WHAT'S ON THE MENU? TODAY'S SPECIALTY: A EUROPEAN NETWORKED UNIVERSITY

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ABSTRACT
In the midst of one of the greatest challenges ever faced, the great demand for learning, educational organizations are being reformed. The MENU consortium is working on meeting this challenge by creating a European Networked University (ENU). This paper provides a macroscopic view of the process of creating such aon organization. It describes the concerns that have to be taken into account and it presents the strategy of ENU. It also identifies ENU customers as well as competitors and articulates where ENU is going and why. Most importantly, it presents the business processes that ENU shall carry out.

KEYWORDS
Virtual or networked university, distance or open university, corporate university, virtual campus.

INTRODUCTION

We have entered the era of information society in which people have to be more knowledgeable and skillful than in any other era before. This is due to the fact that most of the tasks people carry out today are to a considerable extend automated. Automation is the characteristic of the contemporary society. Automation is not coming for free. People have to work hard to construct the proper technical systems and tools that bring automation and then to operate and maintain them. Behind this progress is technology, which is advancing and changing at rates unknown to this time.

In this setting new knowledge and skills are needed that change quickly as technology changes and people are obliged to acquire them through continuing learning. People now have to be life long learners.

This situation creates a great demand for learning for the young as well as adult people. There is no option for people today other than to be life long learners, otherwise they become unemployed with all the negative consequences it implies. According to the World Bank, in 2025, 150 million people will seek higher education and it is more than likely that there will not be enough space on physical campuses to accommodate them. Moreover, many might not be able to afford the costs of attending a university.

If we take into account the needs of life-long learners, this challenge becomes even more acute. The great demand for learning is becoming greater as time passes and is a serious problem, more serious than the other challenges society today faces, like overpopulation, poverty, pollution, etc. The European political leaders have expressed their awareness of this problem in their Bologna and Prague declarations.

Concerning higher education in Europe, European Ministers of Education claim that building the European Higher Education Area is a condition for enhancing the attractiveness and competitiveness of higher education institutions in Europe. They support the idea that higher education should be

considered a public service that is and will remain a public responsibility (regulations etc.), and that students are full members of the higher education community [Bologna declaration 1999]. The Bologna Declaration has been politically accepted and used as a basis for the development of higher education by most signatories as well as by leaders of universities and other higher education institutions. Any solution to the problem of great demand for learning should accord to these declarations and especially the five objectives of the Bologna process and its follow-ups. At the academic level, however, there is still a lot of second thoughts or even resistance.

The *solution* for meeting the challenge of great demand for learning can be given by reforming the educational/training institutions which must be reformed in order to meet this challenge. The conventional organization of these institutions is inadequate. Reformation is the essence of any solution adopted. The reformation has to incorporate technology, as well as the concerns addressed by the European Ministers of Education in their declarations. It is technology that created the problem. It is reasonable to expect, that among other mechanisms, technology will be the lever in solving it. Indeed, traditional universities starting to adapt purposes, structures and programs and new university organizations are emerging in response. Several such organizations have emerged and are used experimentally today [Hanna 1998].

As a result of the reformation of the classical universities to meet the need of great demand for learning, several reformed or completely new universities have emerged. These institutions are currently being described as online, virtual or networked universities. "If virtual university as is commonly understood, simply means university without walls, we must recognise that it existed long before the Internet in the form of traditional open/mega universities" [Ravet & Layte, 2002]. The key element in the transformation of higher education is the organisation's ability to use network technologies, and especially the Internet and the World Wide Web for supporting the instructional process. Network technologies can be used for:

- Information distribution, e.g. announcements, course description, calendar, etc.;
- Delivery and management of learning material, e.g. presentation of on-line course notes, updating the learning material, etc.;
- Offering multiple communication facilities, e.g. asynchronous and synchronous communication;
- Class management, e.g. on-line marking of students' assessments, tracking learners' participation, management of learners profiles, etc.

Irrespective of the level of incorporation of network technologies in the instructional process, many universities claim themselves as being virtual [Farrell 2001]. A virtual university is the outcome of joint venture of higher institutions and/or e-learning content and service providers. Two types of virtual universities exist:

- Legal entities that offer degrees and certificates; They offer opportunities for students to learn through asynchronous and synchronous interaction with each other and faculty members. Unlike the national distance learning universities, which have a historical tradition from correspondence studies and the post services, these new universities focus on the use of new technologies to provide not only improved access but also improved interaction between and among students.
- Non legal entities that do not offer formal qualifications by themselves; They are often online resource centres or gateways to institutions that offer courses and degrees. The individual institutions involved offer any associated qualifications(?). Each institution is responsible for the academic quality of the programs it offers.

This paper presents a solution to the challenge of demands for learning by proposing a model of a **European Networked University (ENU)**. This model is the outcome of a European project, called "**MENU**" (partially funded by the EU e-learning programme, 2001-2003). ENU is envisaged to be a well-formulated virtual linkage among existing traditional Universities that will provide on-line courses as part of degree programs. The ENU will not be a supermarket of online courses. It will offer a useful intermediate concept between (a) the anarchy of a post-university global educational cyberspace and (b) the limitations inherent in simple, evolutionary extensions of ODL provision by single institutions.

THE ENU STRATEGY

The ENU Consortium

ENU will be a partnership of European universities, committed to delivering postgraduate and lifelong learning-level programs via networked open and distance learning.
The initial partnership of universities that will work together to offer university degrees and certificates over the Internet or via distance education, as shown in Figure 1, is comprised by:

- Høgskulen Stord/Haugesund (HSH) – Norway
- Stiftelsen TISIP (TISIP) – Norway
- Høgskolen i Agder (HiA) – Norway
- Norges Teknisk-naturvitenskapelig Universitet (NTNU) – Norway
- Technologiko Ekpedeftiko Idrima Thessalonikis (TEI Salonica) – Greece
- National Technical University of Athens (NTUA) – Greece
- Universita' di Roma "La Sapienza" (UoR) – Italy
- University of Greenwich (UoG) - UK
- Finnish Virtual University (FVU/Utu) - Finland
- Högskolan i Kalmar (HiK) – Sweden
- Universidad Politécnica de Valencia (UPV) –Spain

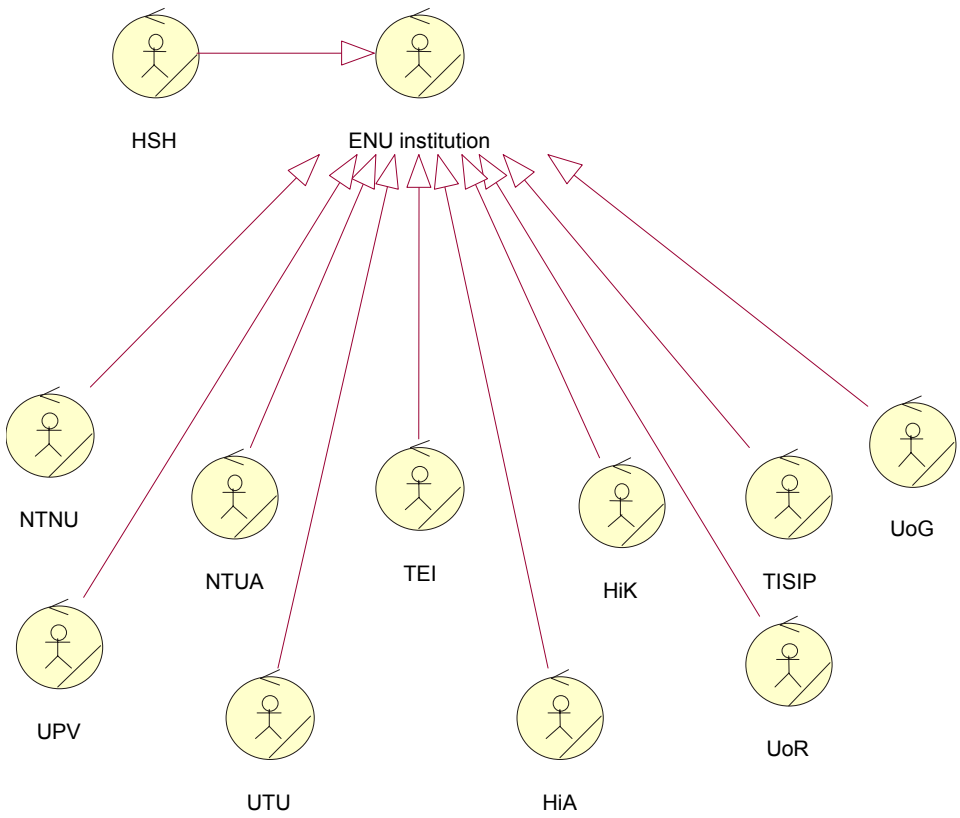

Figure 1. The ENU Institutions

Competitors

At the moment, at European level, few similar European initiatives that can be thought of competitors, exist such as Universitas 21 which is already running, and the EUNITE is an initiative (not realized as yet) managed by EUROPACE to create a virtual university undertaken by a strategic alliance of 8 universities. Moreover, there are some joint ventures among universities for offering European degrees on specific subject domains e.g. the EURO-MBA, a full-time European MBA; Bristol Business School,

Institut Commercial de Nancy and Georg-Simon-Ohm Fachhochschule Nürnberg have joined forces for its design. However, at international level, competition is huge. Efforts should be made to make a joint partnership with one of the big American virtual universities. ENU 's added value should be the multilingual programme of studies.

Size
ENU may divide the size measures in two: one that part deals with the amount of courses and programs that will be offered; and a second part that deals with opening ENU for any institution that wants to join It is envisaged that at least one MSc degree on will be developed as a test bed in one and a half years. However, a user could choose from a variety of distance courses offered by participating universities. Moreover, at least an "external partner" will join the ENU consortium of universities (the initial "formants").

Profitability
ENU will not be a legal entity. Fees will be required for some (if not all) of courses and degrees. The costs of courses and degree or certificate programs will vary according to the education provider.

Service level
Services will be provided for the individuals who are interested in full programs (degrees, certificates or diplomas) or in individual courses. Services that will be provided will cover information distribution, search facilities for programs and courses, academic advise, technical assistance, etc.

Research
ENU will be a constellation of European institutions that will perform collaborative research efforts for developing and delivering pedagogicallysound and technically stable learning material and models for effective e-learning experiences and for disseminating their experiences to other institutions.

THE ENU CONCEPTUAL MODEL

ENU is intended to be a complicated business system with numerous elements and complicated interrelationships and dependencies between them. In order to define a clear, high-level description of the most important concepts introduced in the ENU as well their associations, a conceptual model is given in the current section. The model is depicted in the form of a UML class diagram, as shown in Figure 2. The UML modeling language, a standard visual language for the modeling of software as well as business systems, utilizes the notation and the semantics for the diagram presented [Eriksson & Penker, 2000]. The most important concepts of the ENU are shown as orthogonals, classes in the UML terminology, connected with lines representing relationships between the corresponding classes. There are two types of relationships in the presented class diagram: *Associations*, depicting relationships between connected classes, the precise kind of which is given as a name of each relationship, and *Aggregations,* denoting a containment or whole/part relationship between the connected. Associations are shown as single lines while aggregations have a small diamond on the side of the containing class.

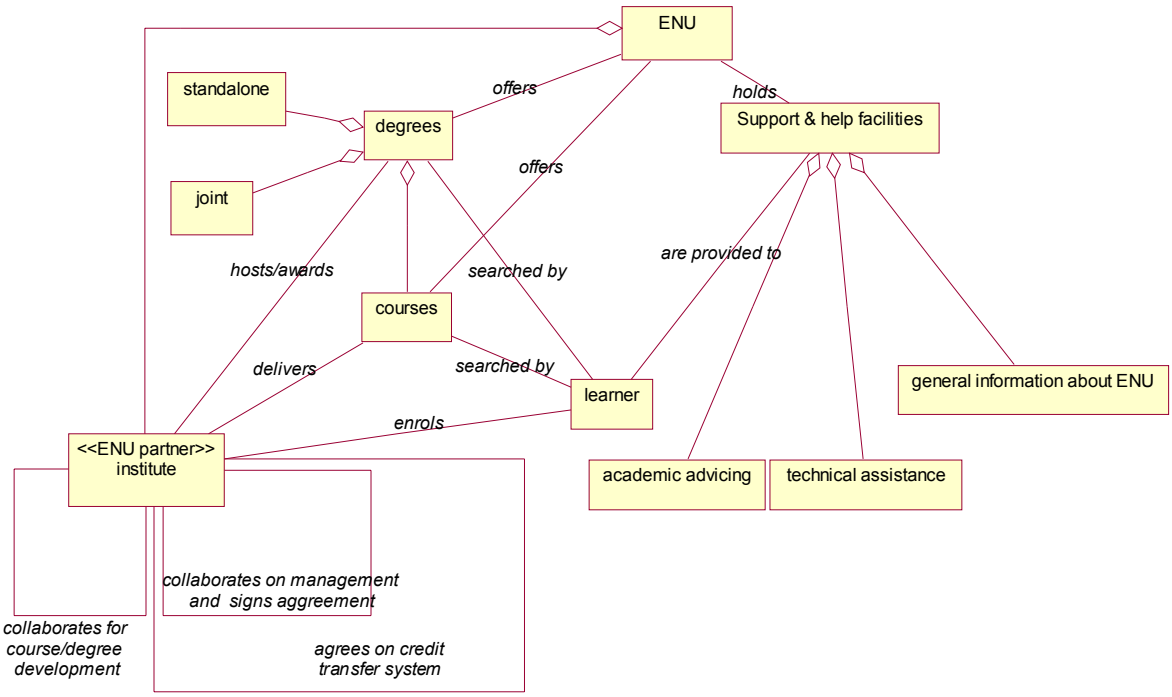

Figure 2. ENU conceptual model

The main concept of the model is the ENU itself. ENU is associated with a class named *Courses* with an association named *offers.* This denotes the fact that the ENU offers a number of courses to registered Learners. A number of such associations between classes are depicted in the same diagram in a self-explanatory manner. Note the associations relating the *Institute* class with itself. This means that two instances of this class, i.e. two entities of type *Institute,* for example NTUA and UoR are associated with an "*agrees for a credit transfer system*" relationship. In addition in the Resources section later in this document a short description of most of these classes is given. As an example of the aggregation relationship, we see how the "Support & help facilities" held by the ENU contain academic advice or technical assistance.

A GOALS/PROBLEMS MODEL

Goals can be broken into sub-goals associated with problems that might occur in achieving these goals. In order to achieve a goal all sub-goals should have been fulfilled accordingly. The principal goal of *making a European Networked University* can be further analyzed into the first level sub-goals*:*

- To *create and organize a network of institutions*. This means that participating Universities (i.e. the members of ENU)
  - should *make partnership agreements* (e.g. decide on common strategy, sign contracts, etc.)
  - should *provide a sustainability plan* explaining how they will exploit their e-learning activities and how they will get involved into R&D in the e-learning field (short and long programming).
  - They should *apply a quality assurance plan* in order to evaluate and guarantee the quality of the services and products that ENU offers as well as its future trends.
- To build measures for the *scalability of ENU*. This should be done by
  - Trying to *establish a membership process* for potential collaborators
- To *apply a marketing policy* for attracting clients
- To *offer or give access to degrees and programs of study*. ENU wont give any awards. Only the "home" institution where each student should register will do so.

- ENU infrastructure should be such that it will offer students information in the means of *meta-data description* about the participating institutes , the programs and the courses available
- The students should *register via the ENU infrastructure*
- The student should be able to *access the courses* that will be provided via the ENU infrastructure
- In order for a student to have the freedom in choosing various courses from different universities according to his personal preferences and needs, all participating universities should have *established an agreement of credit acknowledgement and transfer*. This means that all participating universities should agree on a credit transfer system

- To *offer specialized courses* mainly targeted to students that are not interested in getting a degree. For this goals, it is required that
  - ENU infrastructure should be such that it will offer students information by the means of *meta-data description* about the courses available
  - The students should *register via the ENU infrastructure*
  - The student should be able to *access the courses* that will be provided via the ENU infrastructure
- To *offer help* to potential learners. This can be achieved at three levels:
  - Offer academic advise
  - Offer information about the ENU philosophy and achievements
  - Offer technical assistance when problems in utilizing the ENU infrastructure arise.

THE ENU BUSINESS PROCESSES

Figure 3 shows the global view of all the business use cases and business actors. This is a diagram that can be considered as an overview of the ENU structure and functionality.

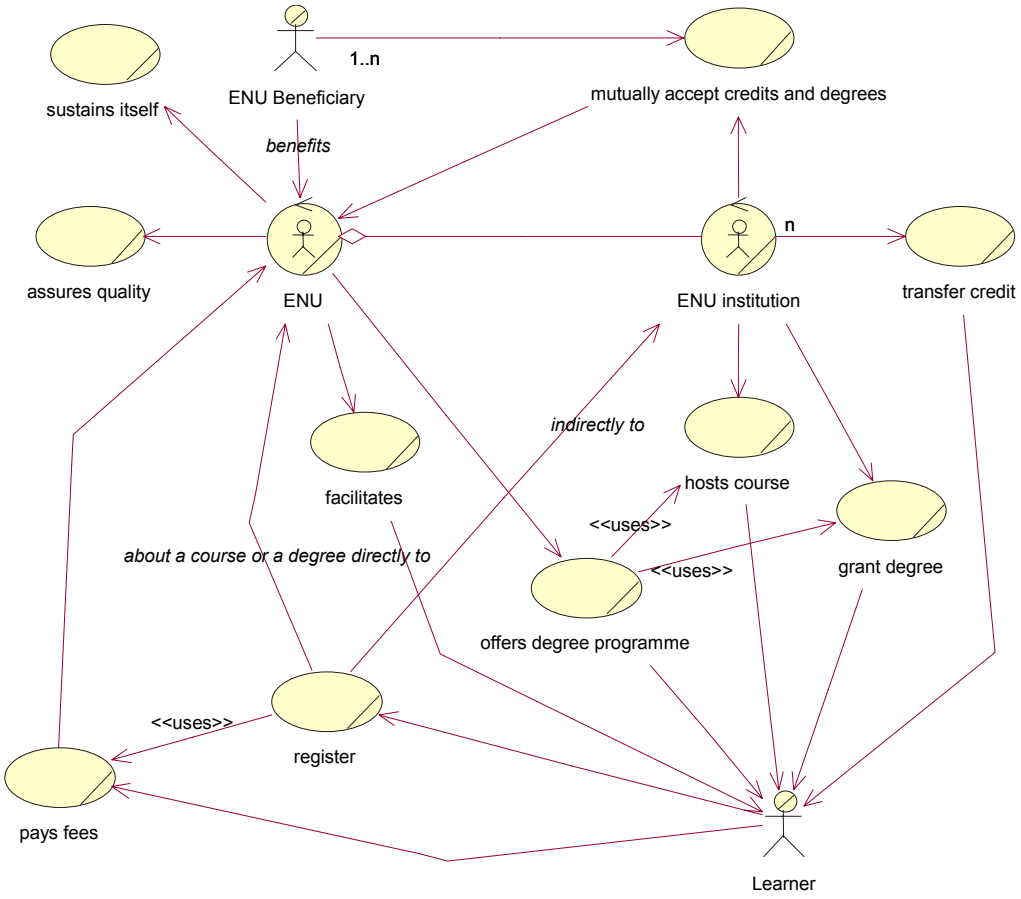

Figure 3. Global view of business use cases and business actors

There is one main business actor, i.e. an entity that does not belong to the ENU but interacts with it, through specific interfaces: the *ENU beneficiary*. The ENU Beneficiaries are learners, political decision makers, national authorities, political administrators, curriculum developers and administrators, university leaders, faculty members and university administrative personnel as depicted in Figure 4. In turn, ENU considers three kinds of learners, as illustrated in Figure 5: the students of the MENU partners' universities, external students that are company employees and other individuals.
The business worker that carries out all these business processes, in a macroscopic level, is the *ENU institutions*, i.e. the 11 partner institutions as depicted in Figure 1. The business processes that are carried out by the *ENU Institutions* are the following: assures quality, facilitates, grant degree, hosts course, mutually accept credits and degrees, offers degree programmes, pays fees, registers, sustains itself and transfers credits. All these business processes will be elaborated on the business object model.

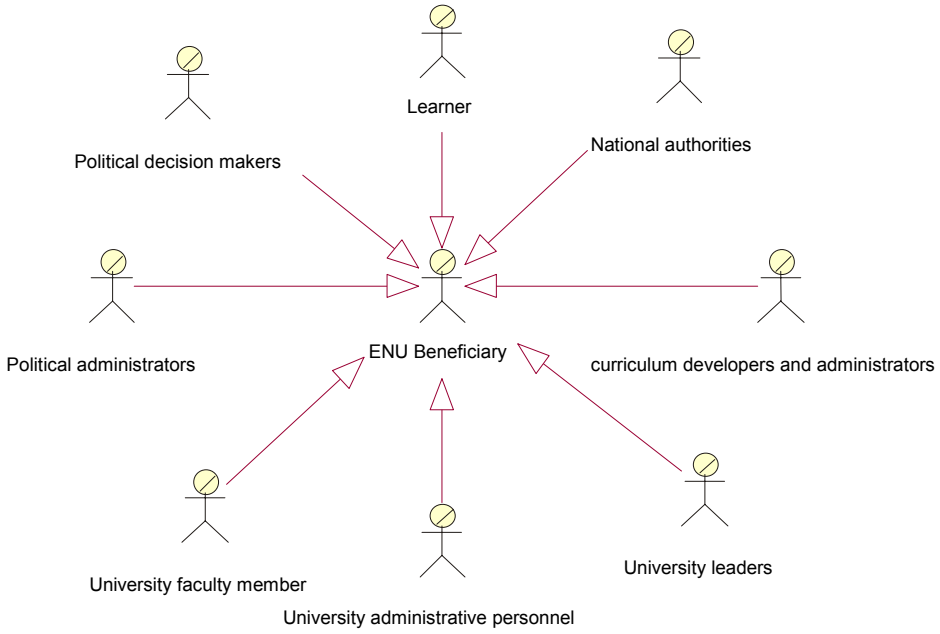

Figure 4. The ENU beneficiaries

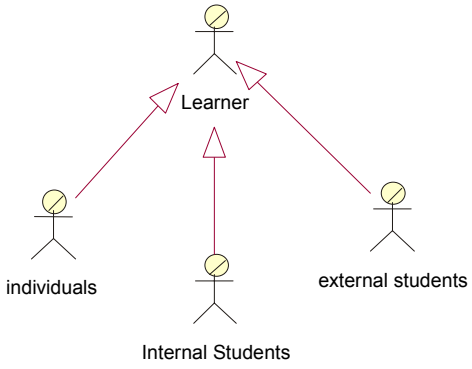

Figure 5. The ENU learners

SOME CONCERNS

The establishment of an ENU is not an easy task. Inputs and experiences from relevant efforts should be taken into consideration. Some of the most crucial concerns are the following:

- **Financial considerations**: The running costs of universities are high. The 3,500 colleges and universities in the USA have an enrolment of 14 million students and annual spending on higher

education is around $175 billion. This represents an average cost of $12,500 per student. The UK has 182 higher education institutions, 1.5 million students, and an expenditure of nearly £10 billion. It works out at around £6300 per student, or about $10,000. Not quite as expensive as the United States but, as they would say, in the same ballpark. The eleven mega-universities as a group enroll some 2.8 million students. Their budgets aggregate to around $900 million. This works out at less than $350 per student. One university after another is either setting up its own for-profit online subsidiary or otherwise working with Street-wise collaborators to trade on its brand name in soliciting investors, In the year 2001, academic entrepreneurs of distance education have begun to encounter the sobering reality that all that glitters is not gold [Dirr 2001]. Columbia University's high-profile, for-profit venture Fathom is reported to be "having difficulty attracting both customers and outside investors" compelling the institution to put up an additional $10 million - on top of its original investment of $18.7 million - just to keep the thing afloat. According to Sarah Carr's report in the Chronicle of Higher Education, Columbia's administrators remain behind the venture whether or not it makes money. Carr reports. "They are realizing that putting programs online doesn't necessarily bring riches".

- **Technology infrastructure**: Virtual space is infinite, but it does not promise universality or equity, nor is it appropriate for many students whose experience with technology is limited—and who might benefit far more from traditional delivery systems [Chellappa, Barua & Whinston 1997]. However, the experience of the UK Open University on the use of networked technologies (their preferred term is "knowledge media") seems to give hopes for the future. In 1997, 30,000 students were networked to the OU from their computers at home. That's up from only 5,000 two years before and 17,000 in(?) 1996 [Daniel 1997].
- **Multilingualism**: Most of the virtual universities have not faced the problem of different languages and cultures. Most, if not all the programs of studies are in English (in case of multinational co-operations) or in the native language of the institutions that participate in a geographically based co-operation. The only good example of multilingual programs exists in the case of online course brokers and the Universitas21.
- **Copyright issues** continue to hinder the setting up of virtual libraries and electronic document delivery systems, but there have been positive developments in the licensing of electronic products.
- **Reactions of conventional institutions: structure.** It is not a straightforward process to introduce virtual education in the traditional educational arena. There will be a "knock-on" effect from the introduction of virtual education that will affect all other administrative and academic practices. The case of the strike of the York University in Canada shows that the introduction of the changes is not always welcome [Dirr 1999].
- **Public perception**
  - It will not be a straightforward process to introduce virtual education in the traditional educational arena. There will be a "knock-on" effect from the introduction of virtual education that will affect all other administrative and academic practices.
  - There is public suspicion about the quality of education from non traditional universities
  - Some users are digital illiterates, so the use of networked open learning method is inappropriate for them. Moreover, some people might not have computer equipment that will allow them to study anywhere and at any time [Gladieux & Swail 1999].
- **Services**: Must the new organization provide all the services itself? If not, which might it contract to outside vendors (e.g., bookstore, online library, registration, financial aid assistance)?
- **Quality issues**: Assuming that the technologies will be new to many people in the target population, what will be done to assure that the infrastructure is usable and does not become a barrier? Establishing and maintaining qualitative integrity is critical to all the stakeholders of a new virtual education organization: the founders, the administrators, the faculty, the students, and the regulators. How will quality of instruction and support services be monitored? How will the results of quality control monitoring be conveyed to the stakeholders?

CONCLUSIONS

In the era of information society, people have to be more knowledgeable and skillful than in any other era before. This creates a great demand for learning, which is difficult to meet by traditional Universities, which are in search for suitable changes in order to adapt themselves to the new challenges. Within the MENU project, a European Networked University is proposed as a solution to this problem, which is envisaged to be a well-formulated autonomous and virtual linkage among existing traditional Universities that will provide on-line courses, which will be part of degree programs. The degrees will be granted by these Universities and not ENU. The collaborative venture between existing universities is a model that combines the strength and credibility of more than one institution.

Although there are just few European initiatives for collaborative ventures, there are a large number of similar initiatives in USA, Canada, etc. Having analyzed most of them [reports on organization models for Virtual Universities, 2000], we have embodied in ENU some of the most common characteristics these institutions have and in particular the ones from the Canadian Virtual University and California Virtual Campus. However, we have embodied some characteristics due to the European cultural diversity (e.g. multilingualism, lack of a standard credit system, etc.).

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