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NETWORK-BASED TRAINING: A NEW PARADIGM OF THE NATO TRANSFORMATION PROCESS IN SUPPORT OF THE COMMAND AND CONTROL SYSTEM

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I. GENERAL ASPECTS OF E-LEARNING, E-EDUCATION AND E-TRAINING

E-learning is the general term which defines the new educational paradigm, based on information and communications technology. The boundaries of e-learning are not clearly established. Most of the e-learning experts consider that this concept comprises all educational aspects which can be fit into the information age. From this perspective, we could meet a wide variety of e-learning solutions depending of the many variables and all are related to the specificities of institutional educational systems and their aims and objectives. None of these solutions is exhaustive and none can be exported to other similar institutions. However, one thing is certain: each of them is based on main principles, as follows:

- They use the information and communication technology in order to deliver knowledge and to improve the learner's abilities.
- The core of e-learning is represented by the digital content. Nevertheless, developing the digital content is not

based on the general standards, and this aspect has a negative impact on interoperability and content repository.

- It is a student-centered system.
- There is more flexibility in learning time management. Thus, as a result, we can speak about two different ways to deliver knowledge: synchronous and asynchronous or, in other words, under or without the teacher's assistance.
- Courses are shared by different types of networks, especially via the Internet.

Let us cast a glance on this picture (figure 1) showing the most representative elements of the e-learning system.

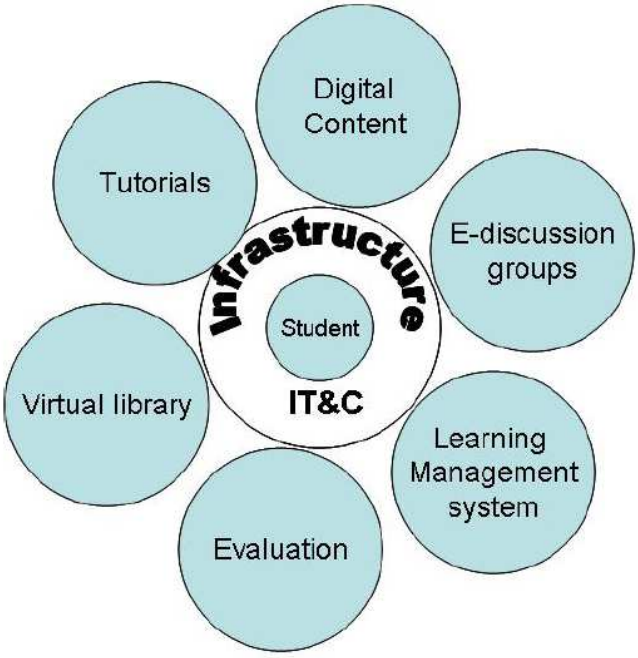

Figure no 1. Generic e-learning framework

The students are in the center of the system, surrounded by the IT&C infrastructure, hardware, software and communications networks on which the digital learning support is laid. This framework is designed to conduct the learning processes to meet the learning objectives. But which are those? Are those objectives

different from the traditional learning approach? The answer is definitely NOT. In this case the differences could be not others than teaching tools and methods, in order to deliver knowledge.

In the spirit of this article, and, of course, according with well-known experts, we have to accept that e-learning is the generic term which gets shape only in the strict relation with the learning objectives of the institutions. The latter could cover a very large area of interest, from primary education to universities or multinational corporations. The learning objectives are very close to the structure of the human resources, their expectations, professional skills, area of interest, etc. In this case, it is clear that each of those types of institutions looks for specific e-learning solutions. Thus, if we try to cut any component of the generic e-learning model, we will notice that the model could be ineffective. In conclusion, adapting or tailoring an appropriate e-learning system upon the institutions' requests should be made inside to the e-learning components.

None of the e-learning company providers produces customized solutions: their products are general, in accordance with standards, and can be adapted based on the institutions' operational requests – tailored solutions.

In figure 2 is represented a simple scheme by means of which we try to explain the relationship between the dimensions of individual preparation for life. Family, school and society generate the even influence about the person, but each of them covers other dimensions of individual learning. School and society are situated at the base of this triangle, along with those who have the major responsibility (but not exclusive) to develop skills, knowledge and aptitudes. Consequently, if we want to speak about using IT&C in learning activities, we have to concentrate on this ensemble without excluding the others.

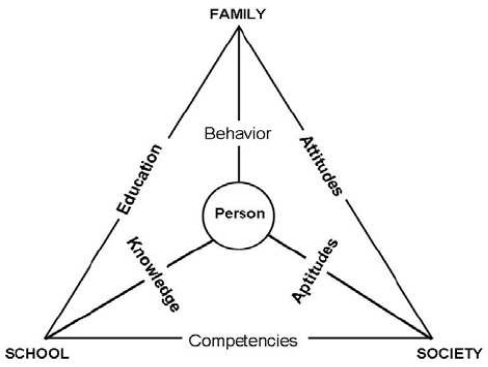

Figure no 2. Dimensions of Life-Long Learning

Probably, when the experts divided e-learning in at least two main directions, e-education and e-training, they took into consideration, besides the formative objectives, both the institutions in charge and the tools and methods to reach the objectives.

II. DEVELOPING THE ADVANCED DISTRIBUTED LEARNING SYSTEM IN "CAROL I"NATIONAL DEFENCE UNIVERSITY

"Carol I" National Defense University is the most important military education institution of the Romanian Ministry of Defense and, consequently, we have an important role in the transformation processes of the military forces in accordance with the new security environment and the new NATO member status.

The missions of the National Defense University (NDU) are orientated in two main directions:

1.To prepare military and civilian leaders and experts selected for management and expertise positions in the field of national defense and security.

2.To conduct scientific studies required by structures with responsibilities in the national defense and security area.

The NDU has also a major role in the Modeling and Simulation (M&S) Plan for the Romanian Armed Forces (RAF). The roles of NDU are as follows:

- To provide M&S instruction to NDU personnel;
- To perform M&S education planning for the RAF;
- To provide core M&S educational material development;
- To function as the Pilot Center for Advanced Distributed Learning (PCADL) within RAF;
- To supervise the graduate and post-graduate level modeling and simulation education program;
- To integrate the use of technology to enhance educational curricula throughout the RAF education system;
- To meet RAF analysis and study requirements.

Besides the role in the military education system, we are intrinsically connected to the National Education System and we have National Accreditation under the Bologna processes documents.

In this situation, the NDU has to be compliant with both military and civilian standards which cover the distance learning process as well. We have therefore considered that it is necessary to develop an e-Learning system compatible with both sets of requirements.

We are convinced that e-Learning is the future trend in the education field and, sooner or later, it will be present all over the world, as well as in the military education systems, and we want to be prepared to make it effective. Moreover, it is

true that nobody is fully prepared in this moment to use the e-Learning tools and, consequently, through this research program, we are trying to bring closer to teachers and students knowledge, expertise and tools in this domain.

Starting with the major role and interests in the e-Learning field, in the autumn of 2004 the NDU set up a new department, a specialized one, called the Advanced Distributed Learning Department. The mission of the ADL Department is "*To make effective the educational activity based on IT&C and generate, develop and manage the distance learning curricula under the national educational laws and in full accordance with the NATO ADL principles*"; our motto is "*From information to knowledge through the power of information technology applied in training and education, where, when, what, and to whom it is necessary*"

The effort of the ADL department is two-fold and defined as e-education and e-training. E-education is focused on the Bologna Process and its main interests are the developing of the capabilities covered by the Bologna documents, called educational services support. These are under the national educational requirements: bachelor's and master's degrees, doctoral studies, post-graduate on-line courses (on-line master's). E-training is considered to be the most appropriate to meet NATO requirements and standards and has, as a long-term purpose, to convey the military capabilities from individual to team. E-training relies on the Advanced Distributed Learning concept and is consequently based on SCORM standards.

Its objectives are: increase of the level of students' abilities and knowledge; flexibility in course structure and content; use of efficient system education management tools; more freedom of thought; compatibility with the National Education System; integration in the NATO military training system.

The beneficiaries of the e-Learning network developed by the NDU are the following:

MoD military and civilian personnel; personnel from others ministries involved in the Romanian security and defense system; governmental and non-governmental agencies; civilian society; personnel from NATO/PfP countries.

Starting with the general picture of the e-Learning system which has three essential components, hardware and communication infrastructure, e-Learning platform and digital contents, we have created a model shown in figure 3. Our model has three levels, each of them covering one segment of the e-Learning framework: *infrastructure, learning management system, digital content.*

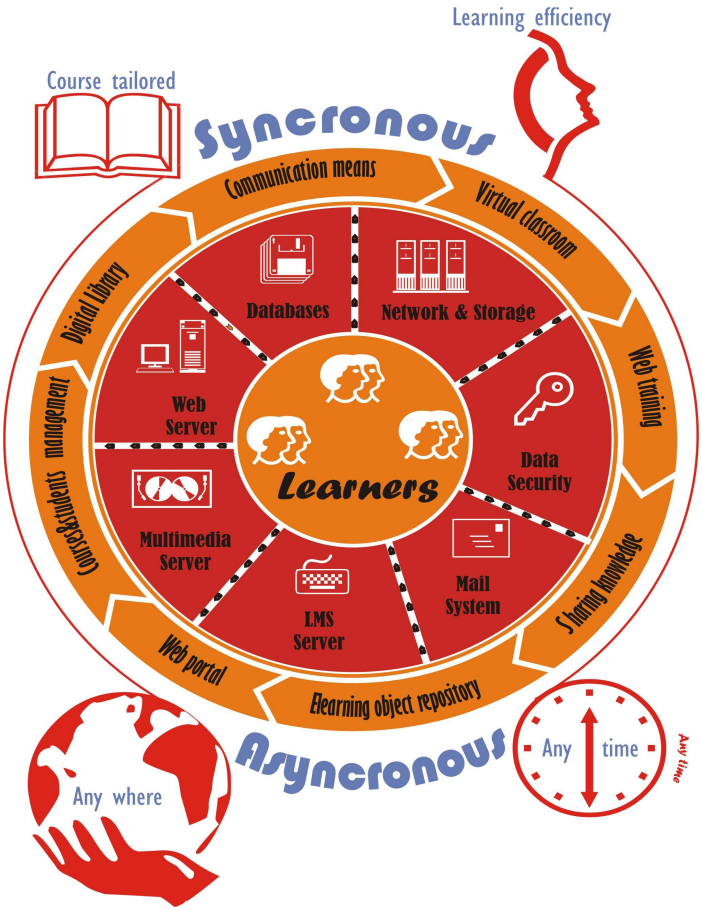

Figure no 3. NDU e-Learning model

III. E-EDUCATION AND E-TRAINING COMMONALITY AND SPECIFICITY

The changing nature of society and work means that professional or vocational skills are increasingly not enough. The complexity of the work organization, the increase of types of tasks employees are called upon to carry out, the introduction of flexible work patterns and of team-work methods mean that the range of skills used at the work place is constantly widening.

Similarly, society as a whole is less uniform thanit used to be, so that personal skills (such as adaptability, tolerance of others and of authority, team work, problem solving and risk taking, independence, etc.) are more widely required if people are to live together in tolerance and respect for each other. The most important of these skills is the ability to learn - maintaining curiosity and interest in new developments and skills - without which lifelong learning cannot exist.

For many teachers, however, this ability is difficult to stimulate and its development should therefore be a focus both of teacher training and educational research in the coming years.

Part of the learning process is the promotion of active citizenship. The focus of active citizenship is on whether and how people participate in all spheres of social and economic life, the chances and risks they face in trying to do so, and the extent to which they therefore feel they belong to, and have a fair say in, the society in which they live. The promotion of active citizenship and employability are to be seen as complementary. Both depend upon people having adequate and up-to-date knowledge and skills to take part in, and make a contribution to, economic and social life throughout their lives. In this context, it is important to reduce school failures. At the same time it has to be noted that non-formal learning also promotes young people's employability and develops their competencies and skills.

Current ICT integration into education is focusing attention on the formal and non-formal contexts of learning, on their organization, on the time and space environment as well as on the heart of learning, knowledge itself. New support services are required in order to ease the use of ICT and to multiply the achievable pedagogical gains, from services that facilitate the use of technological equipment, to services that ensure Internet security, and to services that provide better tailoring of the learning process in guiding, coaching, and tutoring individual learners.

Starting from this point and making a short review of education and training by means of well-known classical methods, the logical result is beyond any doubt: if training and education are different in the classical approach, so are they in the digital system.

Another question arises now: which are the main differences between education and training in the classical framework and how are they reflected in the new e-Learning approach?

2.1. E-education side

E-education is more specific for the formal and institutional educational framework, from primary schools to universities. Consequently, the target group for e-education is represented by scholarships and students. The latter need to accumulate

a large variety of knowledge, to learn how to think, to connect all school values with the reality of life, to transform theory into practice, a.s.o. For this reasons, the e-content prepared to be delivered by IT&C infrastructure, designed for self learning or assisted by the teacher, has to be in full accordance with the didactic and pedagogical principles.

It is not our intention to go any deeper into the content and e-Learning object regarding the scholarship level; there are many other studies made by experts, but it is clear that the content at this level is more descriptive in the text or made more explicit by the multimedia objects.

2.2. E-training side

The e-training term is more widely used in close association with the Life-Long Learning in the adult learning area, professional skills development, and corporate training activities.

In the area of training, work placements are valuable in enhancing employability and in offering an insight into the world of work. Links with employers are also important, for example, in providing trainers with a perspective on future skill needs. The usual area of interest for the e-training aspect could be:

Vocational and Skills Training

- Further and Higher Education
- Corporate Induction and Training
- Professional Development
- Specialist Technical Training
- Statutory and Compliance Training

Due to our area of expertise, i.e., military education, we can state that this sector is more relevant in using IT&C, in order to enhance the abilities, capabilities, skills a.s.o.

In the military field, part of the term associated to e-training has been defined as follows:

> *General Military Training.* Training and/or education received after initial training and education, roughly during the first 2-4 years of service, usually providing initial preparation and certification for a specific task, job, and/or career.
> *Professional Development.* Training and/or education received after general military training and education, roughly after about 4 years of service. Professional development includes both technical skill training and career education.
> *Technical Skill Training.* Training received any time after initial

training, emphasizing preparation of individuals or teams for specific tasks, jobs, or duty assignments (e.g. operation of specific equipment, tactical language training for specific locations).

According to the US military experts in education and training sector, over a quarter of the military from all services are enrolled in different forms of training. The permanent training costs are very high, including both educational budget (i.e., teachers, facilities, laboratories, and exercises) and the cots allocated to accommodation, transportation and other personnel.

Developing an integrated e-training system could bring many advantages, not only the costs, such as:

- v' Accessibility - Anywhere/anytime training for individuals and teams
- v' Agility - ability to tailor instruction to individual needs
- v' Increased quality of initial training
- v' Increased quality of language and/or cultural training

Conclusion

E-training and e-education are part of the same family. The differences between them are not more relevant than the similarities, and, consequently before, speaking about any of them, we speak about e-Learning.

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