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# IT SKILLS UTILIZATION: FROM RHETORICAL VERBALISM TO APPLIED KNOWLEDGE MANAGEMENT

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## Abstract

*The new challenging business environment recognizes the exploitation of the intellectual capital as a critical business process. Furthermore the need of the modern organizations to utilize their knowledge assets that are employed for the achievement of performance is more than ever well justified. Our paper discusses an advanced KM system, which is partially developed under an IST project called MODEL (Multimedia for Open and Dynamic Executives Learning), and a proposed system called KNOWLEDGE CHANGE submitted on the last call of IST.*

## Introduction

Knowledge Management in recent years has been one of the most frequently mentioned terms. The objective to formulate, evaluate and exploit theories and tools in order to set effective processes in business units seems to be in the leading priorities for the digital economy's enterprises (Armistead 1999). Besides that the management of knowledge assets in business units, incorporates the discovery of knowledge in many levels of the organization. Products, people and processes define a triptych of analysis (Quinn, Anderson et al. 1996). The market of the knowledge management tools comprises a massive range of solutions that help the capture, the organization, the management and the use of knowledge resources. Nevertheless it has been realized that the majority of such systems is just gloss of the knowledge management on its key dimensions. The MODEL approach is trying to define a new market of knowledge management solutions and tools. We could describe it as a niche market that facilitates the development of competencies and the exploitation of the human capital.

The core competencies in the modern organizations are constructed through vital business processes that in general provide a web of interconnections among people, knowledge resources, customers, tasks and evaluation standards (Civi 2000). The major observed problem in the current situation is the absence of knowledge management systems that increase the re-usability of knowledge for training purposes. The executive training is mainly accomplished with executive seminars and various workshops with reliance on undefined quality standards. Moreover most of business units suffer from their inability to support new hired employees according to the specific characteristics of their core business processes and business environment in general. The cost for training a new employee is superlative and increases if we take into account knowledge oriented and not only routine business processes. In other words we have an exponential increase for the cost of training or learning when the subject of the training is more value creating. The development of a tool that could manage effectively the required knowledge for the comprehension of knowledge processes (Gooijer 2000) is the objective of our research effort. The major research questions derived from our intention include:

- The knowledge delivered on executive training programs is something taken for granted or it incorporates synthesis of well-defined value components?
- Is there a simple learning scenario that fits best to the business process training?
- Can we distinguish learning processes that enhance and facilitate the knowledge delivery in an advanced system for executives training?
- Can we categorize these learning processes in a hierarchical way using a value metric? For example, can we distinguish learning processes on a value delivery basis allowing building learning scenarios of different difficulty and value?
- Can we analyse the logic of such a system and distinguish technological components? And is there any direct relation between the implementation of each component and the learning process that supports?

- Can we embed dynamic characteristics to the whole system based on the nature of the knowledge components and the diversity of learning processes?
- On a more abstract way can we create theoretical concepts e.g. conceptual maps or grids that could directly link business processes types with learning scenarios?

MODEL tool-set systematically pursues to answer the above questions. The overall objective is to justify the necessary components of a KM system that will be able to support the development of executives in business environments as well as Training Departments of Organizations, Corporate Universities, Distance Learning Programs, Universities, Learning portals etc.

## Research Context

The development of MODEL tool-set has to be based on extensive research. The specific characteristics of executives as learners as well as the understanding of the business processes in detail (Jackson and O'Dell 1998), require the analysis of many issues. Additionally the nature of learning is so complex that challenges the engineering of such a system that could manage the required knowledge. Knowledge management theory, learning theories, system analysis and design, Data bases, expert systems and web development are namely only a few of the key terms for the efficient implementation of MODEL tool set. Figure 1 summarizes our methodology for strategic implementation of executive training through advanced knowledge management systems.

### A METHODOLOGY FOR STRATEGIC IMPLEMENTATION OF EXECUTIVE TRAINING

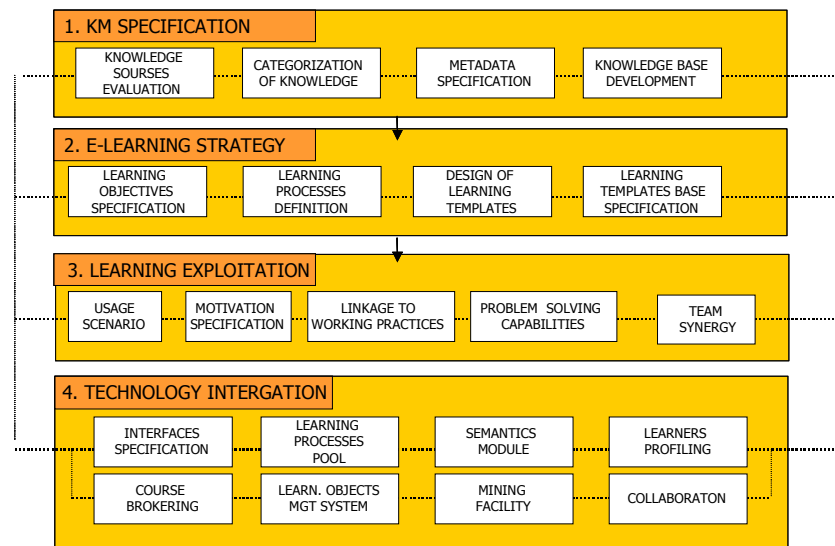


Figure 1. The Methodological Framework

Four general dimensions are recognized as critical steps for the enhancement of executive training: The Knowledge Management Specification, the e-learning strategy, the learning exploitation and the technology integration.

### Value Delivering Learning Processes

Knowledge management literacy is full of similar approaches for the determination of the value chain of knowledge transformation (Butcher and Rowley 1998). Our research is based on a clear assumption: Executive training delivers value to executives through a continuum of separate but complementary processes. These processes have to be clearly defined in terms of sub tasks that construct and exploit the learning content. From this point of view we can distinguish the concepts of learning processes and business processes. A business process is a composition of interrelated tasks that need knowledge in order to be implemented effectively. The identification, the categorization and the transformation in re-usable formats allow the establishment of an effective human resource management mechanism.

The critical question from this perspective is whether we can transform the critical knowledge in such a format that could be used for training purposes in business contexts. The emerging issues of enterprise portals as well as corporate universities (Dealtry 2000) base their attractiveness and capacity on flexible and dynamically constructed learning products. Such a facility formulates a new competitive weapon for the modern business organizations. The need for immediate utilization of knowledge capacity under pressure and validity conditions definitely justifies the business value of such a system.

Moreover the learning setting for a system like the one described above is very difficult to be defined. The essential concept of this approach would be the definition of specific learning processes that can manipulate separately or jointly knowledge

components. Their combinations model a variety of learning scenarios, which can be used by executives for personal development. Of course the linkage of business processes that incorporate the knowledge and learning processes can be manifold:

- The specification of learning processes appropriate for specific knowledge elements
- The classification of learning processes on levels of different knowledge intensity
- The specification of learning scenarios capable of supporting the executives training for specific business processes
- The dynamic construction of learning products through the employment of specific learning processes.
- The categorization of knowledge components in a hierarchy based on their value dimension
- The proposition of knowledge-business processes / learning processes matrix which specifies different modes of executive training.

The distinction of specific learning processes implies different levels of technological requirement and consequently more sophisticated technological supported environments. Each learning process is a combination of learning tasks, which jointly structure the learning space for the user. These learning processes provide constructional pieces that can be manipulated in different manner according to the different types of business processes. Of course it would be a much more useful if we could incorporate this ability and in the learner's side. Let's think about a Knowledge Management system on which the educational space is dynamically created according to the preferences of the learner or through a discovery of required learning processes.

The most challenging issue of our research is the detailed analysis of the learning processes from a logical perspective as well as from information required to support the logic and the functions of a Knowledge Management system. Consequently, the detailed analysis of the learning processes will provide an overview of the necessary data elements, metadata and procedures. An extensive approach focusing on the specification of metadata and XML components is currently the main research work that is undertaken. Metadata models for learning such as IMS, LOM, and SCORM are currently analysed in order to promote a new metadata set for learning purposes. The object-oriented analysis of such a system is not only critical for the success of the research effort but relates the learners' satisfaction directly to the necessary processes and data of the integrated learning environment. Figure two, defines the learning process Analysis as a combination of relevant learning tasks. The Author of the MODEL tool-set in order to use this learning process on a specific executive program that develops has to put effort on various requirements. For example, he has to provide the knowledge base of such a system a number of "relevant" objects such as theories, real world case studies, abstracts, experiments etc, so as to enable the student to find them.

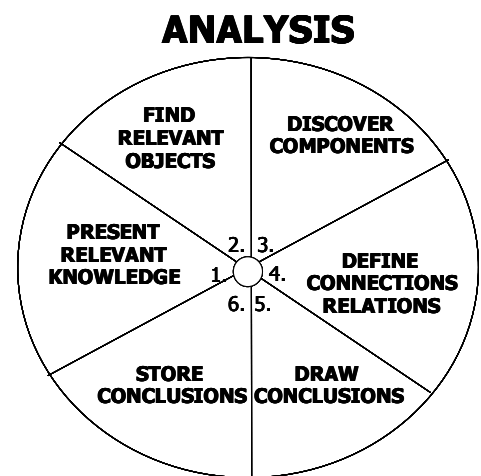


Figure 2. The Definition of Learning Process Analysis

### **Learning Product**

The second variable for the establishment of dynamic MODEL tool-set would be the development of learning products with a different mix of value components in terms of knowledge, attributes etc. The creation of the learning products and their exploitation will be utilised under a customised mechanism on the author and the learner side. MODEL approach is based on the belief that learning and especially executives learning is a synthetic process that delivers a kind of product, with specific characteristics to its recipients. In addition to that we have to mention that such a product is not only tangible (e.g. a 40-hour content material) but also intangible (e.g. incorporates degrees of motivation, problem solving capabilities etc). In general, every product due to its characteristics has a value.

In our opinion this marketing based approach can be really a re-designing tool for the executive training. The first implication of this approach is the need to clarify the term of educational product. We suggest that educational product is a value carrier (driver) that is formed through learning processes that have tangible and intangible value-adding components. The potential capacity of learning product is the full exploitation of the human capital that exists in business processes.

Our belief is that educational product is not only a schematic creation with little application value. Its components incorporate substantial value and furthermore their creation requires specific processes. Moreover the learning product on executives training is a mix of value delivering components. We distinguish six value components for the learning products of a system capable of supporting executive training: **Needs, Knowledge, Motivation Elements, Problem Solving, Team Synergy and Packaging**. The employment of technology will admit the step-by-step construction of learning product in a two-fold way. From author perspective who is the responsible for the incorporation of learning products ingredients and from executive learner perspective

who is going to use the functionalities of the KM system in order to find the appropriate learning products for his/her development and to customize the learning scenarios in a value delivery mode.

Through this approach the MODEL tool-set can be developed further. The Learning products construction on a real business environment has to transform business processes in specific learning products, suitable for learning purposes. The critical issue from this perspective is to be able to develop a grid on which every business processes could be related to specific learning processes. The new concept describing this transition is the concept of learning template. A first implication of our intention to create a theoretical tool capable to map the relation of a business processes to a mix of different learning processes is a grid that helps the relation of any business process to specific learning processes according to their embodied value. A learning scenario is a combination of learning processes that formulate the educational space for the trainer and the executive trainee. A first approach is presented in figure 4. The two dimensional grid defines four separate quadrants capable of describing four different learning situations. We distinguish four learning situations that are supported by different learning processes:

1. Understanding
2. Meaning creation
3. Process understanding
4. Intellectual Capital Exploitation

The conceptual model implies that every business process could be broken down into separate business tasks that can be positioned somewhere on the learning grid. Consequently this approach could be analysed further in order to specify in a more detailed way the parameters of each learning situation. The selection of advanced learning processes with increased information transformation requirements enhances the quality of the achieved learning goals. The value delivery through the MODEL system is organized through the employment of specific learning templates. Of course the value dimension of such a system doesn't imply a concrete measurement system of value satisfaction. The intention is to formulate a method on which the trainer would be responsible for the maintenance of all the content material capable of supporting different value levels of trainee exploitation. From this point of view the MODEL learning templates help the learner to organize the learning process. The aim is not to create predefined content sessions but to establish knowledge discovery mechanisms that potentially involve the participation of co-workers, other executives' knowledge sources from the external business environment etc.

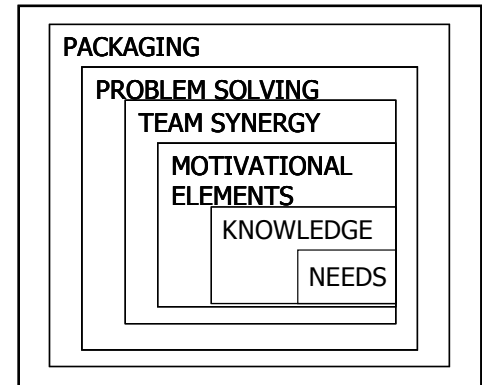


Figure 3. The Learning Product and Its Value Components

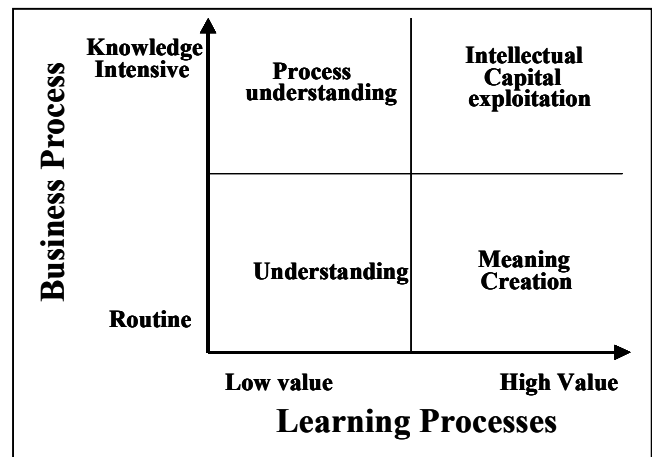


Figure 4. The Business to Learning Process Grid

### Logical Presentation of MODEL Tool Set

All the above stated parameters vary the MODEL approach. The desired outcome of extensive research is the preparation of a logic model for the whole system. The dynamic nature of MODEL approach is critical. Our experience from various national and European projects designates the difficulty of learners to adapt to distance or computer mediated environments when the content is static and the learning scenarios predefined. The establishment of dynamic variables is not a simple subject of research. The MODEL tool-set is trying to realize the dynamic feature using the Knowledge Management approach that is explained below.

#### Generic Knowledge Management Approach

Through the combination of the two life cycles, the knowledge objects are transformed dynamically to learning products through specific consideration. The XML language increases the capability for the inclusion of semantics in knowledge objects and every

knowledge stage as well as every stage of the transformation model enriches the initial knowledge objects with specific metadata. The proposed model that is presented in figure 5 depicts the double loop knowledge management exploitation. With no doubt the full utilization of the proposed model requires further explanations and justification. For example in our approach the transformation framework intends to support a sophisticated e-learning system where the educational scene is constructed dynamically through the deployment of well defined learning processes.

To sum up the whole model claims a role of an effective knowledge management mechanism for learning purposes. The proposed model permits the operation of an integrated knowledge management environment and a learning agent capable of supporting virtual universities and corporate learning portals. Under conditions this framework also, can implement technological infrastructure that will collaborate with crucial business information systems such as ERP's. The realization of organizational memory can't be based on theoretical models but requires extended technological considerations and enormous development efforts.

Each of these knowledge transformation processes formulates a KM framework that can be used as a guide for the MODEL training strategy. The underlying ideas for their selection include:

- The relation to specific training needs or problems
- The customisation of content according to the discovered needs or the desired learning scenario
- The incorporation of motivation modules able to enhance the active participation of executives to the learning process
- The development of engagement mechanisms, implying more sophisticated learning situation
- The establishment of concrete learning processes efficient to achieve different learning goals
- The development of delivery modes able to support the daily business life of executives

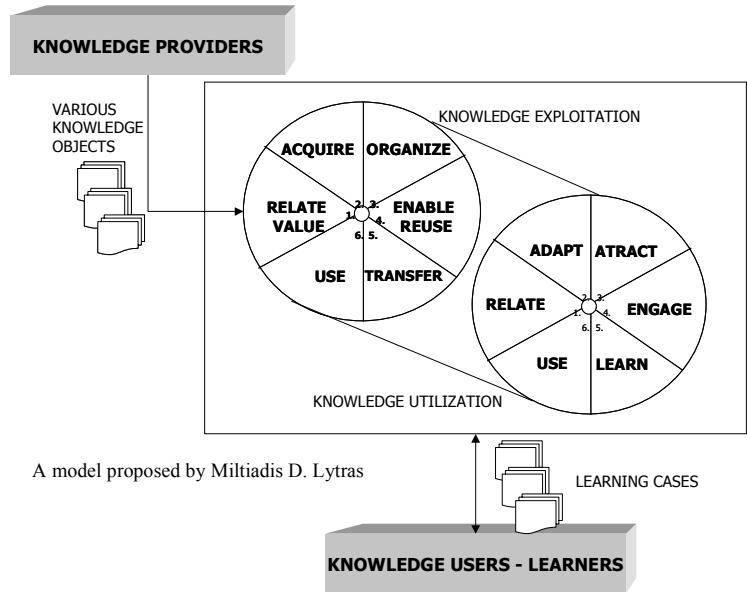


Figure 5. The MODEL KM Framework

The objective is to improve the quality and the performance of the training effort and to make easier the access to its content. It is really very interesting to expound this fundamental idea in order to define a broader set of issues including the support that technology can provide to them. Our intention is to create a full justification of the technology components that must be employed on a full-integrated KM environment for Executives Learning.

**MODEL Overview**

The figure 6 provides an overview of MODEL toolset. The presented subsystems are trying to support the concepts that we discuss on a practical way. In the next year we will put enormous effort on combining the capabilities of Oracle 8i and XML in order to make real all the promising but difficult in the development phase subsystems. The analysis of all the learning processes in detail and their specific description will allow the development of the Learning Processes Pool. This aim to be a dynamic construction that will contribute specific learning

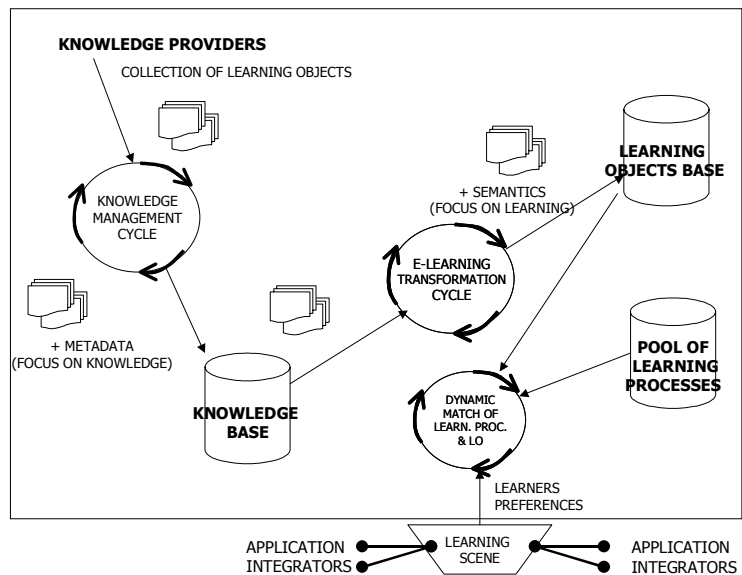


Figure 6. The MODEL Architecture

scenarios that have to be chosen by executives on a value basis. The Business to Learning Process Grid concept will support the Business to Learning Process Matching Systems that will be responsible for the development of a whole learning scenario suitable for specific business processes. The learning templates will facilitate the realization of the learning scenarios providing the base ground for the incorporation of the learning products. The metadata agent tool will secure the knowledge components management on a systematic way since the establishment of value components is required for every learning object. This subsystem is really very important for the effective operation of the MODEL tool set because both the learning templates as well as the learning scenarios have to deliver learning products with value components. The executive learner will use the MODEL tool-set specifying the mode of training that best fits to its needs.

## Conclusions

The MODEL approach sets a number of research issues that have to be analysed. The incorporation of dynamic and customized mechanisms that support the executives training has to be based on new concepts. The scientific justification of these concepts is really a challenging issue. The analysis of learning processes in detail; the development of value hierarchies and the establishment of learners profiling mechanisms are the crucial issues for the development of a dynamic learning environment. The need for the exploitation of knowledge in business settings makes the undertaken effort quite promising. With no doubt the successful implementation of MODEL tool set will provide new perceptions for the nature of executive training. Furthermore the integration of this system on the human resource department of organizations expands its potential usefulness, as it becomes the major personal and team development tool. Finally the value orientation of the underlying idea has a clear objective: To prove the willingness of trainees to follow specific learning scenarios according to their perceptions for value delivery. We are looking forward for any comments concerning our research. Do not hesitate to contact us by email: mdl@aueb.gr. , Or visit the web site of our research unit in the following URL: www.eltrun.aueb.gr. We are looking forward in collaboration for the value justification of executive training.

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