

CYBER CENTER NETWORK - AN OPPORTUNITY FOR E-LEARNING APPLICATIONS DEVELOPMENT

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ABSTRACT

With the rapid growth of information technologies, our society and life are changing significantly. More and more countries, organizations and enterprises pay more attention to the development and application of information technologies to help collect and diffuse the knowledge. The virtual community is one of the most powerful tools. A virtual community can build an interactive learning environment for citizen. The Cyber Center is an opportunity for any community to translate its major activities in cyberspace. Teachers and schools play an important role in the all-side preparation of the younger generation for the integration of new information technology into teaching plans of school. More and more schools place much emphasis on the application of information technology to education. When the concept of the Internet is introduced into the learning system, we should consider information technology to be a useful tool for formation and reviewing the knowledge base, and how to build the framework for spreading experiences among students, teachers and people. The paper focuses on a Cyber Center based Network, concept that can be considered as a key-element in the development of knowledge management and e-learning in educational system.

1. INTRODUCTION

Recent achievements in the field of Information Technology and Communications (IT&C) opened new interacting opportunities between people and organizations contributing to radical changes in social behavior and to communities development. Inevitably, the traditional social pattern, concepts and way of living have to adapt face to new challenges of our world. More and more human activities move to the cyberspace as well as many communities of any kind are present on the Internet. One of the most significant aspects of IT&C development is the educational impact. For societies to remain economically competitive, educational institutions, government and business must collaborate in an effort to broaden the range and reach of education. We must create an educational system that is available to all individuals over the course of their lifetimes. In this context, the role of policy makers in promoting public and private partnerships for Cyber Education is evolving rapidly. Increasingly, policy

initiatives to address the digital divide will have to address not just the broad availability of technology and connectivity, but also the development of knowledge and skills to foster effective use and new educational models for a digital age.

The main obstacles slowing down the penetration of IT&C driven development into Romania (and other developing countries) are the lack of money and of infrastructure, compounded by the lack of educated demand. The project “**The National Network of Community Cyber Centers**” (**Cyber Center Network**), a large group of Community Cyber Centers (which are similar to relatively disciplined Internet Cafes) working together under the coordination of a central body called CyberNEST, will ensure coordinated public access to IT&C facilities and to applications from very diverse domains.

2. ACCESS TO INFORMATION – AS NECESSARY AS WATER

The deployment of Internet applications requires – similar to the city water supply system – three components:

- a. Content suppliers (applications, portals) – similar to water reservoirs;
- b. ISP physical connections by fiber, wires, radio – similar to pipes;
- c. Computers/workstations ensuring end-user access to Internet applications – similar to faucets. Although there are some important on-going pipe projects, no major commercial end-user/public access project is being implemented. Subsequently, the lack of access projects leads to the weakness of local content. Thus, the main activity on the Internet in Romania (and other developing countries) means access to imported content, which many times is alien to the local user. Waiting for the market to solve the problem of developing the access for the majority of population, by itself, might mean lost years of opportunity and long term IT&C underdevelopment.

The solution that we propose as “the highway to cross the digital divide” is the implementation of coordinated public access through **The National Network of Community Cyber Centers (Cyber Center Network)**. There are two aspects on which we focus. The first one is the structure, usefulness, and use of the Cyber Center Network related to National Educational System. The second aspect is the evaluation of the size, cost, and efforts for integration and operation of the Cyber Center Network.

3. CYBER CENTER NETWORK – STRUCTURE, USEFULNESS AND USE

In communities around the world where residents can hardly pay for water supply, heating, or sometimes for food, it would be impossible to have a computer and an Internet connection installed in each home. Thus, the public access in Community Cyber Centers (Internet cafes with less coffee and no smoking) is maybe the only way to insure access to the IT&C supported programs. Thus, returning to the water supply system analogy, the **Community Cyber Center (CCC)** becomes the “info fountain at the corner of the street” where anyone can come (taking turns) to drink and exchange information. However, the novelty of our approach is the fact that each CCC acts as an integral part of Cyber Center Network, under the direction and supervision of a coordinating body, which subsequently will be called the NEST. The NEST coordinates the development and organization of Cyber Center Network, the deployment of specific applications through the net, thus delivering public coordinated

access to National Programs belonging to “upstream customers”. This structure enables the implementation of complex national programs in various sectors by means of IT&C. In many areas of operation, Cyber Center Network will be the main, and sometimes the only, decent connection for people to the world via IT&C. Most of the projects for mass access to information proposed by governmental and private organizations for developing world can be solved quickly and efficiently following this solution. The main goal of the **Cyber Center Network Project** is to facilitate mass-access to the Internet, allowing electronic services to citizen, distance learning and community development. The deeper goal behind is to create among people the specific mentalities and skills of the Information Society based on Knowledge. The network is defined by the following attributes:

1. Adequate set of rules in order to establish a coherent framework regarding the relationship inside the network. The regulations will be issued according with European directives and practice.

2. Flexible set of rules concerning the network interactions with other legal entities (social, business, political, NGO, etc.).

3. There will be no constraints regarding the content presented on the net by the Community Cyber Centers. Nevertheless, the Cyber Center Network will focus on two major components:

a. Electronic services to the citizen, facilitating an efficient and honest relationship between citizen and authorities;

b. Education-oriented applications as e-Learning and Continuous Learning.

4. The network will have its own hardware and software support. The added value brought by the project will consist in databases and software applications dedicated to the specific aims.

5. Participative, interactive and innovative features.

6. Includes all kind of communication and interacting patterns:

a. few-to-many;

b. many-to-few;

c. many-to-many.

7. Includes all community cyber centers, cyber centers specialized on particular subjects, as well as virtual communities that want to affiliate to the CCN.

8. Allowing the access of children, who live in remote, isolated communities to the educational system through electronic means. That may be considered as an alternative to carrying those children by bus a few hours a day to the school, at least on heavy winters.

There are many community cyber centers in most of the developed countries. Many of them are parts of regional networks. Some of them structured into national networks, as in Canada or United Kingdom. In Canada the National Cyber Center Network is issued by the CAP (Community Access Program) and is only one part of a huge system that covers various segments of the society. " The Community Access Program (CAP) is a Government of Canada initiative, administered by *Industry Canada*, that aims to provide Canadians with affordable public access to the Internet and the skills they need to use it effectively. With the combined efforts of the federal, provincial and territorial governments, community groups, social agencies, libraries, schools, volunteer groups and the business community, CAP helps Canadians, wherever they live, take advantage of emerging opportunities in the new global knowledge-based economy. Under CAP, public locations like schools, libraries and community centers act as “on-ramps” to the Information Highway, and provide computer support and training. CAP is the key component of Connecting Canadians initiative, whose

goal is to make Canada the most connected nation in the world. CAP started in 1994 in rural communities with populations up to 50,000 [1].

In Great Britain a huge national cyber center network was deployed since the government decided (in 1999) to accelerate the process of e-Government. The British Cyber Center Network has a portal named *Discover the UK - Visit a Virtual Community* [2] and contains hundreds of cyber centers representing villages, towns and counties. Each cyber center in the network has a portal containing e-services for the citizen, useful information and links for both habitants and visitors. The British network can be also accessed via the portal called *UK-On-line* [3].

Such examples are available in most developed countries from EU, America and Asia. Most of them offer as a major application on-line courses and seminars.

4. CYBER CENTER NETWORK AND E-LEARNING

In many parts of the world, there is a growing recognition of the importance of education to remain competitive, especially in a knowledge driven and technology enabled global economy. On March 28, 2001, the European Commission adopted the *e-Learning Action plan* to invest US\$13.3 billion in e-learning over a three-year period that spreads across all levels of education [4]. The plan is “aimed at broadening digital literacy in Europe and at reducing the continent’s shortage of trained information-technology workers”. Similar in at least one respect to the e-learning investments and proliferation of digital learning initiatives, the European Commission is looking to cyber education as one of the ways to address the issues of a growing shortage of technology skills - which today impacts nearly every age group, education level, and regional economy on a global scale. Education and the new models of e-learning have become pivotal to tackling these kinds of economic challenges and spurring growth. Moreover, for the individual and society, education is about much more than just productivity in the workplace and a return on investment for government. An educated citizenry, one that can understand issues and participate in the political process is a requirement for a vibrant and dynamic society. In addition, quality of life is often linked to education. The plan lays out a series of objectives in favor of European cooperation on e-learning:

1. Creation of a decision-making tool in the form of an information database for teaching purposes;
2. Creation of a European exchange and research platform (maximizing the potential of new and emerging technologies applications in training and education, including the use of digital TV, satellites, etc.);
3. Encouragement of infrastructure development (with the aid of European Investment Bank and other financial instruments);
4. Maximizing teacher's potential through training, the sharing of best practices and investment in research and skills;
5. Support for the quality of educational content (including protection for authors);
6. Encouragement of new educational and training services in three areas: language learning; the arts and culture and citizenship; technology and science.

The Cyber Center Network is intended to include as a major service to the user an e-Learning application. This will be focused on the following target groups:

- a. Children who live in remote, isolated communities;

- b. Disabled children;
- c. Centers/networks of excellence;
- d. Secondary and high-school level;
- e. Temporarily unemployed people included in workforce reconversion programs.

When choosing the appropriate e-Learning software some criteria will be considered such as:

1. Is the synchronous / asynchronous client/server communication possible?
2. Are the interfaces user-friendly?
3. Is the platform providing e-mail and ftp services?
4. Is the platform able to allow several teachers participation within the same course?
5. The platform offers multimedia content and tools?
6. Are there self-evaluation procedures and tools included?

Among the most popular e-Learning applications we mention Blackboard, ClassNet, COSE, LEARNLINK, Learning Space, TopClass, WebCT.

We have some important remarks about the Cyber Center Network + NEST structure. Although the visible structure we want to build seems to be a highly technical distributed tool for accessing the Internet, its capability of deploying national programs to and for the people in a coordinated way is the main characteristic and strength. The human component imbedded in the Cyber Center Network + NEST structure is very important; this structure interfaces with the customers constantly, in a very complex way, and has a profound social impact. Thus, it is more important (and also quite difficult) to understand and foresee the real usefulness and the impact of this structure, beyond the highly technical IT&C aspects involved.

5. CONCLUSION

The Cyber Center Network project is a global project; it is excellent for deployment to the largest part of the developing world. We are convinced that the implementation of this project will generate development in presently stagnant areas and will drive favorable economic and social changes, leading to a friendlier globalization process.

IPA SA and Romus Industries SA have started an important effort for the deployment of a National Network of Community Cyber Centers in Romania.

The National Community Cyber Center Network project started in November 2001 under the R&D Program *INFOSOC (Information Society)*. The expected result of the project is the pilot system, in fact the network backbone that will include some major Community Cyber Centers and the Central Server. Over this structure e-Services and e-Learning applications will be deployed. The tables presented in this paper relate to the further network development and exploitation.

According to the characteristics of virtual communities, the virtual learning community is one of the most powerful tools to meet requirements of educational systems in the digital age. A virtual learning community can provide an open learning environment for people to share their knowledge and to learn the knowledge they want. The school can also capture, classify and understand those knowledge posted in the virtual learning community. Therefore, many schools begin to establish their distance learning environment by constructing the virtual learning communities [5].

The new technologies have served to push knowledge acquisition into the domain of the individual. Concomitant with individualization comes the growing autonomy of learners.

Technology, and particularly its application in flexible, open and distance learning situations can be considered vital for increasing and widening access to learning and for the learner to become more autonomous. Flexibility of open and distance learning methodologies is the key factor in their emergence as the primary mode for lifelong learning.

Also, learning to learn using new technologies or, in other words, building technoliteracy can help to build the confidence to use the technology as a tool to further the learning experience even without the mediation of a learning institution. This is a major challenge for developing countries. An inadequate response to the need for technoliteracy/media literacy would result in the creation of yet another barrier to meaningful participation in learning. This is even more critical in the context of non- formal distance learning [6].

We are ready to transfer the knowledge and experience we have in this domain to all interested parties, including the ones in foreign countries. We are also aware that we will not be able to implement this project by ourselves. That's why we need the help of all parties interested in the development of this project. We appeal to governmental and to international institutions, to private enterprises and to entrepreneurs and investors, to help us develop the Cyber Centers Networks, which can connect billions of less fortunate people to the world and to a better life.

6. REFERENCES

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