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**PROMOTION OF DEVELOPMENT-ORIENTED
ICT APPLICATIONS FOR E-LEARNING**

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Abstract

Information and communication technology (ICT) is a fundamental vehicle of how modern societies function. ICT has become one of the main sources for economic growth, competitiveness and prosperity. ICT is a cornerstone for transforming developing societies into information and knowledge based societies. Establishing an e-Learning infrastructure for education and training is key to creating a new information and knowledge-based society. An e-Learning programme at a national level should involve both public and private sectors. It should involve education and training institutions as well as the relevant social, industrial and economic players. This paper investigates the opportunities offered by ICT for e-Learning, and the challenges associated with implementing e-Learning at a regional and national level. The paper also reviews the possible impact of these challenges on e-Learning regional objectives, priorities, strategy, policies and initiatives. Finally it summarizes and analyzes the direction and objectives of a number of European e-Learning projects sponsored by the European Commission.

The paper defines what an e-Learning system is, discusses the opportunities and challenges associated with e-Learning, and reviews the European Union's e-Learning initiative as an example of a regional plan for e-Learning, and views some of the main themes in the USA Web Commission report. The paper advocates that ICT is a primary tool for learning and for creating the knowledge-based information society.

The summit issued a declaration covering three themes:

- e-Learning: extending educational opportunity
- e-Learning: accelerating change and educational innovation
- e-Learning: exploring public private partnerships

The European Commission e-Learning initiative involves sponsoring a number of projects aiming at the realization of e-Learning across Europe. The projects summarized highlight the main trends of e-Learning in Europe including examples for :

- Projects for creating Regional Virtual University
- Projects for creating a model for a European University for e-Learning
- Projects for developing e-Learning environment

The ideas introduced in this paper plus the projects summary provided aim to serve as an example to be followed in ESCWA's effort in creating an e-Learning programme that would be a step towards establishing the Information Society in Western Asia and the Arab region.



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I. OPPORTUNITIES AND CHALLENGES OF ICT AND E-LEARNING

A. ICT IS AN ENABLER FOR E-LEARNING

The application of new information and communication technology (ICT) is more focused as the technology develops and spreads in the society. Based on different political manifests, new programmes and funding systems have been initiated.

e-Learning has become feasible only after the ICT technologies has reached its current state of advancement maturity and integration. The Internet is a manifestation of such maturity and integration. The Internet has proven to be the most transformative technology in modern history, reshaping business, media, entertainment, and society in astonishing ways. But for all its power, it is just now being tapped to transform education. The Internet is not like any other technology. Its reach and impact on all aspects of society are unprecedented. The Internet is beginning a new way of learning. The Internet is bringing us closer to make e-Learning possible at all levels, any time any place and at any pace. The World Wide Web is a tool that empowers the society to educate the illiterate, bring job training to the unskilled, open a world of images and knowledge to all students, and enrich the understanding of the lifelong learner.

B. WHAT IS E-LEARNING

e-Learning is defined as:

- The use of technology to manage, design, deliver, select, transact, coach, support and extend LEARNING (of all kinds). (*Elliott Masie, 2001*)
- 'The use of network technology to create, deliver, foster, support learning activities, independent of time and space',
- eLearning is more than web-based self study courses.

The main components of an e-Learning system comprise:

- Learning Management Systems (LMS)
- Learning Support System (LSS)
- Learning Content Management Systems (LCMS)

1. Learning Management Systems (LMS)

An LMS system comprise:

- Content Management System (CMS)
Develop, manage, deliver content via the web
- Learning Management System (LMS)
Organise the administration of the training activities
Registration of users, course catalogue, follow-up of the learning activities, reporting

- Learning Content Management System (LCMS)
Learning Management System (LMS) + Contents Management System (CMS)
Combination of management of content and management of the learning activity

2. Learning Support System (LSS)

An LSS comprise:

- Learning Support System
System which delivers all the necessary tools for the SUPPORT of the learning activities
- 'Slim' version of LCMS

Strong emphasis on: Self testing, Coaching and Collaboration.

Less emphasis on: Management and reporting of the learning activity and Management of courses and content.

3. Learning Content Management Systems (LCMS)

An LMSC should address the following areas: Production of contents, Storage and archiving of contents, Structuring of contents, Delivery and communication of contents, Inter-operability, Competence management, and Administration support of Learners and Teachers.

The past has witnessed a shift from pure LMS (the management of learners, teachers, administration etc.) to more enhanced LCMS (Functionalities of an LMS and the management and development of content). Today, there are still many fluctuations in the market of LCMS. Every LCMS compared to the other does different things and has diverse functionalities.

To develop an LCMS system you will need to take the position of a company (or any educational institution) that wants to organize his training (classical training as well as e-learning) using an appropriate LCMS. We will characterize further this company in more detail. Based on these characteristics we will use an analytical model to assess the concrete needs of this company. Every component of this model is an important aspect that can be incorporated in an LCMS. A component contains possibilities and functionalities of an LCMS. This analytical model is composed of 9 components:

1. Production
2. Storing and archiving
3. Structuring
4. Delivery
5. Communication
6. Testing
7. Administration
8. Competency management
9. Connections with other systems

Within a regional e-L/ initiative there is a need to develop and agree Of course, an LCMS model is always a limited representation of a more complex reality. However the goal of an LCMS

model is not to fully represent this reality but to use it as x-ray glasses to look at the complex reality. In doing this we can distinguish clear structures which permits us to fully understand the complex reality.

C. OPPORTUNITIES AND BENEFITS OF E-LEARNING

e-Learning lays a foundation for knowledge-based societies. It should bridge the generation gap. New generations grow-up without fear of computers or communications. ICT becomes a normal tool of their day-to-day lives. e-Learning provides an effective way of developing the human resources in the ESCWA/Arab region, driving them into the way towards the creation of knowledge-based societies. The opportunity is already with us. The power and the promise of ICT technologies are here. It is now time for regional programmes in the ESCWA and the Arab to discover how the Internet can be used to enhance learning opportunity, and to identify ways that public and private organizations can help local schools, and national universities overcome the barriers to making e-Learning a reality. Experience of other regions has proved that the Internet can be used to transform learning in new and powerful ways.

Benefits of e-Learning include enabling the realization of the following benefits:

- To center learning around the student instead of the classroom through 24x7 availability of e-Learning systems
- To focus on the strengths and needs of individual learners through customized & personalized learner-interface
- To make lifelong learning a reality
- Distance learning and cross-border learning/tutoring to bring social and cultural cohesion across the region.

Additionally, through the use of e-Learning the learners will enjoy the following benefits:

- Decreased cost of training
- Ability to offer life long training to their employees
- Ability to measure and record the Learners performance
- Reduced travel and related costs
- Enhanced employee retention of knowledge
- Individualized training through the accommodation of a variety of learning styles

D. CHALLENGES AND BARRIERS TO SUCCESS OF E-LEARNING

1. A barrier to e-Learning success: Shortage of ICT Skills

The growing shortage of skilled ICT workers is one of the most critical factors that is likely to hinder the success of any e-Learning initiative in the ESCWA/Arab region. There are Millions of citizens who still cannot access the Internet, do not understand how to use it to harness the global web of knowledge. They do not know how to deal in information, the basic currency of the knowledge economy. They do not know how to find information, how to handle it, how to trade in

it, how to invest it for their futures. A programme for addressing the ICT skill gap should precede any e-Learning programme. The e-Learning programme is itself a vehicle for overcoming the shortage of ICT skills through changes to the educational curricula at all levels to deliver relevant ICT skills.

2. A barrier to e-Learning success: Lack of accessibility to technology.

There are many people who find formal learning difficult or inaccessible for reasons of cost or personal circumstances. Funding for development to be provided for individuals who are unable to fund their own access to technology or e-Learning. Solutions to accessibility should not only come always from top down, they should involve all stakeholders including government ministers, university and college deans and teachers, and students. These individuals, already at risk, will become increasingly marginal in the emerging knowledge economy-unless governments change current laws, current regulations, and current practices in order to accommodate the ICT needs for the challenges facing e-Learning in the accessibility area include:

- Addressing the need for greater access to broadband connectivity
- Addressing the need to develop guidance on how to best use the Web for learning
- Addressing the need to understand how people learn differently with the Internet
- Addressing the need for content that leverages the powerful capabilities of the Web.

3. A barrier to e-Learning success: Teacher and training shortage

There is a shortage of teachers with e-Learning skills across the world including the ESCWA/Arab region. There is a need for retraining and growing a community of teachers with the ICT skills necessary to embrace the new e-Learning technology. New e-Learning teaching methods should be more attractive to the teaching profession and increase its status. The challenge that need to be addressed by any e-Learning regional or national programme is addressing developing incentives for attracting teachers to acquire e-Learning skills.

4. A barrier to e-Learning success: Lack of appropriate pedagogy

Pedagogy is defined as: the science of teaching. e-Learning systems requires an understanding of the theories of learning and teaching and adapting the teaching techniques to match the e-Learning technological and support requirements. The challenge to overcome this barrier is to address the question of how to apply the fundamentals of the teaching science in view of the modern technological environment and its impact on the learners and teachers.

II. E-LEARNING REGIONAL AND NATIONAL PLANS.

A. E-LEARNING NEEDS

Regional and national needs to establish an effective e-Learning infrastructure:

- Powerful new Internet resources (with broadband access), that is widely available and affordable for all learners.
- Continuous, relevant training and support for educators and administrators
- New research in how people learn in the Internet age.
- High quality online educational content that is widely available and meets the highest standards of educational excellence
- Re-assessment of the current regulations to revoke any regulations that impede instructional innovation and replace with others that encourage anytime, anywhere, any pace learning.
- Security and privacy safeguards to protect online learners and ensure their privacy
- Sustained support and funding of e-Learning programmes.

These areas are fundamental to e-Learning and need to be addressed and overcome in order to achieve success with e-Learning.

B. REQUIREMENTS OF A REGIONAL & NATIONAL PROGRAMME FOR E-LEARNING

1. Regional & national ICT Infrastructure

An ICT infrastructure is required to provide access and connectivity of e-Learning system users, learners, teachers and administrators. Thus it is a prerequisite for e-Learning at a national or regional level to provide the availability of an effective Internet-based communications & network infrastructure that can

“connect everyone and everything from everywhere”

Easy access to the Internet provides connectivity, which in turn creates the necessary fertile conditions for new e-Learning communities to take root and flourish. However focus on the Infrastructure must be supported by complementary initiatives aimed at developing high quality content and promoting continuous professional development.

“Access for all is not only a social objective but is also a major competitive asset for Europe. The key challenge is that we need basic skills for all. For that reason, connecting schools and upgrading curricula are vitally important” Erkki Liikanen, European Commissioner for Enterprise and Information Society.

The infrastructure required should establish good connectivity between universities and academic centers in various countries in the region. Expanding connectivity between all places of education is a pre-requisite for supporting e-Learning.

The European experience has shown that although there is no single strategy for promoting successful access and connectivity solutions, what is required are: “flexible and sustainable models for that can be adapted to user needs and available budgets.” This can be achieved through knowledge sharing and identification of best practice. Access and connectivity must be seen in the context of lifelong learning.

2. Content development

e-Learning relies on digital-based curricula and contents. All the current learning materials for current courses are in paper form, and they need to be converted into digital form. This is not a straightforward transformation, rather the contents need to be restructured to allow for ease of navigation, self-teaching, easy access and self-test. There is a need for developing a generic model for course content transformation into digitized form.

3. Target Communities for National e-Learning Initiatives

e-Learning programmes should be designed from the point of view of the target communities including:

- Schools: primary and secondary schools
- Higher education: graduate and postgraduate
- Research & development institutions
- Vocational & industrial training institutions
- Companies in the private sector : for employee training
- Public services : government employees and citizens in general including Adult education & life long learning initiatives

4. Transforming Current Learning Models and Contents

Any e-Learning programme should address the need for transforming the current learning models and contents to match the new e-Learning model. This should cover areas such as:

- Course conversion/development
Current courses need to be converted into online courses. New subjects need to be developed as online courses
- Instructional design
The scope is from self-paced training with self-tests
- Online tutorials
The text books designed for class-room training are not good-enough for online training. Conversational aspects of the

- 24x7 technical support
This is required to provide flexibility for learners and teachers.

C. MAIN FEATURES OF AN E-LEARNING REGIONAL PLAN

1. Should be driven by a vision

ICT provides the communication and technological infrastructure that could make e-Learning feasible. Because of the dependency of e-Learning on ICT, the objectives and drivers of an e-Learning programme should fit within an overall ICT vision. An example of a regional ICT vision is the European Union's ICT vision of:

“becoming the world's most competitive and dynamic knowledge-based economy, capable of sustaining economic growth with more and better jobs and greater social cohesion.” (Source Commission of the European Communities, COM(2001) 711final, The Impact of the e-Economy on European Enterprises)

The e-Learning programme should be driven by a vision for e-Learning along the lines of:

“Making lifelong learning an objective for every citizen, as the way forward for creating the knowledge-based society.”

2. Should facilitate the cohesion of societies and cultures:

A regional e-Learning programme should facilitate the cohesion of the societies and cultures in the region through inter-cultural convergence and cross-border exchange of communications and information.”

3. Should facilitate continuous learning for all:

e-Learning must be inclusive and should facilitate continuous learning for all groups and sectors of society”. This should be assisted by a public policy aimed at maximizing the power of the Internet for learning at all levels, and support the continuous growth of educators and learners through the use of technology.

4. Should involve all relevant groups in the region:

The e-Learning initiative of the European Commission seeks to mobilize the educational and cultural communities, as well as the economic and social players in Europe, in order to speed up changes in the education and training systems for Europe's move to knowledge-based society.

5. Should define high-level ambitious goals:

The ESCWA/Arab regions can learn from other e-Learning initiatives and action plans developed by other regions in the world. Local and regional culture and national special attributes should be taken into consideration whilst learning from other regions. As an example of a regional e-Learning initiative, the European e-Learning summit, 10-11 May 2001, La Hulpe, Belgium, has

come up with an e-Learning action plan, which sets a number of challenging goals to European education and training systems:

- *To develop the comprehensive integration of ICT into education and training.*
- *To create flexible infrastructure that will make e-Learning available to all*
- *To define and promote digital literacy*
- *To develop high quality European education services and content*

III. LESSONS FROM THE EUROPEAN E-LEARNING INITIATIVE

A. THE EUROPEAN E-LEARNING INITIATIVE.

The e-Learning Initiative taken by the European Commission in Brussels, has led to a regional e-Learning Action Plan, and the allocation of funding. The action plan aims to boost the change from traditional education to systematic applications of ICT for the provision of flexible learning and competence building - *Designing tomorrow's education*, as the Commission says.

In its resolution of July 2001 the Council of the EU invites the member states to 16 different actions, among these an invitation:

- to foster the European dimension of joint development of ICT-mediated and ICT-complimented curricula in higher education, by encouraging common approaches in higher education certification models and quality assurance
- to promote collaboration and exchange of experiences in the area of e-Learning and pedagogical development, especially with a view to:
- supporting transnational virtual meeting places,
- stimulate European networking at all levels and in this context establish and provide networks for the benefit of teacher training,

On the basis of these documents a the Commission issued the Call for proposals in June 2001, for preparatory and innovative actions. Particular areas identified, including:

virtual European universities, based on partnerships and cooperation with other universitiesfor European degrees combining courses and materials from different universities;

B. RECOMMENDATIONS OF THE EUROPEAN E-LEARNING SUMMIT

In support of this initiatives a European e-Learning summit was organized 10-11 May 2001 in La Hulpe Belgium, chaired by the European Commissioner for Education & Culture and hosted by IBM with participation by and contributions from leading organizations including: IBM, NOKIA and Cisco systems and others. The summit issued a declaration covering three themes:

- e-Learning: extending educational opportunity
- e-Learning: accelerating change and educational innovation
- e-Learning: exploring public private partnerships

The summit resulted ended up with ten recommendations aiming “To remove the barriers to access and connectivity, support professional development, accelerate e-Learning innovation and content development, address ICT skills shortage, promote digital literacy and lifelong learning, and explore sustainable public private partnerships.” The recommendations are:

Recommendation: No.1
Connect everyone and everything from everywhere

eLearning must be inclusive and should facilitate continuous learning for all age groups and sectors of society. The key driver is access for everyone linked to a process whereby every device can be networked and access is possible from any location. This requires immediate action to remove barriers inhibiting access to interactive eLearning environments. By utilising a diverse set of technical solutions, eLearning can be provided broadly at reasonable cost. Flexible approaches that reflect the different social and cultural conditions in Member States are those most likely to succeed. The following phased approach is proposed that will involve varying degrees of parallel activity in each Member State:

- Phase I: All schools are connected to the Internet (physical connection, e-mail address, URL, etc.)
- Phase II: Schools are fully networked (LAN, WLAN)
- Phase III: Teachers/students' homes (or mobile presence) connected to the Internet.

The use of the Structural Funds could be used to speed up this phased development. As part of a broader eLearning strategy, Europe should also aggressively pursue the goal of providing the best possible connectivity for all citizens everywhere. Particular attention needs to be given to: developing solutions that meet specific end user eLearning needs, especially those of the disabled; providing all citizens with a digital identity; adopting open standards for connectivity; digital rights' management; security; mobility and remote access to eLearning content.

(Note: the rationale for this recommendation is that access any where and at any time is a precondition of more flexible access to learning resources and a necessary condition to ensure connectivity for otherwise isolated learners and equity in access to eLearning)

Recommendation: No.2
Adopt and participate in the development of open standards for eLearning.

Europe should follow a policy for developing an eLearning infrastructure and digital content based on open standards and proven interoperability. The adoption of international standards, together with technological innovation and free market competition, will deliver solutions at attractive price points appropriate to broad participation in eLearning. A general climate of "openness" should be promoted which strikes a balance between the legitimate IPR concerns of content owners and the creation of mechanisms that encourage maximum possible access to digital content based on flexible agreements between suppliers and consumers.

Recommendation: No.3
Focus eLearning research on pedagogy, eContent and user-friendly interfaces and devices

eLearning Research is too often driven by a technology agenda and may involve academic evaluation methodologies that do not fully meet the requirements of training environments. Existing research needs to be consolidated, interpreted and widely disseminated in a range of formats and via eLearning communities that are suitable for both practitioners and private sector suppliers. Future research priorities need to be defined against a clear vision of how eLearning can be implemented in Europe. Private sector engagement is necessary in supporting and using the outcomes of research.

The study of the pedagogical paradigm (how we learn) should be given priority. The research effort needs to be multidisciplinary and additional funding is likely to be required:

- To evaluate current eLearning practices and clarify eLearning pedagogy
- To study the impact of end user devices on the teaching and learning process
- To identify new ways in which individuals can interact with network-based services and online content
- To explore the key pedagogical features and interaction of eLearning and classroom based teaching with particular regard to skills based training that requires hands-on experience
- To determine ways to expedite the scalability of programmes

Recommendation: No.4

Create the conditions to sustain a commercial market for eLearning content development.

Budgets for learning resources must allow institutions to make substantial purchases of digital content. Digital content, no less than traditional resources, must also be seen as essential elements in effective learning delivery that deserve to make equal demands on institutional budgets. The creation of small learning 'objects' (based on open standards) could facilitate the development of new business models for content development and encourage innovative procurement mechanisms. To ensure that a critical mass of quality content is readily available in all Member States, the private sector should pursue design and development models that facilitate content localisation and adaptation; commercial platforms for exchanging metadata tagged content produced by educators, institutions and publishers could support this process. New approaches should be explored to copyright and IPR for collaborative content development involving public-private partnerships.

Recommendation: No.5

Increase investment in continuous professional development of educators. Enhance their status. Help them develop an understanding of and a pedagogy for eLearning.

Educators must increasingly be recognised as a key profession in the successful development of the Information Society and a knowledge economy. eLearning holds the potential to transform the current learning model and will bring about an inevitable and continuing redefinition of the roles of educators. Entirely new roles may also emerge. Professional development for the next generation of educators must reflect this process and ensure that eLearning theory is supported by professional development practice; a significant proportion of teacher education should be delivered using eLearning tools and methodologies. For real change to take place at local level, leadership competences will also need to be developed and educators generally will need to develop a fuller understanding of the strategic impact of ICT on learning.

Recommendation No.6

Develop flexible curricular and assessment frameworks to provide individuals with the skills needed for participation in the Information Age.

To address the recognised shortfall in ICT skills in Europe, educators, policy makers and industry should work together in partnership to close the existing gap and prevent new problems emerging. A proactive policy that looks to future skill demands should provide training opportunities and particularly seek to increase participation from women, the unemployed and disadvantaged groups. National education ministries should review the relationship between vendor certification and national qualification frameworks, including the accreditation of prior learning and experience to promote lifelong learning strategies. A formal mechanism should be established by which industry and education could collaborate on a European level regarding the development of future curricular which address ICT skills building on initiatives such as Career-Space.

The European Commission should build on successful current initiatives (including ECDL) in order to develop and update core digital literacy competences (including higher order skills) for Europe and to share knowledge and best practice from both the private and public sector. The formation of expert groups should be encouraged to address the digital literacy needs of a variety of target audiences including students, teachers and adults engaged in lifelong learning whose levels of digital literacy competence will need regular updating.

Recommendation: No.7

Expand eLearning communities and forums.

Best practice has been identified and knowledge networks are starting to appear but what is now needed is an easily accessible inventory (possibly in the form of a portal) that would allow systematic and comprehensive tracking of current developments. Such an information source needs to be put in place quickly and should be promoted by a widespread information campaign. As a next step, an evaluation instrument should be developed to help codify and benchmark best practice and provide indicators on pedagogical innovation. Particular attention should be given to the development and support of multilingual eLearning communities to encourage collaboration across borders, and careers advisory services that are aware of eLearning opportunities and can provide route maps to available qualifications and training programmes throughout Europe.

Recommendation No.8

Provide financial incentives to promote the take-up of eLearning.

Incentive-based schemes should be used to encourage individuals to assume responsibility for their own learning and skill development and to encourage employers to support eLearning schemes within their own organisations or local communities. Incentives in the form of tax allowances, tax credits, individual learning grants/loans and the provision of low cost retraining schemes could significantly accelerate the implementation and take-up of eLearning and help develop a climate for lifelong learning. Incentive-based schemes should be widespread although specific initiatives may need to be developed to help promote both digital literacy and ICT skills development in small and medium enterprises and among the unemployed and socially disadvantaged groups.

Recommendation No.9

Leverage financial instruments to support eLearning.

The Structural Funds should be leveraged to allow quality learning resources and training programs to be developed, translated and localised, particularly in those smaller countries where ICT implementation and eLearning delivery is suffering from a lack of investment. Particular emphasis should be given to providing additional funds to accelerate teacher professional development in the integration of ICT into professional practice. The Summit also calls on the European Investment Bank to step up its lending to the education sector, favouring wherever possible the development of those public private partnerships which are appropriately structured and balanced to deliver efficient eLearning. Further, the Bank should encourage the European Investment Fund to support SMEs active in the origination of digital educational content. Private sector funds should also be called on to support the development of public private partnerships with solid business plans.

Recommendation No.10

Explore the potential of public private partnerships.

Industry can play a valuable role in supporting the European public sector in its drive to embrace eLearning by supplementing limited public sector resources and bringing its expertise to accelerate the implementation of the eLearning Action Plan. Partnerships between the public and private sectors have the potential to: provide longer-term investment strategies; encourage the exchange of experience and best practice; promote dialogue on future requirements for multimedia learning materials; enhance technology transfer; and ensure that business skill needs are taken into account. Clearly defined models and infrastructures now should be developed for public private partnerships (PPPs), clarifying the principles for government investment in PPPs and taking into account the recommendations of the first European eLearning Summit.

The Summit particularly calls on the European Commission to stimulate discussion and initiate a major study on sustainable models for public private partnerships under the European research area for new learning environments proposed in the eLearning Action Plan. Within this, an attempt should be made to benchmark PPP activity and best practice in Europe and investigate models for PPPs involving cross border participation as the basis for a programme involving new investment in eLearning.

C. SPECIAL FACTORS FOR THE ESCWA/ARAB REGION:

The ESCWA/Arab region should sponsor a regional programme which takes into consideration the special characteristics of the Arab culture. Some examples of the differences between the European Union region and the ESCWA Arab region are:

Collaboration in the EU countries has been going on for nearly three decades. Running EU-sponsored across national boundaries. There is a need to encourage multi-national projects to collaboration across national borders in the ESCWA/Arab region.

Language: e-Learning systems should support both Arabic and English languages. Supporting the Arabic language is essential for attracting all ages to e-Learning systems.

Culture: Any curricula should reflect and respect the Arab and Islamic culture and national traditions.

Political & Economic systems: There is no political body yet in the Arab region equivalent to the European Union. The Arab League is still far from a political or economic union. The ESCWA has a pivotal role in filling this gap by encouraging and sponsoring regional programmes.

IV. EXAMPLES OF EUROPEAN E-LEARNING PROJECTS

Following is an analysis of projects selected from the European Framework Programma (FP5). These projects are carried out with the support of the European Commission, Directorate-General for Education and Culture, Training and Youth - eLearning initiative. The information contained below is a summary of the authors overall understanding of these project and does not necessarily reflect the latest state of these projects nor the position or the opinion of the European Commission.

All of these projects are now in the implementation phase. They are discussed here as an illustration of the European regional initiative in e-Learning which could be useful when preparing a regional e-Learning programme for the ESCWA/Arab region.

A. EXAMPLE PROJECTS FOR CREATING REGIONAL VIRTUAL UNIVERSITY

Project: cEVU – Collaborative European Virtual University

This project is aimed at the development of validated e-learning models and ideas for a European virtual university, based on regional and transnational collaboration between existing European universities. Following is a summary of the main features of the project. Readers who are interested in more detailed and up-to-date information are advised to access the Project Web site: <http://cevu.europace.org>

cEVU Project overview

The collaborative European Virtual University project, running from 1st November 2001-30 June 2003, is aimed at the development of validated e-learning models and ideas for a European virtual university. It is a proposed collaboration between five existing international university networks, which are already actively pursuing academic and organisational cohesion in the areas of distance and online learning: EuroPACE, EUNITE, ECIU, Coimbra Group and EUA . The project positions itself in the ongoing evolution in Europe, implementing ICT in education as a strategic issue for future university development.

The following activities are being undertaken:

- Study of the elements of joint working practices, models and policies for such distance and online education.
- Development of the technical infrastructure for a cEVU, together with the necessary teaching and learning services.
- Validation by the participating institutions through a set of high quality online pilot courses.

The results of this project are published in an online "Manual for a collaborative European Virtual University" with recommendations and guidelines for decision makers, teachers, trainers, managers and technicians.

Project: LIVIUS Learning in a Virtual Integrated University

The project's objective is the definition and creation of a new organisational model and a new psycho-pedagogical and didactic model of a European Virtual University that originates from a consortium of traditional universities, distance universities and telecommunications companies of many European countries structured as a network. Following is a summary of the main features of the project. Readers who are interested in more detailed and up-to-date information are advised to access the Project Web site : <http://www.uninettuno.it/Livius/livius.htm>

LIVIUS project objectives

The project's general objective is the creation of a new organizational model and a new psycho-pedagogical and didactic model of European Virtual University that originates from a consortium of traditional universities, distance universities and telecommunications companies of many European countries structured as a network. The project will focus on the sharing of know-how and technological and didactic competencies of the involved partners, according to a perspective of consolidation of a self-sustainable virtual network. The project has the following four general objectives:

1. propose an organizational solution for traditional universities and for the distance ones, combining innovative educational methodologies, technologies and contents;
2. develop a special cooperation among the partners in order to design didactic paths and common academic curricula that allow the acknowledgement of titles at a European level, according to the Sorbonne and Bologna declarations;
3. test new forms of learning services and a new psycho-pedagogical model that allows the integration of didactic opportunities given by different media into the same open and flexible environment, characterised by distance didactics both of the synchronic and diachronic type.
4. produce a pilot module of 40 hours of videolections in four different languages (English, French, Spanish and Italian) of Computer Science and experiment the its delivery by different means (TV sat and Internet, Didactic Platform on the Internet by sat and videostreaming by video-server).

LIVIUS Project Motivations

The project aims at supplying appropriate answers to the needs for the development in Europe of knowledge virtual networks that use new multimedia technologies and the Internet to enhance learning quality, facilitating the access to resources and services, as well as cooperation and exchange of knowledge and information. The effectiveness of educational systems depends on the effectiveness of the approaches used in education and learning. In order to be effective, communication technologies must be accompanied by a profound re-organisation of learning structures and models and this is the viewpoint of the European Virtual University that we intend to realise. The project will have to:

- create an organisational model aiming at international cooperation;
- communicate knowledge by means of the new technologies;

- innovate teaching and learning methods;
- make the exchange of information and data faster;
- design common academic paths;
- meet the need for flexibility and limit the student's feeling of isolation;
- match presence with distance devising a mixed pedagogical model that:
- enhances the traditional system using a type of teaching that is free from spatio-temporal barriers;
- retains direct interaction that includes activities by which the student studies alone, uses new technologies and develops activities that make him interact with other students and teachers both on a face-to-face and distance mode;
- facilitate the acknowledgement of titles at a European level;
- start alliances between traditional and distance universities aiming at developing knowledge networks;
- renew the roles of the student and in particular that of the teacher who will have to:
 - design learning scenarios;
 - learn new languages;
 - learn how to teach on television and on the Internet;
 - be able to use new technologies of the mind to convey knowledge, but also to share and develop new knowledge;
- promote employment in the field of information and communication technologies training the computer science and telecommunication European engineer;
- promote the changing of traditional didactic into an open system capable of updating itself and organise an ever increasing and diversified amount of knowledge;
- offer the universities the opportunity to cooperate, share experience, access to new technologies, assure a higher visibility at a European and international level;
- offer telecommunications companies the opportunity to propose, not only technological solutions, but also contents developed by universities;
- offer students the possibility to share a common European path, following an homogenous curriculum and getting a degree recognised at a trans-national level.

The proposed model is based upon the idea that distance education should be founded upon the peculiar functions of each university, with the aim of developing a higher education offer inspired by autonomy and open to the flexibility of different initiatives. The choice of a consortium model to create this new university model, starts from the following belief "the University, a fundamental institution for advanced education, is still able to play a significant role as it regards the new educational needs in the new setting". Thus, it must contribute to develop, and it needs to put together traditional structures, but also distance universities and technological partners

The LIVIUS Project target groups

Among graduates, engineers are the most requested by companies. The increasing skill-shortage of computer science and telecommunication competencies is opening a new global labour market and the winner will be the one who will be able to offer the best conditions in terms of education, salaries, opportunities for re-skilling, life-style and flexibility.

The European Virtual University that we want to create means to suggest a possible answer to these needs and later on to identify new needs and find new common answers;

The project is addressed to different typologies of users:

- Students who are already enrolled to the university;
- Students who must enrol, who have not already made up their mind about the kind of study to attend;
- Students-workers;
- Employees that wish to re-skill;
- Unemployed.

The target group can benefit from the possibility to:

- Access high quality and European level education that derives from the combination of different experiences and best practice among partners involved in the project;
- Enjoy a specific training in a field that are particularly requested by the labour market;
- Use new technologies for education and training;
- Use an open and flexible educational model;
- Organise one's own learning path according one's own rhythms and needs;
- Interact with teachers in a synchronic and diachronic way according to a dynamic and collaborative learning process;
- Exchange knowledge with users of different nationalities according to a multicultural and multilingual perspective.

B. EXAMPLE PROJECTS FOR CREATING A MODEL FOR A EUROPEAN UNIVERSITY FOR E-LEARNING

Project MENU -- Model for a European Networked University for e-Learning

MENU sets out to create a model for a European Networked (Virtual) University, offering a variety of e-learning opportunities. The model, based on experiences from previous, national and international, projects and activities, will propose an organisational structure, a quality assurance system, examples of joint courses and study programmes across institutional and national borders. Following is a summary of the main features of the project. Readers who are interested in more detailed and up-to-date information are advised to access the Project Web site: <http://www.hsh.no/menu/>

Project MENU objectives

The MENU project (= MODEL FOR A EUROPEAN NETWORKED UNIVERSITY FOR E-LEARNING) MENU sets out to create a model for a European Networked (Virtual) University, offering a variety of e-learning opportunities. 11 partners in 7 European countries are joining forces to establish the model, based on experiences from previous, national and international, projects and activities at the partner institutions. The model will propose an organisational structure, a quality assurance system, examples of joint courses and study programmes across institutional and national borders. A demonstrator will show practical e-learning environments, applied to ICT-related studies. Partners in MENU will constitute the core of a future consortium, a permanent, sustainable ENU, offering courses and degree programmes across Europe. ICT will be extensively applied for administration, contact and information, learning environment and virtual mobility of students and staff. Dissemination of findings will make the model and the consortium available to other institutions.

C. EXAMPLE PROJECTS FOR DEVELOPING E-LEARNING ENVIRONMENT

Project GENIUS – Generic e-Learning Environments and Paradigms for the New European Information and Communication Technologies Curricula

This project addresses: the ICT skills shortage through the development of new curricula contents; the investigation of different innovative instruction delivery mechanisms and the development of a pilot pan-European collaborative e-learning environment. Following is a summary of the main features of the project. Readers who are interested in more detailed and up-to-date information are advised to access the Project Web site: <http://www.cs-cyb-ee.reading.ac.uk/genius/>

GENIUS Project Objectives

The GENIUS project focuses on:

New Curricula content development, based on the New ICT Curricula guidelines proposed by the Career Space consortium, focusing on five different strands: Undergraduate, Postgraduate, Non-traditional learners, Multidisciplinary Curricula and Training, Investigation of different innovative instruction/content delivery mechanisms, corresponding to the new pedagogical paradigms based on the new ICT Curricula and e-learning platforms of the partners; Development of pilot European collaborative e-learning environment, based on the e-learning platforms of the partners, that facilitates hybrid mode of delivery and incorporates the new pedagogy; Evaluation and validation of the approaches; Dissemination of the results

Project ULEARN -- A European Lifelong Learning System on ICT in Education for Pioneer Teachers

ULEARN aims at creating a community of pioneer teachers spreading new ideas through interpersonal channels. To this purpose, it has developed a system that supports lifelong learning, knowledge sharing and co-operation. The project's main objectives are: to specify an organisational model of this system, to implement a pilot of the system, to define a curriculum related to the pioneer teacher's competence, to define a transferability strategy a to extend the pilot to a larger scale. Following is a summary of the main features of the project. Readers who are interested in more detailed and up-to-date information are advised to access the Project Web site: <http://ulearn.itd.ge.cnr.it/>

ULEARN project Objectives

ULEARN is a project carried out in the framework of the European program "e-Learning". This project aims at creating a stable community of "pioneer teachers" in Europe through a system which supports teachers' lifelong learning, sharing knowledge and cooperation. ULEARN deals with the definition and design of organisational model for a European virtual system of excellence on ICT in education, the definition of a common European curriculum of ICT skills in education, the implementation of a pilot of the system, the definition of a transferability strategy to extend the pilot to a larger scale and to make the system evolve into a stable structure.

V. CONCLUSIONS AND RECOMMENDATIONS

ICT technologies are enablers for e-Learning, hence an e-Learning initiatives should fit within an overall ICT programme.

e-Learning and innovation in education and training are key for creating the knowledge-based information societies in the ESCWA/Arab region.

e-Learning can benefit private sector, public sector and the citizens in general.

e-Learning needs new educational models and new skills for ICT and for education.

A successful e-Learning programme should be based on the collaboration between education professionals, governments and industry.

National e-Learning should be supported by appropriate policies and legislations.

ESCWA is positioned to play a leading role in creating and supporting a regional e-Learning programme with the aim of supporting the region in developing sustainable e-Learning solutions for education and training that will help create the knowledge-based information societies.

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About the Author

Dr. Sami Zahran has been in the ICT field for nearly 30 years. His career started in the National Computing Centre (NCC) in Cairo Egypt during the mid 1960's and early 1970s. He moved to the UK where he worked with International Computers Limited (ICL) for nearly fifteen years from the early 1970's to mid 1980's. He managed large national computerization projects under the UNDP in the Arab Gulf Areas, then he joined Digital Equipment Corporation (DEC) for 8 years. He is now with IBM Corporation where he manages large e-Business project. Dr. Zahran is a registered independent evaluator with the European Commission since the early 1980's where he evaluates proposals for projects proposals submitted to the European Commission for approval and funding. He is an international author (look him up in Amazon.com), consultant and regular speaker in International conferences on the latest developments in the ICT domain.

