

*Studies in the Context of
the E-learning Initiative:
Virtual Models for
European Universities (lot 1)*

December 2003

*Final Report to the EU Commission, DG Education &
Culture, Annex B, C, D*

*Studies in the Context of
the E-learning Initiative:
Virtual Models for
European Universities (lot 1)*

*Final Report to the EU Commission, DG Education &
Culture, Annex B, C, D*

December 2003

Contents

Page

Annex B: Methodology Note	1
1.1. Desk study	1
1.2. Survey	1
1.3. Population	2
1.4. Interviews with government representatives	6
1.5. Case studies	6
1.6. Interviews with experts and stakeholders	9
Annex C: Interview log	11
Annex D: Terms of Reference.....	17

Annex B: Methodology Note

The aim of this annex is to provide the reader with an overview of the methodology of the study and the criteria applied in it. The different data-collecting activities carried out during the project include:

- A desk study of books, articles, policy papers, reports and material available on the internet
- A survey questionnaire distributed to all universities in the European Union
- A series of interviews with government representatives and key actors from each Member State
- 8 on-site case studies of European good practice
- A series of interviews with experts and stakeholders

The methodological approach for each of the data-gathering activities will be discussed in its own separate section.

1.1. Desk study

The initial data-gathering phase of the project consisted of a desk study of publicly available material: books, articles, reports, policy papers etc. on the use of ICT in higher education in Europe and other parts of the world. The outcome of this process is reported in Annex A, bibliography.

The bibliography was compiled on the basis of a structured internet search, and has been developed continuously through the recommendations of experts, government representatives and other individuals interviewed during the project.

1.2. Survey

The survey was conducted as an on-line questionnaire-based survey distributed to the heads of all universities in the European Union.

The questionnaire was developed by PLS RAMBØLL Management and subsequently approved by the European Commission, DG Education and Culture. A draft version of the questionnaire was read and commented on by Robin Mason from the Open University, UK and Annette Lorentsen, University of Aalborg, Denmark.

The purpose of the survey is twofold: 1) to provide the basis for a general description of the current situation concerning the European universities' use of ICT in the educational and organisational setting; and 2), to help identify examples of good practice in the European Union which would be a suitable subject for further investigation in the case studies.

1.2.1. Collection of data

Data was collected between January and March 2003 by means of a web-based questionnaire distributed to all universities in the European Union (see definition below). A total of 553 universities were included in the survey.

The questionnaire was sent as an e-mail containing a link to a web based-questionnaire – a method which has the several advantages of providing higher response rates than the traditional way of distributing questionnaires by mail, giving the respondent more time to answer, and also providing the respondent with the opportunity to research the correct response if it is not available immediately. The questionnaire was sent to the head of each university. A reminder was sent to respondents who had not responded by 10 March 2003. Later, respondents who still had not answered were reminded again by phone.

1.3. Population

In general, a university is understood as being an institution offering multidisciplinary medium-length and long courses for students of at least 17 years of age who hold an upper secondary qualification (Leaving Certificate) and meet institutional and course requirements. Courses can lead to qualifications at graduate, post-graduate and doctorate level.

It is almost impossible to come closer to a generic definition of universities which is applicable to all member countries. In Sweden, for instance, apart from the 39 institutions designated as universities, a further 20 educational organisations have been granted permission to award one or more qualifications at the undergraduate level. In Portugal, higher education is structured on a binary model, where both universities and polytechnic institutes are allowed to grant bachelor's and master's degrees.

Therefore, we have chosen to make our starting point the member states' own classifications in the Eurydice database of European education systems. Eurybase is based on legal definitions. Accordingly, a university is defined in this survey as an

educational institution which is juridically treated as a university by the member states. According to this definition, we have identified 585 fully-fledged universities in Europe. Note that for most countries, the figures from Eurydice date from 2000/2001 – for some the information is older, for others it is younger. Therefore universities set up after the information was provided to Eurydice are not included in the survey or country profiles.

To ensure that the survey included all objects of interest and was based on a homogeneous population, an additional sampling procedure was undertaken according to the following criteria:

- The Centre Universitaire de Luxembourg, which offers the first and second years of some undergraduate degrees, was included in the survey population, in order to ensure the representation of all Member States.
- The open universities in the UK, Portugal, Germany, Austria, Greece, Spain, the Netherlands and France were included in the survey in order to investigate the use of ICT in distance education.
- Defence academies, which are defined as universities in Germany and Finland but not in other Member States, were left out in order to ensure a homogeneous population and the possibility of cross-country comparisons.
- Academies of art, which are defined as universities in Sweden, Finland and Greece, but not in other Member States, were left out for the same reason.
- Universities with less than 500 students were left out. In statistical terms they are outliers – observations whose characteristics are remote from the rest of the data – because including them in the survey might lead to a distortion of the general picture for European universities portrayed in Chapters 4 and 5. Universities with less than 500 students are a phenomenon peculiar to Germany.

After this additional selection process, the population consists of 553 universities¹. A database was created containing information such as the name of the institution, address, phone number and e-mail address, as well as the name of the head of the university and his or her phone number and e-mail address. This information was gathered primarily by making direct contact with the Ministries of Education or the national rectors' conference, from websites, or by contacting the universities by telephone or e-mail. The database was delivered to the Commission as an annex to the Final Work Plan.

¹ Due to an error eight private universities in Portugal were left out

1.3.1. Responses and limitations

Table 1.1 shows the number of universities which were included in the survey, as well as the number which answered the questionnaire.

Table 1.1: Number of participants in survey

Response rate:	
Gross population	553
Fall out ²	19
Net population	534
Number of answers received	241
Response rate	45.1%

We consider that the response rate of 45.1% is satisfactory given that this is not an evaluation and that participation was voluntary. However, the ability of the survey to give a picture corresponding to reality does not depend only on the overall response rate, but also on the response rate in each Member State.

In Table 1.2 we have calculated the response rate for each country as well as compared the proportionality of each country's responses in relation to the total survey population and the number of answers we received. We have done this in order to determine whether some countries are over- or under-represented among the respondents. If this is the case, the conclusions applying to some countries and for the European level might require some caveats.

Table 1.2: Country response rate and country percentage of population and respondents

	Population (total number of universities)		Respondents (number of universities answering the questionnaire)		
	Number of universities in population	Percentage of the country's population	Number of universities which answered questionnaire	Country percentage of answers	Country response rate
Austria	13	2.4%	9	3.7%	69.2%
Belgium	15	2.7%	11	4.6%	73.3%
Denmark	11	2.0%	10	4.2%	90.9%
Finland	15	2.7%	8	3.3%	53.3%
France	87	15.7%	24	10.0%	27.6%
Germany	91	16.5%	41	17.0%	45.1%
Greece	19	3.4%	5	2.1%	26.3%
Ireland	7	1.3%	4	1.7%	57.1%

² These universities proved impossible to contact for some reason

Italy	77	13.9%	27	11.2%	35.0%
Luxembourg	1	0.2%	0	0%	0%
Netherlands	14	2.5%	8	3.3%	57.1%
Portugal	15	2.7%	6	2.5%	40.0%
Spain	67	12.1%	21	8.7%	31.3%
Sweden	31	5.6%	22	9.1%	71.0%
U.K.	90	16.3%	45	18.7%	50.0%
Total	553	100.0%	241	100.1%	45.13%

Table 1.2. shows that the response rates for Austria, Belgium, Denmark, Finland, Germany, Ireland, the Netherlands, Portugal, Sweden and the U.K. are satisfactory or very satisfactory. However, the response rate for France, Greece, Italy and Spain is lower than satisfactory³. This might be due to several reasons. Among other things, the low response rate could be caused by general or specific language problems, e.g. respondents might be unfamiliar with the technical vocabulary in English.

The rather large fall out in France, Greece, Italy and Spain means that results concerning these countries must be interpreted with care when the findings are broken down at Member State level. Since the questionnaire was distributed via e-mail, there might be a systematic bias regarding which universities answered it and which did not. One might presume that the more technologically advanced universities were more likely to answer the questionnaire. Therefore the picture that emerged in these countries might be somewhat more flattering than the reality justifies.

Regarding who answered the questionnaire at each university, Table 1.3 shows that in 90% of cases it was answered by the university head, a member of the university management or the person responsible for ICT at the particular university. Thus we consider both the reliability and the validity of the data for each university which participated in the study as high.

³ The Centre Universitaire de Luxembourg failed to answer the questionnaire, and therefore Luxembourg is not represented in the survey

Table 1.3: What is your position at the university?

	Number of universities	Percentage
Rector/university head/vice chancellor	119	49.4
Other member of university management (e.g. vice rector, member of board of directors)	38	15.7
Staff member with responsibility for ICT (e.g. director of dept. of curriculum development, director of e-learning, ICT policy advisor)	59	24.5
Other (e.g. assistant to rector or not specified)	25	10.4
Total	241	100

1.4. Interviews with government representatives

In order to investigate the national approaches and major initiatives of the 15 Member States, a series of interviews with government representatives and key people within the field was carried out.

The persons interviewed were located by making contact with the national ministry responsible for higher education, which appointed 2 or 3 government representatives or other key actors at national or regional level as interviewees. Interviews were based on an interview guide developed from the desk study and exploratory interviews with experts. They were carried out over the phone.

On the basis of the interviews and available material, a profile of each Member State containing an overview of key actors, main policy initiatives, drivers and obstacles etc. (cf. Annex F) was compiled and sent to the interviewees for commentary and review.

1.5. Case studies

Eight case studies were carried out with the purpose of studying European good practice in order to obtain in-depth input concerning the models for integrating ICT and e-learning in the educational and organisational setting.

The case studies were chosen on the basis of the results of the survey and the recommendations of experts and government representatives, as well as the following criteria:

- Innovative ways of using ICT in the educational and organisational setting
- New approaches towards partnerships with other universities or with the corporate sector
- Geographical dispersion of cases

Based on these criteria the following institutions were chosen:

- Open University of Catalonia, Spain
- The Finnish Virtual University, Finland
- UK E-Universities, UK
- Campus Numérique, France
- Umeå University, Sweden
- Politecnico di Milano, Italy
- Utrecht University, Netherlands
- University of Bremen, Germany

The case study method was chosen because it is well suited for in-depth study of situations in which a considerable number of explanatory variables are operative.

The characteristics of the case study method are that:

- It is based on different sources of data that supplement and support each other
- It is deductive in the sense that it is based on preliminary hypotheses governing the design of the study, the gathering of data and the analysis of the phenomenon being studied
- It is descriptive in the sense that the end product is an exhaustive description of the phenomenon studied
- It is inductive in the sense that the general conclusions and hypotheses are based on the data gathered during the study.

All these characteristics apply to the studies undertaken in the course of the project concerning virtual models for European universities.

The case studies were carried out in the course of site visits, except for the case of Bremen University, which was unable to receive us. Here the interviews were carried out via postal correspondence.

Each case study was built around an initial desk study of available background material such as ICT strategies, action plans, ICT project plans and internal evaluations, and a two-day visit at the university or project organisation under study. Interviewees were chosen by the individual institutions according to the following general criteria formulated by us:

- Interview with the managing staff in order to get an insight into strategies, business models, and co-operation with other universities both nationally and internationally, as well as the relationship with the responsible ministry etc.
- Interview with the executive board in order to gain insight into the interests of local and regional stakeholders
- Interviews with individuals responsible for ICT
- Group interview with labour market representatives and other stakeholders, if possible
- One or several interviews with private sector partners, e.g. sponsors, private partners or ICT companies located near the campus
- Group interview with 4-6 teachers involved in e-learning or blended learning
- Group interview with 4-6 students involved in e-learning or blended learning

These criteria were adjusted to fit the strengths or peculiarities of the particular institution or project under study. For instance, since the Open University of Catalonia (UOC) is fully virtual, the students never meet physically and thus it was not possible to conduct group interviews with them. Instead, the UOC made available to us their quantitative data on the students' evaluations of the courses and study format. Another example is the Finnish Virtual University. Since it consists of a rather small central developmental unit with other units located at the participating universities, in the case study an emphasis was placed on visiting several of these institutions in the Helsinki area.

In addition to this, telephone interviews were carried out with stakeholders after the case visit.

On the basis of the data gathered, profiles for each case (cf. Annex G) were written and sent to the institutions for commentary and review.

1.6. Interviews with experts and stakeholders

During this phase of the data-collecting activities, interviews were carried out with 17 experts and stakeholders from Europe and the rest of the world. In addition to this, a number of European organisations within the area, the European Association of Distance Teaching Universities (EADTU), EuroPACE, European University Association (CRE/EUA) and European Network on Intelligent Technologies for Smart Adaptive Systems (EUNITE) were singled out for interview, but this proved not to be possible due to difficulties in establishing contact.

Interviews with experts and stakeholders were carried out to fulfil several objectives:

- For exploratory purposes in the early phase of the project
- To provide input for the development of the survey questionnaire and question frame for the interviews with government representatives
- To recommend examples of good practice in Europe
- To qualify the findings and to provide perspectives and validation regarding analyses and future scenarios
- To provide input concerning the development of ICT in countries well ahead of Europe (US, Canada, Hong Kong, Australia)
- To provide input on the development of ICT in four accession countries (Slovenia, Lithuania, the Czech Republic and Hungary)

The accession countries were chosen according to the criterion of geographical dispersal.

Annex C: Interview log

Below are listed persons interviewed as part of the series of interviews with government representatives, experts and stakeholders. Interviews carried out during case-studies are not included. Please refer to the individual case profiles (Annex G) for a list of these interviews.

Government Representatives				
Country	Name	Institution	Position	Type of interview
Austria	Dr. Felicitas Pflichter	Department of innovation in study systems and Research at universities	Head of the action "New Media in Higher Education at Universities and Fachhochschulen	Written
	Prof. Dr. Peter Baumgartner	University of Innsbruck	Chair, steering group "New Media in Higher Education and Fachhochschulen"	Telephone
	Prof. Dr. Arthur Mettinger	University of Vienna	Vice Rector for education and international affairs	Telephone
Belgium(Fr)	Prof. Dr. Françoise D'Hautcourt	University of Brussels	Head of department of educational technology	Telephone
	Mr. Amaury Daele	Département Education et Technologie Cellule d'Ingénierie Pédagogique - FUNDP	Researcher	Telephone
Belgium(Fl)	Patrick Willems	Department of education, Ministry of the Flemish Community	Head of Section	Written
	Noel Vercryusse	Department of education, Ministry of the Flemish Community	Head of Division	Written

Denmark	René Bugge Bertramsen	Ministry of Science, Technology and Innovation	Head of Division	Telephone
	Solveig Boesen	Ministry of Science, Technology and Innovation	Head of Section	Telephone
	Wilbert van der Meer	The Danish Rector Conference	Special Consultant	Telephone
Finland	Pekka Kess	Finnish Virtual University	Director	Telephone
	Marja Kylämä	Department for Education and Science Policy, University Division, Ministry of Education	Senior Adviser	Telephone
France	Philippe Perrey	Direction de la Technologie, SDTICE, Bureau de l'Enseignement Supérieur (B3), Ministère de la jeunesse, de l'éducation nationale et de la recherche	Chef du bureau des technologies de l'information et de la communication pour l'enseignement supérieur	Telephone
Germany	Dr. Monika Trautewig	Referat 316, Ministry of Education and Research		Written
	Hans G. Klaus	"Neue Medien in der Bildung"	Leader of project	Telephone
Greece	Rector Christos Nikolaou	University of Crete	Head of Ministry of Education Committee on the Strategic Planning in the field of ICT in Universities and in Education in general	Telephone
	Konstantinos Delidis	Ministry of Education and Religious Affairs	Executive Secretary for Higher Technological Education	Telephone
Ireland	Michael Byrne	Learning Group, Information Society Com-	Chair	Telephone

		mission		
	Ian McKenna	Higher Education Section, Ministry of Education	Assistant Principle Officer	Telephone
Italy	Claudio Dondi	SCIENTER	Director of Research	Telephone
	Alessandro Musumeci	Servizio Automazione Informatica e Innovazione Tecnologica, Ministero dell'Istruzione, dell'Università e della Ricerca	General Director	Telephone
Luxembourg	Mr. Germain Dondelinger	Ministry of Culture, Higher Education and Research	Professeur-attaché	Telephone
The Netherlands	Franz Dezwaan	Directorate for University Education	Member of Board	Telephone
	Liebrand, prof. dr. W.B.G	SURF Foundation	Director	Telephone
Portugal	João Nuno Castro	UMIC - Unidade de Missão Inovação e Conhecimento Presidência do Conselho de Ministros		Telephone
	M.F. Thomaz	Ministry for science and technology	Secretary of State	Written
	Dr. Pedro Martin	POSI	Manager	Telephone
Spain	Sr. José Raga	Consejo de Coordinación Universitaria, MCED	Secretario General	Telephone
	Claudi Alsina i Català	General Directorat for Universities, Ministry of Universities, Research and Technology, Catalonia	General Director	Telephone

	Manuel Castro,	National Distance Education University (UNED)	Vice-rector for New Technologies	Telephone
	Miguel Rodriguez Artacho,	National Distance Education University (UNED)	Director de Planificación de Sistemas Informaticos	Telephone
Sweden	Professor Mats Ericson	www.netuniversity.se	Director	Telephone
	Carin Callerholm	Dept. of Higher Education, Ministry of Education	Head of Section	Telephone
	Rector Christina Ullenius	Swedish Rectors' Conference	Chair	Telephone
United Kingdom	Malcom Read	JISC	Executive Secretary	Telephone
	David Cook	JISC	Head of Policy and Corporate Services	Telephone
	Dr. Anthonny Mann	DFES	Team leader	Telephone
	Lynne Wells	DFES	Member of Team	Telephone
Expert and stakeholder interviews				
Australia	Rob Philips	Educational Development Teaching and Learning Centre Murdoch University	Director	Telephone
Canada	Joanna Curry	Simon Fraser University	Surrey Campus Director	Telephone
Czech Republic	Jiri Zlatuska	Masyryk University Brno	Rector	Telephone
Denmark	Annette Lorentsen	Aalborg University		Telephone
European Union	Marianne Hildebrandt	ERASMUS		Telephone
Germany	Erwin Wagner	Distance Learning and Continuing Education at Hildesheim University and President of Eden	Director of Centre	Telephone

	Ulrikke Rinn	Projekt Konzepte und Elemente virtueller Hochschule, Knowledge Media Research Center (KMRC), University of Tübingen	Researcher	Telephone
Hong Kong (China)	Nancy Law	Centre for Information Technology in School and Teacher Education Hong Kong University		Telephone
Lithuania	Gytis Cibulskis	Distance Education Centreat Kaunas University of Technology	Technical Director	Telephone
Norway	Morten Flate Paulsen	NKI Nettskolen		Telephone
United Kingdom	Robin Mason	British Open University		Telephone
USA	Andy di Palo	Stanford University, Centre for Professional Development,		Telephone
Sweden	Henrik Hansson	The Swedish Net University		Telephone
	Stellan Ranebo	Nordic Council		Telephone
Organisations		The European Association of Distance Teaching Universities (EADTU)		No interview possible
		European Association og Distance Teaching Universities		No interview possible
		EuroPACE		No interview possible
		European University Association (CRE/EUA)		No interview possible

	Philippe Trautmann	European Network on Intelligent Technologies for Smart Adaptive Systems (EUNITE) SUN Microsystems	EMEA Technical Manager	No interview possible Telephone
--	--------------------	--	------------------------	------------------------------------

Annex D: Terms of Reference

ANNEX I CONTRACT N. 2002 - 0951 / 02 - 001 *Models for European Universities of Tomorrow* PROGRAM OF WORK

In accordance with the guidelines and general objectives laid down in the eLearning Action Plan, adopted by the European Commission on 28 March 2001, the Program of Work shall contain, as described in the Call for Proposals:

1) a general description of the current situation in the field under study:

This first phase will generally be achieved by desk research. The objective is not to establish an exhaustive inventory but to provide a general view of the state of play in the European Union. The main outcomes shall provide a precise definition of the various subject areas which were examined as part of the study and the methodology used to assess them, together with a range of relevant data describing the current situation and identifying potential areas for Community action. This shall include an assessment of the quality and accessibility of readily available information such as, for example, the existence of national directories of web sites of universities or museums. Results of this phase shall, amongst other things, list relevant information sources and identify areas where there is a lack of adequate information.

2) a study in-depth via a meaningful selection of case studies:

Selection criteria shall be specified that will take into account the cultural diversity of the European Union. These case studies shall be based, amongst other things, on in-depth interviews with relevant participants and shall be supported by detailed information on the selected cases. Both demand and supply sides shall be studied. For example, the opinions of teachers, tutors, trainers and students together with the purchasers of equipment, software and other services and their suppliers.

3) a future-oriented analysis:

Aimed at the identification of trends and at the possible creation of various scenarios. These shall be based on the opinions of experts and practitioners in the field, and shall have an educational orientation, aiming to better understand and support learning. The studies shall assess the role of e-learning in this overall lifelong learning model, and shall also consider technical developments and their possible evolution. Priority will be given to those aspects which have particular implications for Europe such as, for example, linguistic diversity.

4) a set of recommendations for future action and study:

These may cover the identification of specific subjects for further research, of issues needing in-depth analysis or empirical testing, and of problems and opportunities for integration and development of the use of ICT for education and training. As in point c), these recommendations shall take into account issues such as technological development, changes in educational approaches, cultural appropriation of innovation, the management of change, and social attitudes towards the problems and opportunities of generalised use of ICT for education, training and culture.

All of the recommendations in response to the above shall reflect the wide scope of the studies, and refer to specific issues identified in the case studies. They shall also try to identify common, pan-European issues and, if suitable, include specific proposals for further EU action in the field

All the studies shall focus on the European Union, but they shall take due account of developments in other countries which are well advanced in the use of ICT in the areas of education, training and culture, such as Canada, Australia, Japan and the United States. The specific situation in European Union applicant countries shall also be considered.

All outcomes shall be written in a style which is easily understood by a large audience. Each study must be preceded by a short presentation of the key findings and conclusions in one or two pages, and by a more detailed executive summary of five to ten pages. These texts must be drafted in a direct and easy to read style, and they must be provided in both English and French.

This Program of Work deals specifically with Lot 1: ***Models for European universities of tomorrow***; the objective shall be to provide the European Commission with a detailed report on the current and possible future use of information and communication technologies (ICTs) by European Higher Education Institutions (HEI) for educational and organisational purposes. ICT provides an important resource for co-ordinating and implementing fundamental changes which are currently underway and which are having an impact throughout society. These can include issues such as organisational changes, new funding schemes, international educational requirements, joint curricula developments and flexible adaptation to short-term employment requirements, etc.

This study shall identify the main benefits of such changes in the University world and consider the possibilities for achieving a sustainable and relevant use of ICT in higher education. It shall try to anticipate the e-learning needs, policies and uses of ICT in the higher education sector in 5-10 years time, in the context of the lifelong learning paradigm.

The continued development of e-learning provision, if only led by market considerations, may result in increasing social exclusion and socio-economic imbalance. It may also result in reducing linguistic and cultural diversity in Europe, if global models are imposed without taking into account different cultural and educational contexts. However, the widespread provision of good quality e-learning contents and services and their effective organisation may enable HEIs to cope efficiently with changes imposed by new educational demands and new approaches to teaching and learning.

The wide range of strategies for ICT integration developed by HEIs are often fragmented and compartmentalised. Universities, or departments within universities and other associated organisations such as distance education units, may have different priorities and different aims and objectives. The introduction of ICT methods and resources does not necessarily succeed in establishing links between the various departments or between universities, nor does it result in the development of shared approaches to external competition. The study shall provide background information and advice on these potential tensions - including public vs. private, institution vs. ministry, national vs. transnational, etc,- both at present and in the near future. It shall also provide information on the current use of ICT; on the mixture and balance between 'virtual' and 'face-to-face' methods, and on the underlying cognitive paradigms.

The study shall result in an assessment of European approaches in the use of ICT in HEI. Different models and patterns shall be identified and illustrated with case studies. For each of these, there shall be a series of interviews with relevant actors (decision-makers at the central level, managers of the innovative projects to be considered, as well as teachers, other university staff and students). Aspects analysed shall include general university strategies; staff development strategies; pedagogical options; technology visions; economic factors; contexts of ICT use (home, learning centres, libraries, offices, laboratories, etc.); learning and teaching styles (for instance, collaborative learning, on-line tutoring and support requirements); incentive schemes to encourage the use of ICT based learning; and ways to address cultural, geographic and linguistic differences.

- 1) The following set of questions shall be addressed by the study:
 - a) How can virtual mobility be combined effectively with physical mobility? How can virtual mobility be a tool to encourage physical mobility? How is virtual mobility currently being developed in practice? How can the academic part of higher education be combined in new ways with the various other activities which take place on campus, such as the exchange of information through face to face contact and by social experience and dialogue?
 - b) How could the role of the HEIs be effectively developed to include all members of society, perhaps, for example, by creating local and regional partnerships and by establishing learning links with other organisations? Could the reinforcement of the traditional campus culture be considered as a competitive advantage for HEIs following the expansion of transnational education?
 - c) Can ICT strategies be a catalyst for re-defining HEI curricula, with a view to providing specific services for new target groups (for example, older learners; the unemployed; those seeking mid-career re-skilling or on-the-job training)? What would be their roles in a context of lifelong learning? What could be the possible roles and models of publicprivate partnerships for the implementation of these ICT strategies? What could be their relationship with other emerging educational models such as corporate
 - d) How can ICT strategies be used to enhance HEI co-operation at European level? What are the possible organisational models for this? For example, what are the advantages of creating consortia amongst national HEIs, or between a HEI and other educational partners at regional and local levels? What would be appropriate collaboration frameworks to establish these links?
 - e) What would be the essential requirements for effective co-operation between European HEIs? For example, for the sharing or exchange of learning materials, including, if necessary, translation and localisation. How are aspects such as quality certification, inter-operability, use of metadata standards, contents brokerage, assessment and accreditation, new business models for HE contents and services currently approached in Europe? What would be suitable organisational and technical solutions for virtual European universities?

- f) How could all the above evolve and result in different possible scenarios for European universities in the knowledge society?

The study shall provide a series of recommendations on further work and research to be done for the identification of sustainable and practicable strategies and services for the development of European HEIs of tomorrow.

