data. In the future, when the metadata languages and engines are more developed, it should also form a strong basis for a web of machine understandable information about anything: about the people, things, concepts and ideas. We keep this fact in our minds in the design, even though the first step is to make a system for information about information.

Search Engines

Search Engines are programs that let you do keyword searches for information on the Internet. They create indexes of databases or Internet sites based on the titles of files, key words, or full text. They provide an interface allowing you to type in your search, then return with a list of search results in hypertext, allowing you to click on any item in the list to get the actual file. The following are the different types of search engines:

1. **Subject Directories** are usually human-compiled web guides that group web sites together under similar categories and are useful for identifying general information. For example, Yahoo
2. **Web Indexes (General Search Engines)** search all the contents of a web site using software programs called spiders or robots. These robots search the Internet, analyzing millions of web pages, news group postings, and new web, gopher and FTP sites, indexing all words. Robots search for documents within web sites that match your search terms. After entering a keyword search, the Indexing Robot assigns a percentage rating for relevancy of each search return.

3. **Specialty Search Engines** index or categorize certain types of items like news articles, discussion groups, FAQs (frequently asked questions), or Web Forums. Popular ones include:
4. **Metasearch Engines** run your search on multiple search engines and display results lists together.
5. **Natural Language Searching** engines use Natural Language Processing (NLP) to match query concepts phrased as questions. They statistically and linguistically analyze your question and act as question answering system. Searches are phrased as questions such as "What is the population of China?"

Portal Philosophies

A portal provides a single, browser-based approach to finding useful information--independently of where the information comes from and how it is created. If made correctly, a portal should give a sense of community and organization for the average information-overloaded user. There are basically four types of portals:

1. Horizontal Portals
2. Vertical Portals
3. Enterprise Information Portals
4. Enterprise Knowledge Portals

Former search engine bigwigs such as Yahoo and AltaVista started the portal bandwagon rolling. Designed for a broad consumer audience, these portals cover such a broad range of information and topics that can sometimes leave the user overwhelmed, especially when one small query yields thousands of results. Few people have the time or inclination to weed through all of these choices, many of which are outdated and irrelevant.

Horizontal Portals

To solve some of these limitations of general consumer portals, certain sites are moving to what's known as a horizontal portal, which embrace the model of personalization. My Yahoo, My Excite, and so on are consumer portals that work on the theory that each person has unique interests and needs. Horizontal portals feature a customized start page featuring the users' specific interests. A writer might have a dictionary on the home page, an astrology buff may have horoscopes, and a day trader could have a stock ticker. Such personal touches entice users to return to the portal, knowing that the information they want will be waiting for them.

Vertical Portals

A second major type of portal, called the industry portal and vertical portal, focuses on a specific community of users. Industry portals provide information for people who want concentrated, in-depth information about a particular industry. iVillage, for instance, targets women and provides a gateway of information on mothering, relationships, cooking, and pregnancy. Industry portals organize and index Web pages to related companies in a specific industry, and they often partner with other industry players such as consultants or distributors to give access to otherwise inaccessible information.

Enterprise Information Portals

The third and currently booming portal genre is the corporate portal, sometimes called enterprise information portals (EIP). EIPs provide a home base for a company's employees by combining information from the company intranet with selected links from the Internet, access to corporate email and databases, and personalized home pages with information such as employee sales records and numbers of products shipped.

Whatever the type, the most popular features of a portal are Web searching, news, reference tools, calendaring, and communication capability. Aggregating large amounts of content from a variety of sources is highly involved and involves a large chunk of change. No matter what your goals, the key to a successful portal is to offer an oasis of organization within the wrangled Web. A portal should be the first place customers look--and return--each day.

Inside a large corporation, there may be dozens or even hundreds of intranets, each with hundreds of thousands of pages on it. And these intranets are controlled by very small, very fragmented groups of people. The fragmentation of intranets has led to a need for an enterprise knowledge portal-a single point of access to enterprise resources. According to International Data Corp., a market and research firm based in Framingham, Mass., this can be an information portal (one that offers access to all information sources), a collaborative portal (one that enables users to establish their own virtual project communities with conferencing, workflow, query tools and document management) or an expertise portal (one that allows expertise to be contributed and networked throughout the enterprise).

Enterprise Knowledge Portals

A fourth possibility is an enterprise knowledge portal, which combines the attributes of information, collaboration and expertise. An enterprise knowledge portal:

1. gathers, integrates and distributes the best data, information, knowledge, practices, processes, training and expertise from disparate sources
2. provides receivers with high fidelity information centered around their specific business practices.
3. provides easy select-and-find search for single best answer
4. creates and reinforces an environment of interaction, collaboration and learning
5. helps users find experts, helps experts coach users
6. empowers readers to provide critical feedback and insight
7. enables authors in creating and refining content
8. distills information down to support new and emerging technologies like wireless portals
9. is quick and easy - to install, change and scale
10. provides a secure environment for creating and delivering information

What HP is doing with its Portico project is an example of an enterprise knowledge portal. The enterprise knowledge portal is the portal of portals, hot-linking people to general corporate information, special interest portals and a variety of Web pages-all adhering to some standards and controls. It is also, according to Gerry Murray, director of KM research at IDC, "what will make the intranet investment pay off."

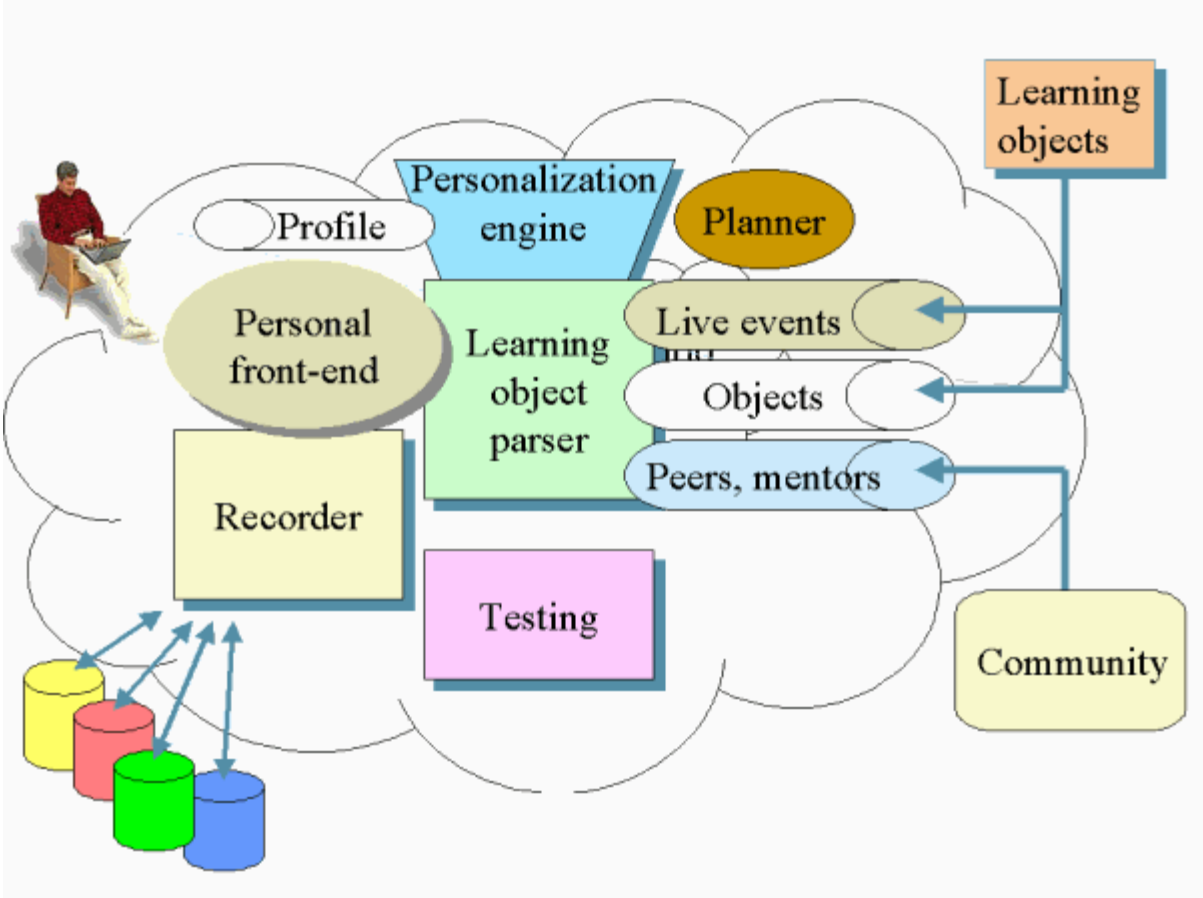
Enterprise Portals impact five primary functions of the organization (Frank J. Bernhard, Managing Principal, Supply Chain and Telecommunications Portfolio, OMNI Consulting Group, in the Economics of Portal Infusion):

1. Strategy
2. Business Communications
3. Business Ecosystems
4. Process Integration
5. Intellectual Property and Innovation

eLearning Initiatives

eLearning is defined as a learning environment that encourages interactivity and dynamically adjusts to each learner's preferences. E-learning is Internet-enabled learning.

Click here for an article on KM and elearning



What is eLearning?

1. learning on Internet-age steroids: real-time, 24/7, anywhere, anytime
2. web-delivered, typically assembling learning experiences on the fly from the freshest information
3. provides a mix of learning methods -- virtual classroom, simulation, collaboration
4. embraces the learning process from assessment through testing and sometimes certification
5. incorporates registration, payment and charge-backs, monitoring learner progress, administering tests and exams, maintaining learner records

6. learner-centric, personalized, 1:1

Components can include content delivery in multiple formats, management of the learning experience, and a networked community of learners, content developers and experts. E-Learning provides faster learning at reduced costs, increased access to learning, and clear accountability for all all participants in the learning process. In today's fast-paced culture, organizations that implement e-learning provide their work force with the ability to turn change into an advantage.

Training content had to meet the needs of people with diverse technical backgrounds. Information had to be collected and organized from far-flung sources. And the solution had to be portable from platform to platform, product to product.

E-learning delivers accountability, accessibility, and opportunity. It allows people and organizations to keep up with changes in the global economy that now occur on Internet time.

E-learning will be the great equalizer in the next century. By eliminating barriers of time, distance, and socio-economic status, individuals can now take charge of their own lifelong learning.

click2learn.com talked about the convergence of KM and eLearning:

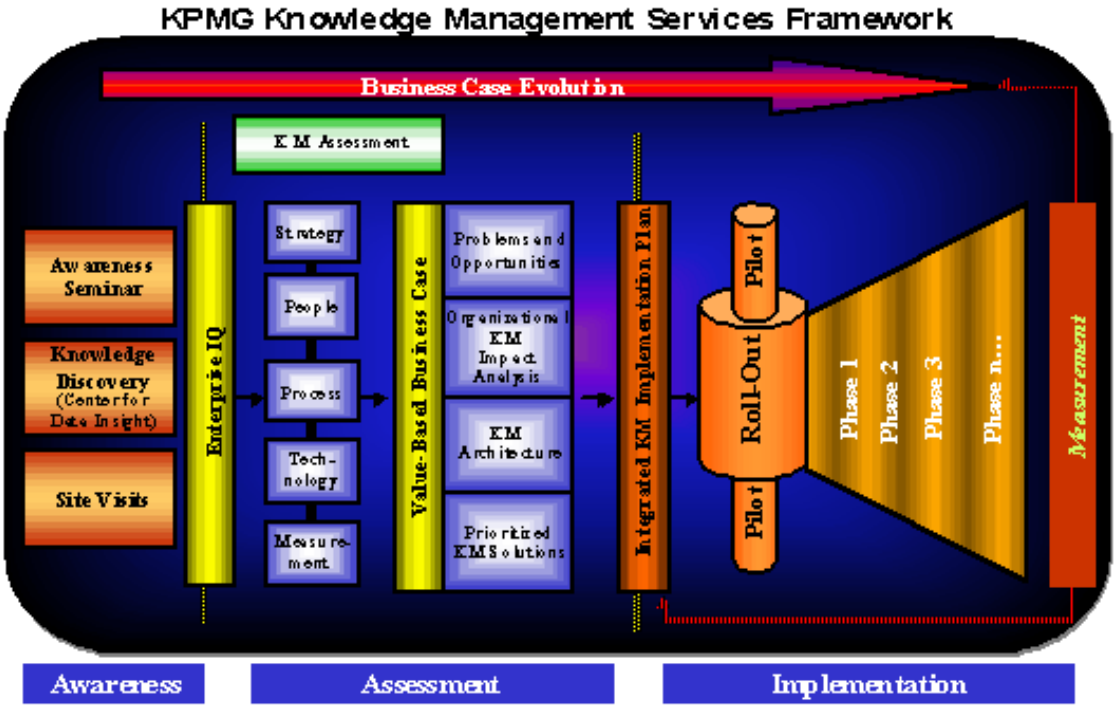
Definition of learning

- To gain knowledge, comprehension, or mastery through experience or study
- The act, process, or experience of gaining knowledge or skill

Theory into Practice Database.

Case Studies

KPMG



KPMG defined itself as the global advisory firm whose aim is to turn knowledge into value for the benefit of its clients, its people and its communities, and in a presentation defining knowledge management defined its KWORLD philosophy of messaging, collaboration and knowledge sharing system that

1. Becomes their universal business management tool integrating all other knowledge and information systems
2. Integrates client and team collaboration tools with global repositories of the firm's intellectual capital
3. Becomes KPMG's digital nervous system
4. Enables people and processes to get to content via technology

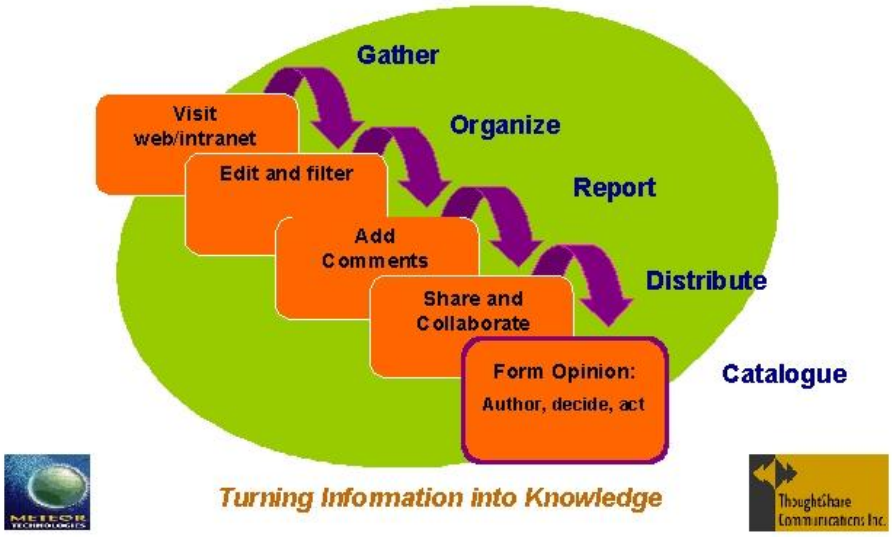
In short... KWORLD brings together content, context and connectivity.

Meteor Technologies & ThoughtShare Communications

Meteor is a technology incubator focused on "growing" companies with unique internet-related technologie s. The Company is the controlling shareholder of ThoughtShare Communications Inc. a comp any building an innovative suite of software products to help users efficiently gather, organize, publish and share Web-based content on the intern et.

Established in 1999, ThoughtShare Communications Inc. is a leading provider of cost-effective, quick-to-deploy and easy-to-use Knowledge Management solutions for the mid-market. ThoughtShare's solutions provide an easy framework to convert employee experience and expertise into a library of shareable knowledge that will help companies achieve their corporate goals. Mid-market enterprises can now enjoy the benefits of a high-end Knowledge Management solution without the high-end price tag.

Using ThoughtShare



Turning Information into Knowledge

Initial Product Suite

- Classifier
  - Catalogue and cross-reference ThoughtMaps
  - Creates library with access controls
- Indexer
  - Creates summaries and hard copy reports
- Viewer
  - Java—read-only—version of the desktop application
  - Tool to quickly and easily scan content
  - Visitors can choose personally relevant paths
- Generator
  - Provides visual interface to search engine results

Turning Information into Knowledge

RazorFish

Scient

Scient focused on a neighborhood of collaboration based on collection, centralizing, sharing and managing knowledge.

The Next Generation of Vendors

Argus
Argus Associates is a recognized pioneer in the field of information architecture. We organize large web sites and intranets so users can find what they need quickly and easily. Searching, navigating, indexing and labeling are the core of our work. Few companies can match our depth of experience; none use our unique methodology.

Inxight
Established in 1996 by Xerox Corporation, Inxight Software was founded to capitalize on breakthrough user interface, linguistic and visualization technologies invented and developed at Xerox Palo Alto Research Center (PARC). Today, the company develops and markets software products that let web builders create world-class portals that revolutionize the way users interact with the web.

Autonomy
Autonomy's products for Knowledge Management and New Media Publishing save time, labor and money by automatically and precisely categorizing, linking, personalizing and searching large volumes of information. At the heart of Autonomy's software is the ability to analyze a document, extract the ideas in the text and determine which are the most important. This is achieved using proprietary pattern matching technology developed by researchers from Cambridge University. Because Autonomy's technology can derive meaning in a piece of text, it can also profile users by analyzing the ideas in the documents they read or produce. These profiles are then used to deliver personalized information, create communities of interest and, in knowledge management applications, identify colleagues with useful expertise.

Firedrop
Occasionally, there's a technological revolution that changes the way people communicate and interact. Email was one such revolution; the web was another. Instant messaging was a third. With the Zaplet Communications Platform[tm], FireDrop[tm] has revealed an entirely new way to communicate. Zaplet[tm] technology brings dynamic, interactive qualities to email. A Zaplet message arrives like any other email message, but when you open it, it's like opening up a web page. You can interact with the content and, more importantly, with the other recipients of the message. Zaplet technology turns email into a live, shared space, and it brings powerful, new applications to the inbox.

KSD
KSD specializes in the development, delivery and support of knowledge base systems for business and internet applications. We make use of Artificial Intelligence technologies, including rule-based systems, fuzzy logic, model based reasoning and neural networks, to best capture your business knowledge. These systems are integrated into your existing operating environment, deploying your business knowledge throughout the company on a 24/7 basis.

VisualSoft
VisualSoft Technologies Limited, is a leading technology, product and solution development company in the global market. VisualSoft has a portfolio of more than 50 COM/DCOM, XML and JB/EJB for the developer community. It has also suite of Web Applications aimed at the IT Infrastructure market such as ASPs, Intranets/Extranets. It has made a mark for its customized applications development for the end user segment. With more than 350 software professionals working across the globe, it has built expertise in N-Tier architecture for distributed environment. VisualSoft's key areas of focus includes: -

E-business (B2B and B2C) - Knowledge Management - Security Solutions - Dataware housing and DataMining - Wireless Applications and Net Appliances.

ThinkMap
Thinkmap (tm) provides next generation interfaces for displaying, animating, and navigating complex and interconnected information. The Thinkmap platform enables the rapid development of a new class of applications in which information is presented within context and navigation encourages user interaction. Thinkmap's knowledge management solutions improve enterprise communication, efficiency, and ultimately, profitability.

Semio
Semio's patented categorization solutions help companies optimize the value of their online information and gain a critical competitive advantage by effectively organizing content so that users can easily navigate their portal and retrieve the information they need.

Epicentric
Epicentric provides extranet, intranet, and Internet portal tools and hosting services to companies wanting to create custom portals. You can create a corporate intranet portal with the enterprise tools to help keep employees focused on relevant internal and external information and resources. For vertical and affinity portals, Epicentric tools help you acquire and retain customers.

Sopheon
In today's global e-business economy, knowledge is an organization's most valuable asset, and its key to competitive success. Sopheon provides an unmatched blend of expertise, information technology and content resources that allows companies to efficiently access internal and external information and turn it into actionable knowledge. Its comprehensive solutions can enhance business processes ranging from product development to customer relationship management and quality management.

Aptech
Aptech's knowledge management practice bridges the gap between enterprise portals and virtual learning to create unique performance improvement solutions for competitive organizations in 24 countries worldwide

Mindcrest
MindCrest's KM framework and Enterprise Knowledge Portal technology takes KM, particularly management of Tacit Knowledge, to the next generation in enabling organizations leverage their knowledge assets in a comprehensive manner. MindCrest also provides business and technical consulting and implementation services, integrated with an extensive learning management system to ensure the successful usage and adoption of KM in the organization. MindCrest offers its solutions and services as an Application Service Provider or on a project basis. The MindCrest method will result in encouraging innovation, empowering employees, enhancing communication and establishing valuation of knowledge assets. eWise is a browser based KM framework that as a portal allows for easy personalization at the individual level. eWise is built using cutting edge technologies on a modular framework to provide greater flexibility in meeting the organization's needs. It is an open architecture product capable of sustaining upgrades, revisions and is completely scalable irrespective of the size of the organization.

Summary

The following improvements are possible with knowledge mangement:

Everyone thought electrons were particles, so they looked for particles, and they found particles and particle based rules. That gave rise to Newtonian science which in turn, was applied to management theory as scientific management. But when you look at it properly, electrons are both particles and waves. If you start looking for the waves, you suddenly find life is a lot different.
In exactly the same way, knowledge is both a thing and a capability. The trouble is that most people look for things, so that is what they find. Capabilities are more dynamic and more useful. You don't manage capabilities like machines because they constantly evolve. You manage capabilities as an ecology.
---- David Snowden

An organization's strength is no longer measured by physical assets alone. Today, experiences and insights - in other words, knowledge - are the most critical elements of a successful portfolio. Knowledge is not housed in the 'organization,' however; knowledge lives in people. Knowledge Management focuses on ways of sharing and storing the knowledge of individuals, as a means of improving the competency, speed, efficiency - and profitability - of the larger whole.

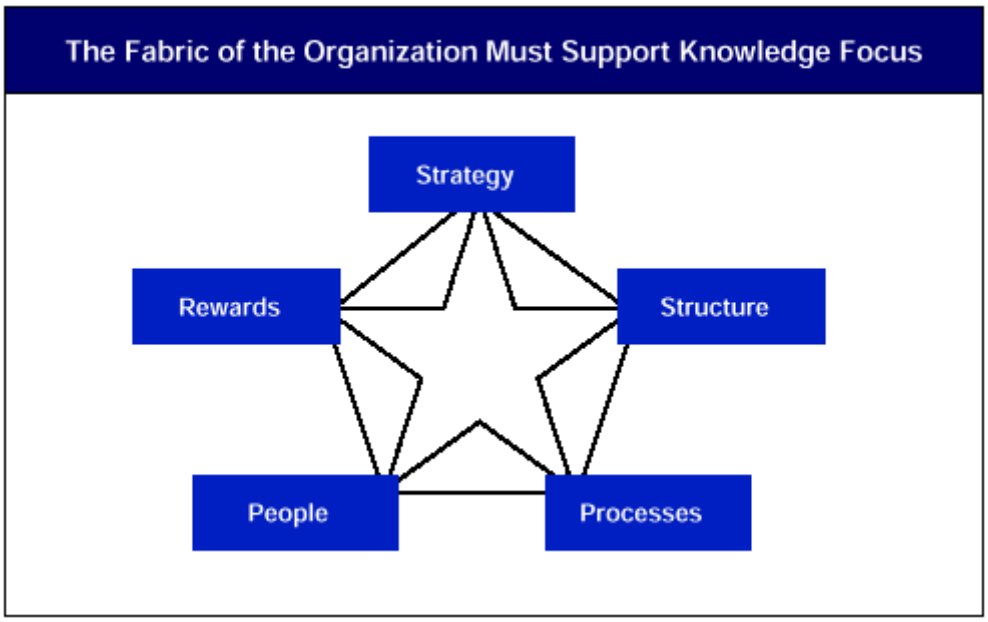
In the knowledge economy, the only sustainable competitive advantage is knowledge: creating it, applying it, managing it and deriving value from it faster than your competitors can. Knowledge defines and is embedded in the competencies of a company; knowledge management is a core strategic capability. Achieving strategic leadership demands ongoing innovation, creativity and improvement that create product and service offerings and effective and efficient processes that leave your competitors behind.

With top management increasingly committing to knowledge management as a strategic process, more and more companies are moving from evaluation to planning, piloting and production of KM applications. Most of these currently consist of collaborative systems, such as Lotus Notes/Domino, and intellectual asset management applications. But with KM being increasingly driven by the Internet, e-business and intranet content management applications are also on the rise.

Organizations want the ability to mine knowledge sources, which include such features as a central search facility and improved searching and indexing, content analysis and automatic categorization capabilities, improved data analysis and personalization functions. These features are inherent in the

concept of the corporate portal, the single point of access across the applications, repositories, processes and functions that have proliferated in the enterprise information environment.

Becoming a knowledge company demands much more than programs and technologies. The focus on knowledge must be built into the fabric of the organization. For most companies, successful competing on knowledge demands fundamental shifts in norm, values and behavior.



David Snowden recounted a story from the Sufi sagemasters about Mullah Nasrudin:
The other night, I encountered the Mullah on his hands and knees in a lighted parking lot and upon asking him he said "I am looking for my keys". So I proceeded to help him look for it. After about 5 minutes of searching, I asked Mullah to describe how exactly he had lost it upon which he said: "Oh, I know exactly where I lost it - its in the fields over there". "Then why are we looking for it here" I said. Upon which the Mullah answered "But its lighted here, and easier to look".

Until recently many knowledge management systems have been conducted on that principle: look for it under the light, in Enterprise interactions, in what we think are well lit portals of information, in places we already know. There, of course we have found precious things. Without carrying the parable too far, we may say that we are now moving to the fields, into the expressive culture of interactions, to look for our keys. As it often happens we may not find the keys we are looking for and may have to make new ones, but we will find all sorts of other things we never knew we had lost, or even had.

References

KMWorld Web Site

BRINT

From Xerox - Exploring the Know Network

The Microsoft Knowledge Management Strategy

Workshop Papers on Innovation

The Mullah Nasrudin:

Many of these teaching stories come from Sufi sources and are about a character called Mullah Nasrudin. Many nations of the Middle East claim the Mullah as their own, however, the Mullah, like all mythological characters, belongs to all humanity. The Mullah is a wise fool and his stories have many meanings on multiple levels of reality. These stories show among other things that things are not always as they appear and often logic fails us. When reading a Mullah story just enjoy it and allow your unconscious mind to get the deeper significance of the tale. Many of these stories were originally told by great Sufi poets such as Mullana Jalaludin-E-Rumi, Hafiz, Sadi, but were retold as Mullah stories. I'll start with a simple story called the boatman: The mullah was earning his living by running a ferry across a lake. He was taking a pompous scholar to the other side. When asked if he had read Plato's Republic, the Mullah replied, "Sir, I am a simple boatman. What would I do with Plato?" The scholar replied, "In that case half of your life's been wasted." The Mullah kept quite for a while and then said, "Sir, do you know how to swim." "Of course not," replied the professor, "I am a scholar. What would I do with swimming." The Mullah replied, "In that case, all of your life's been wasted. We're sinking." Mullah Nasrudin Jokes

Nitin Uchil is founder and President & CEO of Mindware, Inc. For the past three years he has been consulting at Ford Motor Company building a knowledge management framework to depict design verification, competitive intelligence, web-based training and content management. He has architectured web-enabled enterprise knowledge bases and expert system tools to house and intelligently mine competitive vehicle information, schedule/archive/correlate Test and CAE analysis, build prediction tools using statistical analysis, rule based systems and artificial intelligence to automatically store and sign-off deliverables using historical data via the Verification Portal. He is also responsible for administering the Computer Based Enhancement (CBE) curriculum at the Ford Design Institute that provides web-based training and testing courses that deliver interactive content using Java Applets & Servlets, Livewire, multi-media based CD-ROM using a back-end Oracle database. He is a graduate of the University of Oklahoma (1987) and has over ten years of experience working with engineering simulations related to aerospace and automotive applications in the fields of structural analysis and computational fluid dynamics. He has held engineering positions at Universal Analytics (1988-1989), the developers of UAI/NASTRAN, eBASE and ASTROS (structural analysis and optimization packages employing the finite element methodology) now part of MSC Software, Analysis and Design Application Co. (adapco) (1989-1996), consultants in aerospace and automotive engineering and the developers of the pre- and post- processor for STAR-CD (a computational fluid dynamics code), and TechneGroup Design (1996-1997), consultants in CAE Simulations now part of ICEM-CFD, a subsidiary of ANSYS Inc. He is currently in the process of defining BDRIVE.COM, a company created to integrate middleware to accelerate eBusiness.

Mindware is a Michigan based IT company dedicated to providing enterprise solutions in engineering and technology using intelligent mining schemes, client-server techniques and the object oriented methodology to deliver content with dynamic and interactive capabilities. More information can be found at http://www.mindware-inc.com/.