Preface

The ***Knowledge Management Strategies: A Handbook of Applied Technologies*** is the fifth book in the ***Knowledge and Learning Society Book Series***. Three titles are already available in the bookstores:

- *Intelligent Learning Infrastructure for Knowledge Intensive Organizations: A Semantic Web Perspective*
- *Open Source for Knowledge and Learning Management: Strategies Beyond Tools*
- *Ubiquitous and Pervasive Knowledge and Learning Management: Semantics, Social Networking and New Media to their Full Potential*

This book is complementary and is published together with the 5th book of the series entitled:

- *Technology Enhanced Learning: Best Practices* (Editors: Miltiadis D. Lytras, Dragan Gasevic, Patricia Ordonez De Pablos, and Wayne Huang)

For mid 2008, two more edited volumes which contribute further to our vision for the knowledge society are also planned:

- *Knowledge and Networks: A social Networks Perspective* (Editors:Miltiadis D. Lytras, Robert Tennyson, Patricia Ordonez De Pablos,)
- *Semantic Web Engineering for the Knowledge Society* (Editors: Jorge Cardoso, Miltiadis D. Lytras)

Introduction

Knowledge management (KM) is a buzz word of late 1990s. In an era of business transition, the effective management of knowledge is proposed as a strategy that exploits the organizational intangible assets. This fact has intrinsic market attractiveness and a great interest for practical guidelines for the implementation of knowledge management strategies. However, the term of knowledge management has been used to describe many different applications. In some cases the tag "knowledge management product" is attached to several software programs purely for marketing reasons.

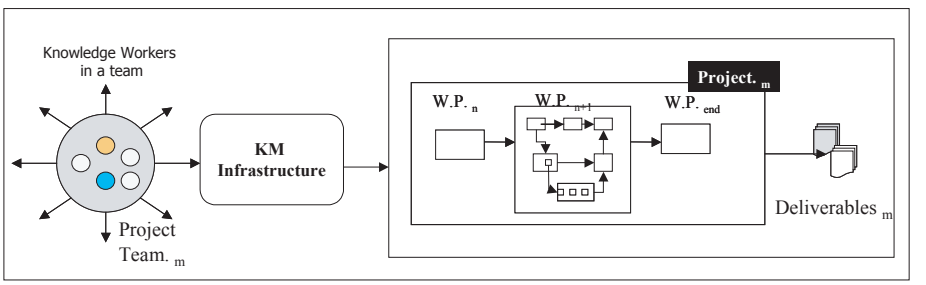
The motivation for this book was based on the fact that literature on knowledge management rarely concentrates on the practical aspect of KM. Moreover, in the situations where a book discusses KM technologies, this is based on a taxonomy which is difficult to align with real world situations. This book recognizes knowledge management as a complex sociotechnical phenomenon where the basic social constructs such as person, team, and organization require support from information and communications technology (ICT) applications. This is not only due to the complexity of the phenomenon but also due to the contextual nature of knowledge.

The inevitable relation of knowledge and strategy formation seems to be taken for granted in most approaches. From this perspective knowledge management is a contextual phenomenon and its performance has to be secured through enormous effort of codifying strategies that deploy specific technologies.

Figure 1 provides an initial stage for analysis: knowledge management infrastructure within business organizations facilitates project teams that work towards the achievement of deliverable *n* given deadlines. Of course teams are not the only level of analysis. KM is recognized as a critical enabler of qualitative achievements in the organizational and interorganizational level as well.

The book intends to give answers to problems that business organizations face when they try to implement knowledge management. Mainly two critical issues are addressed:

Figure 1. The basic scenario in a knowledge-intensive organization



- Which technologies to use for specific KM problems?
- Which strategy can guide the implementation of KM that corresponds to the answer of the above problem?

The ultimate objective of the book is to provide practical guidelines for applied knowledge management through the discussion of specific technologies. Or, in another words, which components provide the basic KM infrastructure and how the selection of several technologies can be justified through specific knowledge management strategies.

The whole book is organized around the following pillars of the knowledge management research agenda:

ARTIFACT LEVEL

- Managing Documents
- Managing Metadata and Semantics
- Managing Taxonomies

INDIVIDUAL LEVEL

- Constructing Yellow Pages of Experts
- Managing Individual Profiles
- Managing Tacit Knowledge

TEAM LEVEL

- Managing Workflows
- Managing Discussion Forums
- Exploiting Collaborative Work Systems
- Managing Team Dynamics

ORGANIZATIONAL LEVEL

- Building Best Practices
- Developing Knowledge Maps/Ontologies
- Managing Competencies
- Managing Organizational Memory

INTERORGANIZATIONAL LEVEL

- Managing Interorganizational Network
- Managing Projects
- Future Technologies

Our wonderful journey in the research and vision for the Knowledge Society has one more stop. In September 2008 [and in each forthcoming September], we organize the 1st World Summit on the Knowledge Society, http://www.open-knowledge-society.org.summit.htm].

The World Summit on the Knowledge Society aims at becoming the leading forum for the dissemination of latest research on the intersection of Information and Communications technology (ICT) and any area of human activity including production, economy, interaction and culture, and will be organized annualy in Greece.

Athens World Summit on the Knowledge Society brings together:

- Academics
- Business People, and Industry
- Politicians and Policy Makers
- Think Tanks
- Government Officials

The underlying idea is to define, discuss and contribute to the overall agenda on how emerging technologies reshape the basic pillars of our societies towards a better world for all.

This is why these five general pillars provide the constitutional elements of the Summit:

- Government in the Knowledge Society
- Research and Sustainable Development in the Knowledge Society
- Social and Humanistic Computing for the Knowledge Society
- Information Technologies for the Knowledge Society
- Education, Culture, Business, Tourism, and Entertainment in the Knowledge Society.

Last but not least we invite you to read the just published special issue on Semantic based Knowledge Management special issue we developed for the IEEE Internet Computing Magazine Issue: Sept/Oct 2007, Guest Editors: John Davies, Miltiadis Lytras and Amit Sheth.

We do believe that this edition contributes to the literature. We invite you to be part of the exciting knowledge management research community and we are really looking forward for your comments, ideas, and suggestions for next editions.

Structure/Editing Strategy/Synopsis of the Book

When dealing with **knowledge management** it is really of no sense in trying to be exhaustive. Not only because of the fast pace in technologies that support KM strategies but mostly due to the many different aspects of the domains. Moreover, when you are trying to investigate the new insights of KM, like social networks and the Semantic Web, then the mission becomes even more complex.

This is why from the beginning we knew that our book should be selective and focused. In simple words we decided to develop a book with characteristics that would help readers to follow several different journeys through the contents. We also decided to open the book to big audiences. While we could pursue through our excellent contacts and great network of collaborators a publication aiming to promote the discipline, we decided that it would be most significant (from a value adding perspective) to develop a reference book. And this is what we made with the support of great contributors: a reference book for KM strategies providing an excellent overview of the emerging research agenda and the state of the art. Having already the experience of the edition of four edited books and getting feedback from 100s of researchers from all over the world, we decided to keep the same presentation strategy. We tried and we think that we really have managed to develop a book that has the following three characteristics:

- It discusses the key issues of the relevant research agenda,
- It provides practical guidelines and presents several technologies, and
- It has a teaching orientation.

The last characteristic is a novelty of our book. Several times editions seem like a compilation of chapters but without an orientation to the reader. This is why every edited chapter is accompanied by a number of additional resources that increase the impact for the reader.

In each chapter we follow a common didactic-learning approach:

- At the beginning of each chapter authors provide a section entitled **Inside Chapter,** which is an abstract-like short synopsis of their chapter.
- At the end of each chapter there are some very interesting sections, where readers can spend many creative hours. More specifically the relevant sections are entitled:
  - **Internet session:** In this section authors present one or more Web sites relevant to the discussed theme in each chapter. The short presentation of each Internet session is followed by the description of an **Interaction** where the reader (student) is motivated to have a guided tour of the Web site and to complete an assignment.
  - **Case study:** For each chapter, contributors provide "realistic" descriptions for one case study that readers must consider in order to provide strategic advice.
  - **Useful links**: They refer to Web sites with content capable of exploiting the knowledge communicated in each chapter. We decided to provide these links in every chapter, even though we know that several of them will be broken in the future, since their synergy with the contents of the chapter can support the final learning outcome.
  - **Further readings:** These refer to high quality articles available both in Web and electronic libraries. We have evaluated these resources as of significant value and readers can definitely find them significant.
  - **Essays:** Under this section a number of titles for assignments are given. In the best case essays could be working research papers. The general rule is that we provide three to six titles for essays and in the abstract titles readers can find an excellent context of questioning.

Next, we will elaborate on the theoretical framework for this book.

Knowledge Management Strategies Underpinnings: Dynamic Flows in Business Organizations

In Figure 2, we depict two entities that are the main actors in projects within knowledge-intensive organizations: the person who carries experiences, skills, knowledge, cognition, and a learning capacity, which are realized in behavior and attitudes; and the project team, which utilizes the team synergy in order to achieve the desired

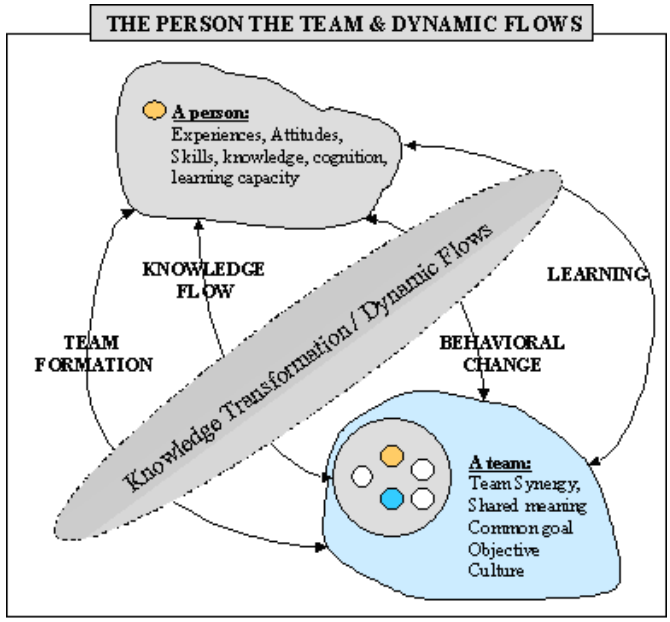
objectives, and is a qualitative whole in a knowledge-intensive organization. The concept of culture is also important here, since the concept of team is not a solid whole with distinct borders, but rather a dynamic formation. Shared meaning emerges through any action that is undertaken while working in a project.

The simple interaction presented in Figure 2 is not representative of practice. In knowledge-intensive organizations, several individuals and a number of project teams interact, forming a spaghetti-like group of relationships (Lytras & Naeve (eds.) 2005). A kind of network is realized with the various nodes playing an important role that merits research investigation.

The dynamic flows between these two entities are rarely explicit in nature. The dynamics of individual and team working together on a project formulate a contextual environment where information technology is used to facilitate the value exchanges. Four kinds of dynamic flows are depicted: team formation, knowledge flow, behavioral change, and learning. These "flows" are knowledge transformation mechanisms. The knowledge capacity of each person is in a continuing exchange with the environment of the individual, which can be the team or the organization (Naeve et al. 2007).

The knowledge flow relates to the characteristic of humans to constitute teams that share a common objective and thus facilitate the exchange of knowledge. In this context the critical question is the nature of knowledge. To this end, a number of knowledge category models (McAdam & McCreedy, 1999) have been proposed.

Figure 2. Dynamic flows in knowledge intensive organizations



A number of characteristics of knowledge have been distinguished providing the dimensions for categorization. The traditional approach seems to be the selection of two characteristics and the justification of a two-dimensional matrix where the specified kinds of knowledge are presented. Such abstraction is easily understandable but perhaps too simplistic. In the literature a number of knowledge categories models can be identified. The model by Boisot (1987) recognizes two critical characteristics of knowledge: diffusion and codification. Proprietary, personal, public knowledge, as well as common sense are the four suggested types of knowledge. A criticism of this model is that a distinction of personal knowledge according to whether it is uncodified or undiffused does not assume that this knowledge is not exploited. The person in daily practice refers to this knowledge and acts according to specific context. Hahn and Subramani (2000) provide a very interesting approach that investigates a framework of knowledge management systems using two basic dimensions: the locus of knowledge and the level of the a-priori structure. These two dimensions determine the boundaries for four quadrants, where several applications are positioned in order to support knowledge management. In each quadrant, specific knowledge types are determined providing an overview of knowledge types that require specific support through ICTs. Nonaka (1994) and colleagues (i.e., Nonaka & Takeuchi, 1995) promote the well-known distinction of tacit and explicit knowledge which seems to be a manifestation in knowledge management, since in its simplistic categorization describes the admission of hidden and revealed knowledge.

The learning flow corresponds to the archetype of human behavior, that through action and feedback, promotes the understanding and adoption to the environment. The contextual character of learning is of critical importance. Individuals, teams, and organizations have a learning capacity, which is not simply a cumulative result of individual contributions. A number of theories concerning learning have been identified for every context mentioned earlier. In an organizational context, Argyris (Argyris, 1976, 1991, 1993; Argyris & Schön, 1978) proposes a double loop learning theory, which pertains to learning changing underlying values and assumptions. Kim (1996) describes the relations between individual and organizational (single- and double-loop) learning, a theme that is expanded further by Naeve et al. (2007). Double loop theory is based upon a "theory of action" perspective outlined by Argyris and Schon (1974). This perspective examines reality from the point of view of human beings as actors. Changes in values, behavior, leadership, and helping others are all part of, and informed by, the actors' theory of action. An important aspect of the theory is the distinction between individuals' espoused theory (what they say) and their "theory-in-use" (what they actually do); bringing these two theories into congruence is a primary concern of double loop learning. Typically, interaction with others is necessary to identify this conflict.

There are four basic steps in the action theory learning process: (1) discovery of espoused theory and theory-in-use, (2) invention of new meanings, (3) production of new actions, and (4) generalization of results. Double loop learning involves applying each of these steps to itself. In double loop learning, assumptions underlying

current views are questioned and hypotheses about behavior are tested publicly. The end result of double loop learning should be increased effectiveness in decision making and better acceptance of failures and mistakes.

At the individual level many learning theories investigate the phenomenon of learning. Two interesting approaches are provided by Bloom and Krathwohl (1984) and Shuell (1992). Bloom's taxonomy of educational goals and the concept of learning function describe the concept of educational objectives while Shuell promotes a value carrier. Lytras, Pouloudi, and Poulymenakou (in press), through an integration of educational goals and learning functions, propose nine learning processes that potentially set the context of learning.

At the team level a number of theories promote the role of a group as a learning facilitator. Action learning (ARL-Inquiry 1996; Watkins & Marsick 1993) can be defined as a process in which a group of people comes together more or less regularly to help each other to learn from their experience. Cooperative learning (Bossert, 1988: Kagan, 1992) is a generic term for various small group interactive instructional procedures. Students work together on academic tasks in small groups to help themselves and their teammates learn together. In general, cooperative learning methods include three-step interview, roundtable, focused listing, structured problem-solving, paired annotations, structured learning team group roles, send-a-problem, value line, uncommon commonalities, team expectations, double entry journal, and guided reciprocal peer questioning.

The team formation is one more dynamic flow, which needs further investigation that goes beyond the scope of this paper. The coherence of the team requires flows that prove to the members the value of the integration. Bird (1989) and Hackman (1990) have identified five parameters that promote the effectiveness of a team. These are vision, values, processes, structure, and perceived business performance.

Finally, behavioral change (Bandura, 1977) enlightens the way in which individuals transform their behavior according to feedback they gain from participation in bigger social constructions. According to the behaviorists, learning can be defined as the relatively permanent change in behavior brought about as a result of experience or practice. In fact, the term "learning theory" is often associated with the behavioral view. The focus of the behavioral approach is on how the environment impacts overt behavior. The psychomotor domain is associated with overt behavior when writing instructional objectives. In the behavioral approach, we assume that the mind is a "black box" that we cannot see into. The only way we know what is going on in the mind, according to most behaviorists, is to look at overt behavior. The feedback loop that connects overt behavior to stimuli that activate the senses has to be studied extensively.

The previous analysis sets a context through the admission that some patterns of relationships contextually describe knowledge transformations without taking into account the sociotechnical nature of the phenomenon. In other words the relevance of KM applications to support these relationships is something that needs justifica-

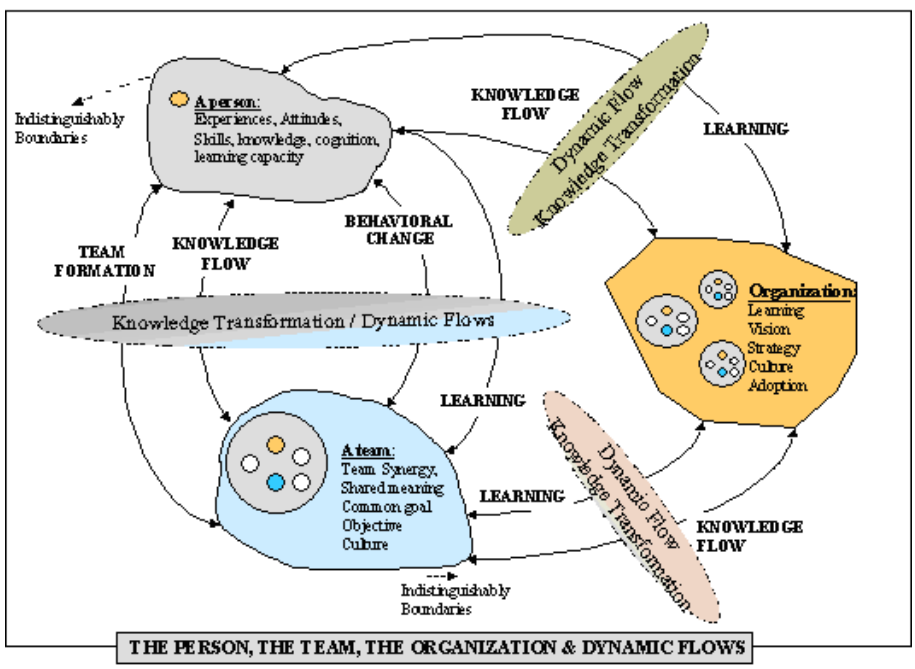
tion. If we expand the basic construct by adding the organizational level, then a richer picture of relationships is revealed. In Figure 3, the person, the team, and the organization define dynamic flows that are of critical importance in knowledge-intensive organizations.

The learning and knowledge flow link together person(s) and organization as well as team(s) and organization. Of course team-to-team linkages can be defined as well as person-to-person relationships (these are not depicted in Figure 3 for simplicity). These patterns of relationships imply specific scenarios of knowledge exploitation. The next step in our research approach is focusing on the sociotechnical dimension of the phenomenon of knowledge transformations and dynamic flows.

Knowledge Management Support Frameworks

The justification of an application as a knowledge management one has to be based on a context. In the KM literature several ways for categorizing KM applications can be found (Binney 2001; Lee & Hong, 2002; Nissen, Kamel, & Sengupt, 2000). Lee and Hong (2002) link IT applications to a four stages knowledge life cycle. Binney (2001) recognizes six elements on the KM spectrum (i.e., transactional,

Figure 3. The knowledge management intra-organizational landscape

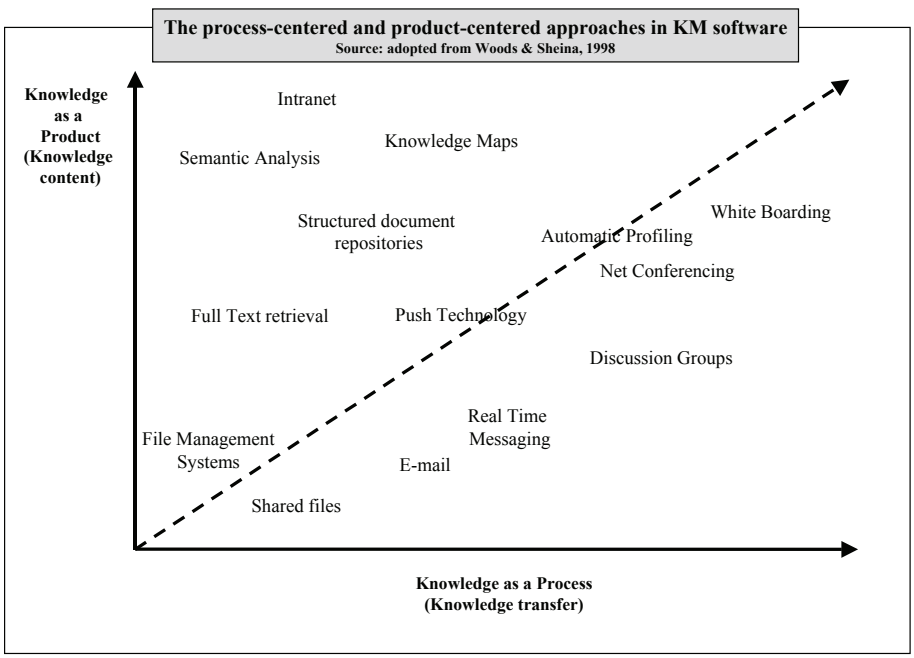


analytical, asset management, process, developmental, innovation, and creation) and links various knowledge management applications and enabling technologies to each element.

A common approach in knowledge management is the analysis of the phenomenon from two perspectives: the process-centered and the product-centered approach (Hansen, Nohria, & Tierney, 1988; Koehn & Abecker, 1997). Woods and Sheina (1998) promote a categorization of applications that support these two aspects of knowledge management using the two basic approaches of knowledge management and mapping several KM applications in a two dimensional structure. Figure 4 provides an overview of the suggested positioning. Applications include file management systems, shared files, full-text retrieval, push technology, real time messaging, e-mail, semantic analysis, Intranet, knowledge maps, structured document repositories, white-boarding, automatic profiling, net conferencing, and discussion groups.

The depicted allocation of applications seems to be very interesting since it gives an overview of technologies and two coordinates can be assigned to each position. A critical question concerning positioning is which is the scale in each dimension? What is the maximum considered abstraction of a knowledge product? Are there any ingredients that incrementally are realized through the employment of specific technological components? And in the knowledge as a process dimension, despite

Figure 4. The process-centered and product-centered approaches in KM software (Apostolou & Mentzas 2001) (Adopted from Woods & Sheina, 1998)

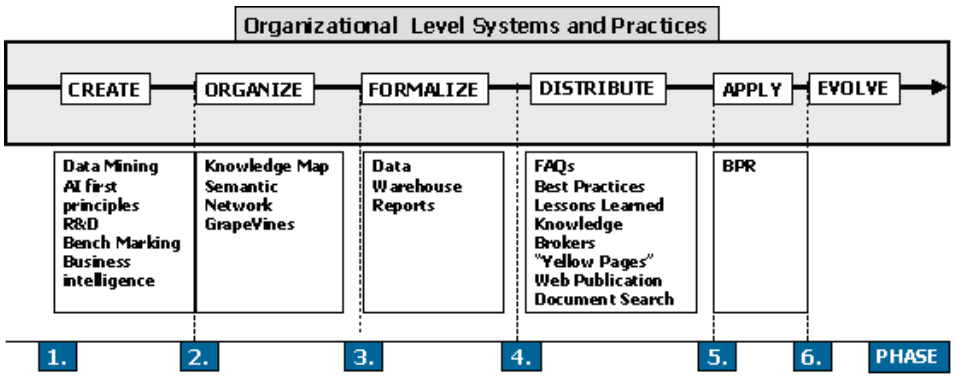


the simplification of emphasis on knowledge transfer, we have to answer the critical question concerning scaling. In this approach several other contributions provide insight. Especially in the case of knowledge as a process, the relation of applications to several knowledge processes is a common approach. Nissen et al. (2000) provide an interesting approach concerning this aspect. They distinguish three levels of knowledge management, namely organizational level KM, group level, and individual level. In Figure 5 we present their classification; the figure pays special attention to the distinction of the three levels. Their presentation is based on an amalgamated KM model which is a result of the integration of four others models (Nissen, Despres & Chaveul, Gartner Group, Davenport & Prusak). This model recognizes six knowledge management processes: create, organize, formalize, distribute, apply, and evolve.

At the organizational level, Nissen et al. provide a number of applications and practices that seem to support each specified KM process. At the stage of knowledge creation, they depict the importance of business intelligence, the R&D practices, the benchmarking approach, and data mining as well as artificial intelligence. In the subsequent phases they emphasize the importance of knowledge maps, semantics networks, data warehouses, and reports. It is obvious that the distribution process, where a number of systems and practices are recognized, has a special role in the whole continuum.

At the group and the individual level the depicted practices and systems present an accumulation in the organize and distribute phase. It seems that the key issue in KM support is the distribution of knowledge. But the critical question is how can the distribution of knowledge be secured if in a previous stage the extensive codification of knowledge is not promoted? Moreover this classification does not pay any attention to learning capacity. All these applications do not stand in any context (team, individual, organization) just for facilitating the daily workload. Knowledge management from this perspective is weak if we do not reveal its capability to sup-

Figure 5. Organizational level systems & practices (Adopted from Nissen et al., 2000)



port learning initiatives that increase the capacity for effective action. Moreover the learning dimension is underlying in any system since if their users will not be able to align their behavior and attitudes to the requirements of the systems then their usage would be limited. Unfortunately the intangible nature of knowledge makes the ROI analysis of knowledge management systems a difficult task. This process-oriented approach provides an insight to the phenomenon of knowledge management, and in the environment of knowledge-intensive organization, it can justify implementations.

A similar approach is provided by Lee and Hong (2002), who recognize a four-stage KM life cycle and they associate specific IT applications with each stage. Figure 7 provides the overview of their proposition.

In this approach, the learning dimension of knowledge management is also disregarded. This is really a very weak point in the models if we consider knowledge management as a sequential indication of stages. The knowledge infrastructure in an organization must not be considered using a librarian perspective of knowledge management. In this dimension the empowerment of learning capability in an organization is a continuing process where specific technologies must secure the human resources management. Drucker (1992) states that "it is safe to assume that anyone with any knowledge will have to acquire new knowledge every four or five years or become obsolete."

Figure 6. Group & individual level systems & practices (Adopted from Nissen et al., 2000)

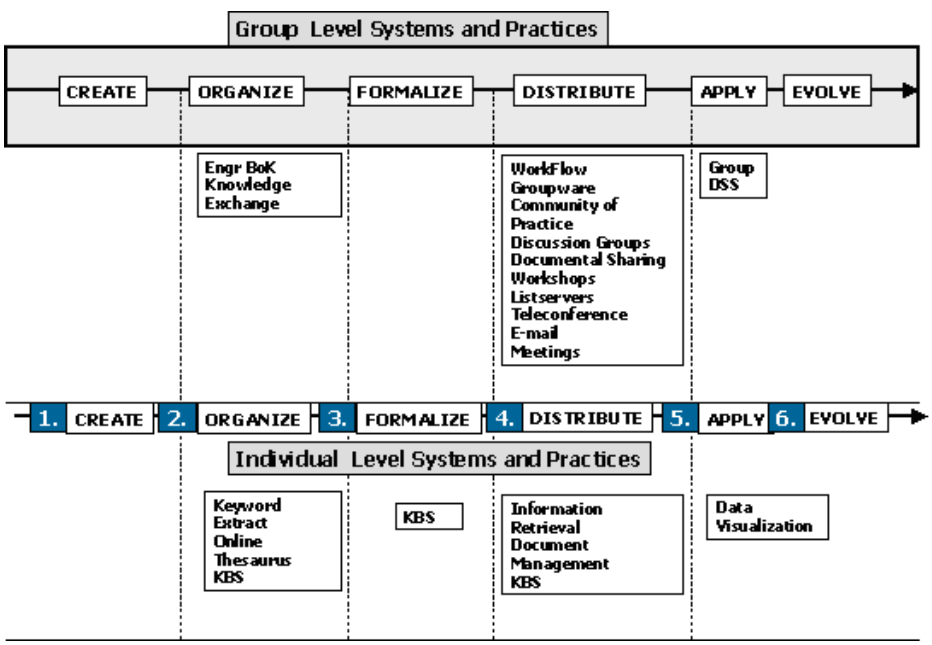
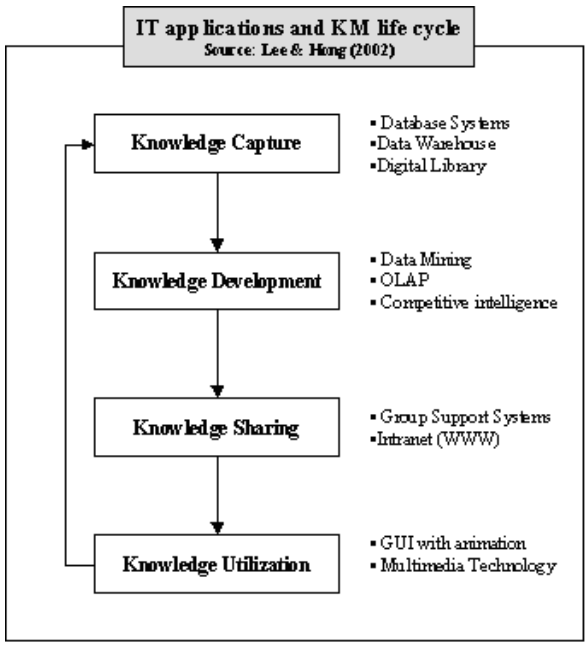


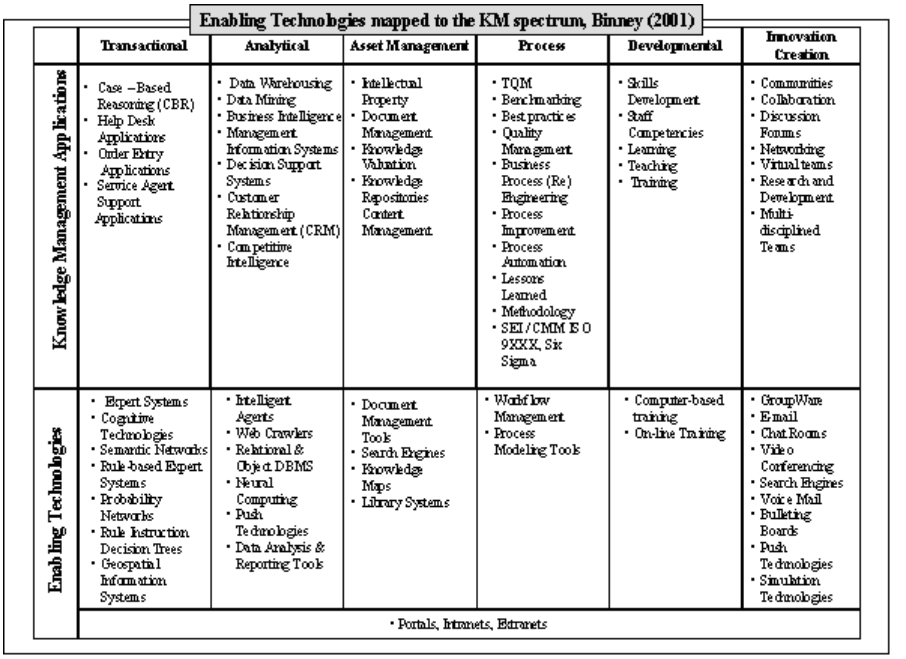
Figure 7. IT applications and KM life cycle (Lee & Hong, 2002)



An interesting categorization of KM technologies is provided by Binney (2001). In this mapping in the developmental stage of the spectrum, a number of knowledge management applications are recognized as of critical importance and some enabling technologies are depicted.

In the next section we provide the basic notion for the categories of KM technologies that will be discussed in the relevant chapters of this book. Knowledge exploitation as a dynamic flow requires the development of extensive practical capabilities in the direction of building competences. All the depicted dynamic flows in previous sections do not stand for just descriptive reasons. The revelation of the underlying logic forces the extensive analysis of infrastructures that support the realization of these flows. One of the most important obstacles in knowledge management is the persistence to descriptive models that unfortunately provide only formalization with limited practical implications. In this direction the proposed book expands further the ideas and the research presented in two published papers in the *Journal of Knowledge Management*.

Figure 8. Enabling technologies mapped to the KM spectrum (Binney, 2001)



Knowledge Management Strategy and Technology Convergence

In the quest of a knowledge management strategy and technology convergence we have carried out systematic research in the past 4 years investigating the relationship of these two concepts, mainly capitalizing on knowledge and learning dimension. In a recent publication (i.e., Lytras et al. 2002) we propose the integrated e-learning knowledge management framework, which recognizes two basic transformations. In Figure 9, this model is provided through a general presentation of the idea for dynamic e-learning environments (Lytras et al. 2002). The two circles in the figure represent two basic transformations. One is summarized by a 6-stage KM life cycle model that is responsible for general knowledge management purposes and a learning-oriented KM life cycle, which is responsible for the adoption of general learning object to reusable learning content. The second circle is based on a clear position that learning content is not guaranteed from general information/knowledge resources unless a specific adoption process for learning is undertaken. The second cycle depicts six learning-oriented processes, namely relate, adopt, attract, engage,

learn, and use. The underlying concept is that a kind of learning product is the value carrier in a learning context. The ingredients of this product include needs, knowledge, motivation elements, team synergy, problem solving capacity, and packaging, which are realized through the employment of the six learning-oriented processes. In parallel to the two approaches for the analysis of knowledge management, this approach is two-fold, since the learning case investigates learning as a process and learning as a product.

In close relation to the practice by Nissen et al. (2000) the anticipation of learning as a process gives an opportunity to map specific applications to each stage (Lytras & Doukidis, 2001). The depicted applications in Figure 10 give an overview of applications or application modules that empower a learning environment. Tools for needs assessment and online survey tools help the recognition of learning needs and promote the personalization and customization to learning needs. One of the most important problems in e-learning is the static content that limits the performance and the willingness of learners to enroll in e-learning courses (Lytras & Pouloudi, 2001). In the adoption phase the information resources are manipulated in order to match educational objectives and to become meaningful learning units. Special

Figure 9. The integrated e-learning knowledge management framework

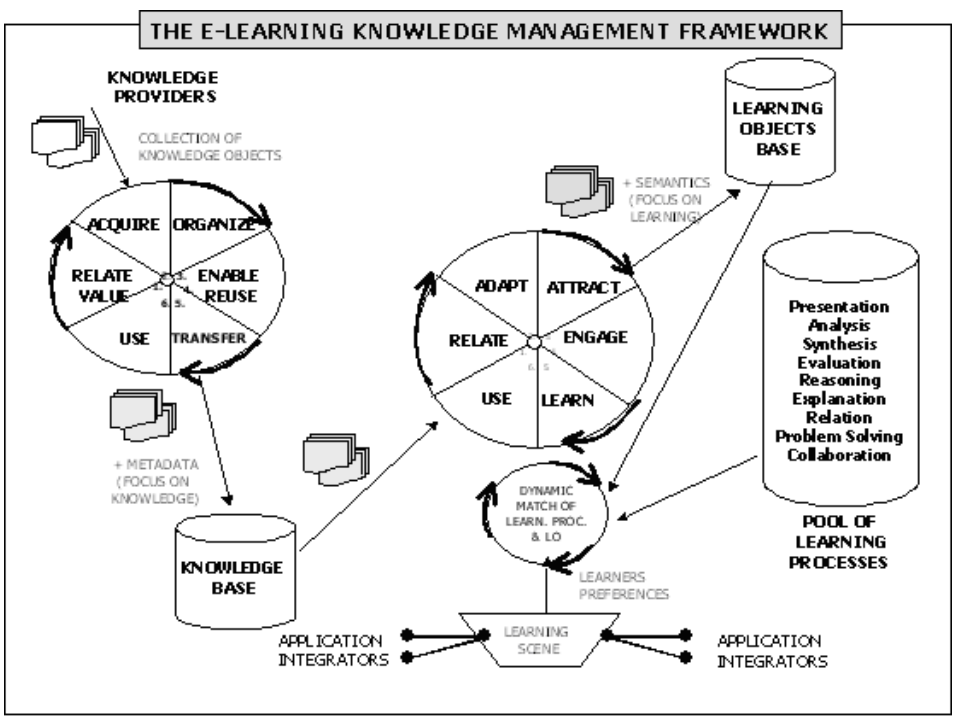
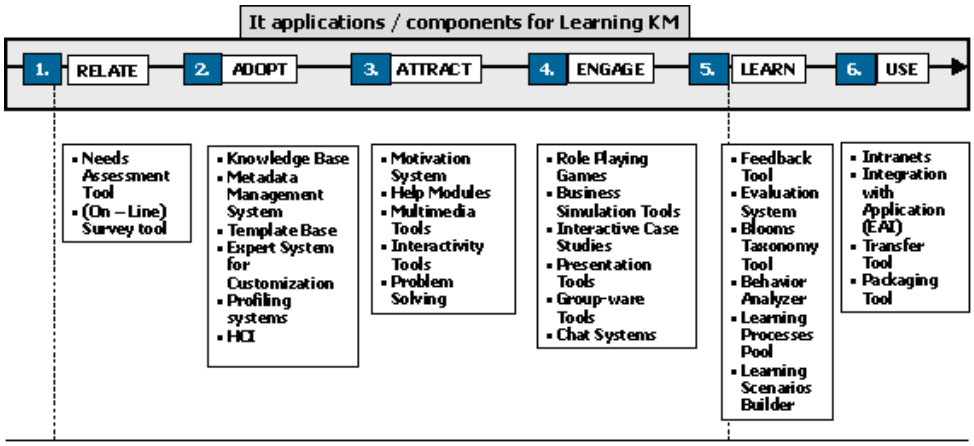


Figure 10. IT applications for learning support (Adopted from Lytras & Doukidis, 2000)



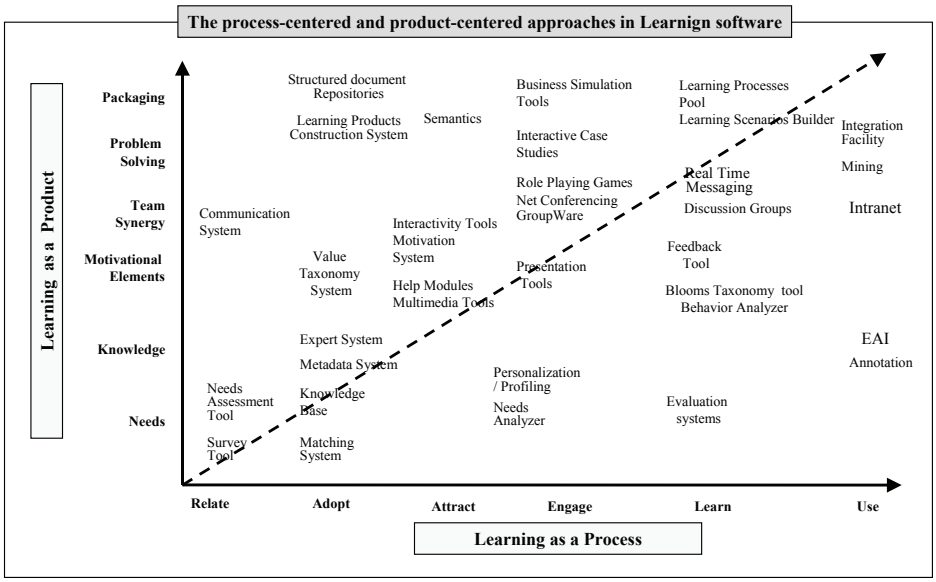
attention is paid to metadata and semantics as well as profiling systems and templates according to HCI theories is paid. In the stage of attract, where the subject of research is the realization of motivational elements, help modules, multimedia and interactivity tools, as well as systems that promote problem solving are very important. The stage of engagement facilitates the active participation of (e-)learners to the learning content, and from this perspective a number of applications are considered to promote the engagement: role-playing games, business simulation tools, interactive case studies, presentation tools, GroupWare, and collaboration tools. In the phase of learn, the learning effort must be evaluated. Given the complexity of the phenomenon of learning, this stage requires sophisticated systems that in general are absent in the majority of learning management systems. Such applications include feedback tools, evaluation systems, Bloom's taxonomy tools, learning processes pool, learning scenarios builder, and behavior analyzers. Finally in the stage of use, transfer tools, packaging tools, Intranets, Extranets, Internet, integration, with critical business applications (EAI) expand the information highways that bring together learners and content.

Lytras, Skagkou, and Doukidis (2001) investigate a number of application modules according to the proposed multidimensional dynamic e-learning model (Lytras & Doukidis 2000; Lytras & Odman, 2001; Lytras & Pouloudi, 2001; Lytras & Pouloudi, 2001; Lytras et al., 2002) which recognizes three critical dimensions for the effectiveness of learning initiatives that utilize information and communication technologies: knowledge management, e-learning pedagogy, and application integration. The justification of dynamic learning environments requires enormous effort in applications that investigate the complex nature of learning.

A first implication of our approach is the capability to propose a two-dimensional map according to the model proposed by Woods (1998), which gives emphasis on the categorization of several applications that support learning. In Figure 11, learning as a process and learning as a product are depicted on the two axes. In each dimension there is a scaling according to the distinctions that where made; learning product is a combination of six elements and there are six learning processes that describe the life cycle of learning.

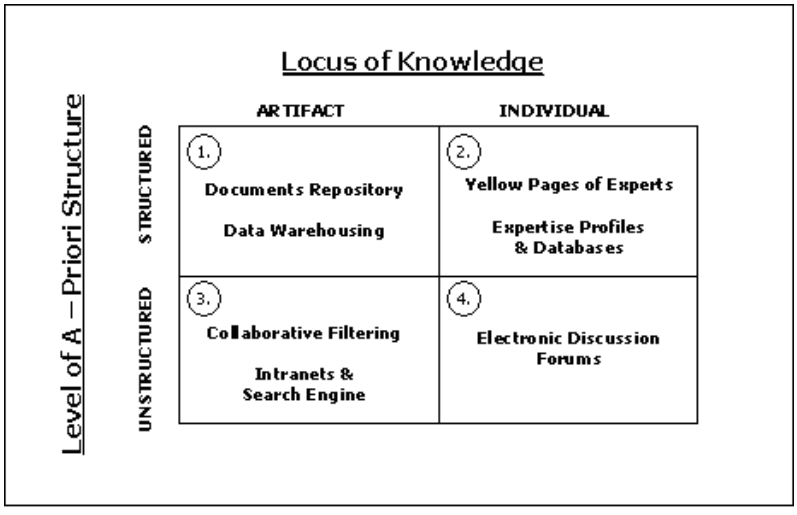
This two-dimensional abstraction can be used in order to provide an overview of technological components that potentially empower the learning performance within business units or organizations. In most cases, descriptive knowledge management models lack practical implications since they only pay attention to the modeling of knowledge flows without taking into account how descriptive narrations can support instrumental and normative aspects of practice. The proposed categorization of Figure 11 provides insight into how several applications support specific value constellations within a business context from a learning perspective. In this categorization the specified scaling permits the anticipation of the potential capacity of each technological component to realize the several value components of learning product as well as to support specific learning processes. For several applications this could be a multifaceted consideration for their placement in the theoretical abstraction.

Figure 11. The process-centered and product-centered approaches in learning software



This map requires an extensive explanation. The basic idea is that the two-fold approach to learning can be realized in business units if a number of infrastructures provide knowledge and a learning Web. The word infrastructure refers not only to IT applications but also to "soft" issues that reveal the role of the social parameters that constitute a sociotechnical environment. In this direction the research work of Hahn and Subramani (2000) proposes an interesting approach for categorization. In contrast to traditional matrix models that usually specify types of knowledge according to specific characteristics, Hahn and Subramani map KM infrastructures according to two very interesting characteristics: the locus of knowledge and the level of a priori structure. In Figure 12 their proposed model is depicted. A first comment is the fact that knowledge is considered to be either on artifacts or in individuals. This distinction poses a critical question: Knowledge cannot be found in teams or organizations? Or perhaps this distinction implies that these two locations are the final points of reference, since organization and team are considered to be a social integration of persons. In our opinion this distinction is really useful and quite sophisticated in its simplicity but it could be expanded further. Locus of knowledge could be the team as well as the organization, and in a way, the interorganizational environment as well. Concerning the second dimension of Hahn and Subramani's model, we have to argue that the structured or unstructured knowledge can support many different scenarios of exploitation. In our proposition, knowledge is considered to be the capacity for effective action and from this perspective one

Figure 12. Hahn, J. and M. Subramani, "A framework for lnowledge management support"



critical concern is to reveal the capacity of learning to provide a continuous loop that increases knowledge sharing and knowledge creation towards the quest for organizational performance.

The proposed framework of knowledge management support is based on the work of Hahn and Subramani but incorporates two basic revisions. First of all it recognizes that the locus of knowledge or learning is not only an artifact or a person but also a team and the organization as a whole. Knowledge and learning dynamics are critical characteristic of teams and organizations. From this perspective the level of a priori structure can have two different concentrations: on the one hand, knowledge as a knowledge product, and on the other hand, learning as learning content. This addition to the perspective of Hahn and Subramani (2000) modifies their model, and the four cells that they distinguish become 16.

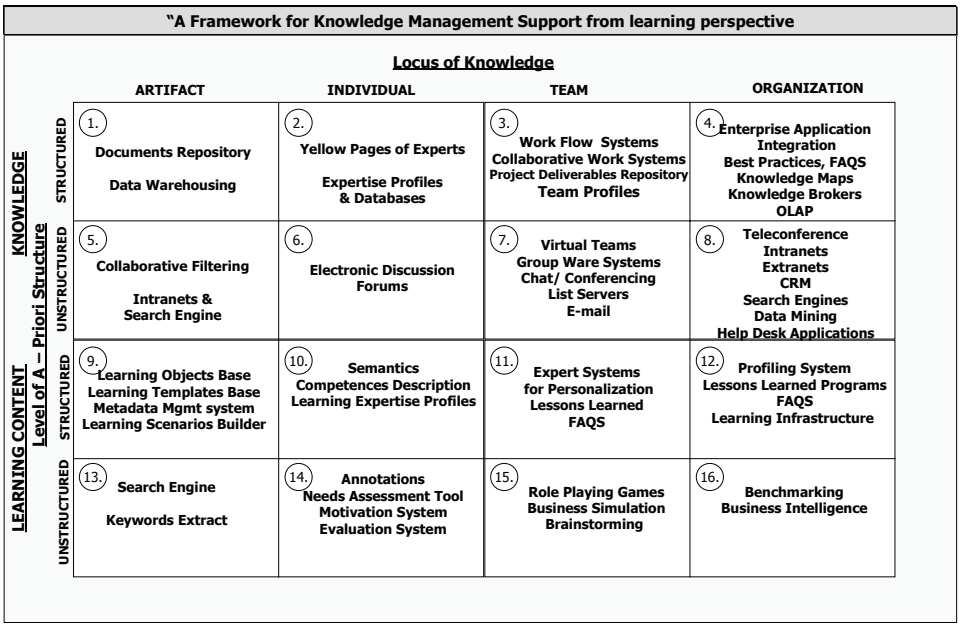
In Figure 13, the revised model is presented. In each of the 16 cells, specific IT applications are depicted according to their capacity to promote the main scope of knowledge management. The propositions of the model describe in synopsis the underlying logic that is summarized by the knowledge management and learning convergence. This framework guides business managers as well as academics in the way that it correlates IT applications to specific knowledge and learning dynamic flows. The concept of flow is basically justified if we describe a channel that diffuses a kind of an intangible product. In each cell of the proposed model a number of applications are highlighted. Of course in an organization the establishment of dispersed infrastructures according to the propositions of the framework is not the point. The critical question is if we can establish a learning and knowledge management infrastructure that can provide integrative services that match the requirements of the applications in the various cells. It sounds challenging but it is just the only way to establish effective knowledge management infrastructures with embedded learning capacity.

The Book Mission

Our mission for this book was to produce collaboratively "a value adding publication which will promote the discipline (both theory and practice) and will be accepted in the relevant target markets." This general mission inspires several objectives. The ultimate objective of the book is to deliver a high quality practical-oriented book that will help business units as well as organizations and institutions to deploy knowledge management effectively.

We see a tremendous demand for a practical book (cookbook) that will explain in depth the practical aspects of knowledge management (e.g., how to apply a KM strategy and which technologies to deploy). The target audience of this book can be distinguished into two general segments. We decided to call them the learning industry and the business market.

Figure 13. A proposed framework for knowledge management support from a learning perspective



In the learning industry five subsegments are highlighted:

- Students enrolling in KM courses
- Special interest groups on KM; for example, associations, public bodies, and so forth
- Adult trainers
- Educational policy makers (with special interest in KM)

Respectively, in the business market five more subsegments are distinguished:

- Managers (interested in implementing KM)
- KM specialists
- Knowledge officers
- Human resources management officers
- Business consultants
- IT managers

The specific added value we see in this book is by facilitating the creation of the ubiquitous business intelligence space. Knowledge management, learning technologies, and the Semantic Web in the last 5 years have gained a significant interest in the information technology research community. The integration of these fields will create a significant business interest for specific products and services, some of which are discussed in this book.

The contribution of this book to the literature of IT is significant. Information technologies are analyzed as sociotechnical systems. Business intelligence based on advanced knowledge management strategies that guide the deployment of technologies and infrastructures provides the context for the exploitation. Learning and knowledge jointly formulate a challenging landscape for the deployment of information technology since their performance is directly related to behavioral-soft issues.

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