International Journal of Business, Human and Social Sciences
ISSN: 2517-9411
Vol:1, No:8, 2007

Information/Knowledge Society and Europe

A. Ziya Aktaş

***Abstract*—**During the last decade some long lasting changes and developments are shaping the global society. The world is entering a new society which is already named as information or knowledge society. In the paper, information/knowledge society is elaborated first. Starting in the year 2000, European Union has initiated some special projects such as eEurope and eEurope+ and activities such as Bologna Process and Socrates/Erasmus Program . The paper will review these activites in relation with information or knowledge society . Before paper ends with a conclusion, some views relevant to the topic are also presented.

***Keywords*—**Bologna Process, Erasmus/Socrates Program, information/knowledge society , Lisbon objectives.

I. Introduction

FOLLOWING the Information /Knowledge Society developments in the United States during ninetees and in parallel with the Japanese Millenium Project started in the end of 1999, the creation of a Europe of knowledge has been a new strategic goal for the European Union in order to strengthen employment, economy and social cohesion as part of a knowledge based economy. After the European Council Summit in Lisbon of March 2000, eEurope and later eEurope+ Projects had been initiated for this goal.

The European Council in Barcelona in 2002 recognised the need for excellence, in its call for ***European systems of education*** to become a ***world reference*** by 2010. Universitites are situated at the crossroads of education, research and innovation that is knowledge triangle, and service to society. They hold, therefore, the key to the knowledge economy and society efforts of member and candidate countries of EU.

European Commission began supporting a mobility programme named Erasmus Programme for European students and academicians in 1987. The Erasmus Programme has later been incorporated under the Socrates Programme umbrella starting in 1995. Socrates is Europe's education programme and its main objective is to build up a Europe of knowledge and thus provide a response to the major challenges of this new century and the new society. The Erasmus action and its different activities fit later into an educational program promoted by the Bologna Process that is initiated in 1999 and followed up by Prague -2001, Berlin-2003 and finally by Bergen-2005 meetings. The Bologna Process has basically aimed at the creation of a European Higher Education Area by 2010 and promotion of the European system of higher education world-wide.

Briefly, EU is getting ready for a new age by means of ***eEurope/eEurope+*** projects that cover public and private sector organizations and ***Bologna Process*** which is operational in the field of higher education.

A.Ziya Aktaş is Professor of Computer Engineering and Rector in Çankaya University, Ankara, Turkey (e-mail: zaktas@cankaya.edu.tr).

II. Information / Knowledge Society

Recently, we realise that many powerful forces have been shaping the development landscape of all countries. Such developments have paved the way toward a new age called ***Information Age***. After agricultural and industrial societies, the new society is already named as ***Information Society*** or ***Knowledge Society***. As it is usually done, I hereby use the term 'information' as a generic term to imply data or information or knowledge which may vary depending on time,place and person [1]. Therefore, 'information society' may also mean 'knowledge society' or vice versa in the text.

The knowledge economy and society stem from the combination of four interdependent elements: the production of new knowledge, mainly through scientific research; its transmission through education and training; its dissemination through the information and telecommunications technologies such as computers, computer networks and internet; its use in technological innovation for new industrial processes and services.

The information society is a society for everybody. Its democratic nature must be noted and supported. It is vital to provide universal access to information for everybody. Transparency and openness in a government activities will definitely help to improve the efficiency of public administration. Electronic democracy, impovement in education and training, betterment of employment, support of market economy, various legal and social benefits and finally research and development improvement may be named as a few of the advantages of information society. A new paradigm is emerging creating knowledge-based economies and societies. Knowledge is becoming the main source of wealth and power, but also of difference as ***digital divide*** between nations, regions, companies and people. Innovation based on a specific knowledge is the main competitive advantage. Competitiveness means to answer just in time to the personal needs or preference of the customer, which requires a very sophisticated knowledge management. Mass customization is succeeding to fordist standardised mass production. With e-commerce business trade directly with businesses and the

company dimension can become more irrelevant when taking advantage of globalisation. Knowledge management becomes a key component corporate strategic management, activating the relationship between marketing a research and production. Corporate organization is reshaped to build a learning organization. New types of workers emerge, namely ***knowledge workers*** [2].

III. Information Society and Europe

In December 1999, the European Commission launched '***eEurope*** – An Information Society for all' ***initiative***. The initiative has aimed at accelerating the uptake of digital technologies across Europe and ensuring that all Europeans have the necessary skills to use them.The key objectives of the eEurope initiative were :

- Bringing every citizen,home and school,every business and administration,online and into the digital age;
- Creating a digitally literate Europe,supported by an entrepreneurial culture ready to finance and develop new ideas;
- Ensuring that the whole process is socially inclusive,builds consumer trust and strengthens social cohesion.

A new strategic goal and an overall strategy , named ***'Lisbon Strategy'*** or ***'Lisbon Objectives'*** was defined at the European Council held in Lisbon on 23-24 March 2000 by the Heads of Government and State of the EU-15. Quoting its own conclusions [2] :

"The Union has today set itself a new strategic goal for the next decade**:** ***to become the most competitive and dynamic knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and grater social cohesion.***"

The Council had noted the urgent need for Europe to quickly exploit the opportunities of the knowledge-based economy and in particular, the internet. In response to this need the ***eEurope Project*** for EU countries was launched in Feira on the 19-20 June 2000. In the same year ***eEurope+ Project*** was adopted for the Candidate countries of EU.

Knowledge has always been an ingredient of human societies, but what is radically new is the speed of its accumulation and diffusion, due to information and telecommunications technologies. Working conditions and living conditions are being redefined. Internet is becoming the main infrastructure of this new paradigm. Europe is somehow lagging behind in this transition and can learn a lot from the US but the point is not to imitate the US, but rather to define the European way to the knowledge economy.Renewing the European social model should create the conditions to help people move from ***jobs with no future to jobs with a future*** [2].

Like *e*Europe Action Plan, the ***eEurope+ Action Plan*** also aims to accelerate reform and modernisation of the economies in the candidate countries, encourage capacity and institution building, improve overall competitiveness and provide for actions which address the specific situation of the Candidate Countries.

eEurope+ Action Plan has the following steps [3]:

0. Accelerate the putting in place of the basic building blocks for the Information Society

a) Accelerate the provision of affordable communication services for all
b) Transpose and implement the *acquis* relevant to the Information Society

1. A cheaper, faster, secure Internet

a) Cheaper and faster Internet access
b) Faster Internet for researchers and students
c) Secure networks and smart cards

2. Investing in people and skills

a) European youth into the digital age
b) Working in the knowledge-based economy
c) Participation for all in the knowledge-based economy

3. Stimulate the use of the Internet

a) Accelerating e-commerce
b) Government online: electronic access to public services
c) Health online
d) European digital content for global networks
e) Intelligent transport systems
f) Environment on-line

Noting the conditions in the Candidate countries, the **eEurope+ Action Plan** has an additional section named ***" Accelerate the putting in place of the basic building blocks of the Information Society"***, different than ***eEurope Action Plan*** . Candidate Countries have also included an additional area in this Action Plan which targets action for developing "***environment on-line***".

The objective of ***eEurope2005 Action Plan,*** adopted in the Sevilla European Council meeting on 21/22 June 2002, was to provide a favourable environment for private investment and for the creation of new jobs, to boost productivity, to modernise public services, and to give everyone the opportunity to participate in the global information society. *e*Europe 2005 therefore aims to stimulate secure services, applications and content based on a widely available broadband infrastructure[4]. (Broadband is a method of sending and receiving data over high speed networks. Broadband connections that use cable or ADSL mean there is greater capacity to send data than standard telephone lines.)

Following the action plans it was expected that by 2005, Europe would have:

- modern online public services
  - e-government
  - e-learning services
  - e-health services
- a dynamic e-business environment

and, as an enabler for these

- widespread availability of broadband access at competitive prices
- a secure information infrastructure.

The action plan comprises four separate but interlinked tools. Firstly, ***policy measures*** to review and adapt legislation at national and European level. Secondly, *e*Europe will facilitate the exchange of experience, of ***good practices*** and demonstration projects, but also of sharing the lessons from failures. Projects will be launched to accelerate the roll-out of leading edge applications and infrastructure.Thirdly, policy measures will be monitored and better focused by ***benchmarking*** of the progress made in achieving the objectives and of the policies in support of the objectives. Fourthly, ***an overall co-ordination of existing policies*** will bring out synergies between proposed actions**.** A steering group will provide a better overview of policy developments and ensure a good information exchange between national and European policy makers and the private sector. This steering group would also make an early participation of candidate countries possible.

Picking e-learning services of the action plan as an example, the proposed actions were [4]: Broadband connections, eLearning Programme, Virtual campuses for all students, University and research computer-supported co-operative system, and Re-skilling for the knowledge society.

All these actions will take advantage of the possibilities offered by e-learning.

In the European Council Resolution 5197/03 [5]:
It was *UNDERLINED that:*
The vital importance of an inclusive approach (e-inclusion) by all stakeholders to the information society and the need for this to be reflected throughout the implementation of the ***eEurope 2005 Action Plan.***

In the same resolution, also it was *STRESSED that:*

1. the key role of appropriate, attractive and high-quality digital content in the successful development of the interactive broadband services on which the full implementation of eEurope 2005 depends and the importance of using access platforms such as 3G communications and digital television;
2. the importance of ensuring the appropriate security of networks of and the information that is transmitted through them for individuals, businesses, administrations and other organisations.

A relatively recent communication of the European Communities summarizes the developments in Lisbon Objectives during the last five years [6]:

"The past 50 years have seen extraordinary progress, but in a changing world Europe cannot stand still. This is why five years ago Heads of State and Government signed up to an ambitious programme of change. They committed themselves to making the European Union the most dynamic and competitive knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion, and respect for the environment. Today, we see that progress has at best been mixed. While many of the fundamental conditions are in place for a European renaissance, there has simply not been enough delivery at European and national level. This is not just a question of difficult economic conditions since Lisbon was launched, it also results from a policy agenda which has become overloaded, failing co-ordination and sometimes conflicting priorities. For some this suggests that we should abandon the ambition of 5 years ago. The Commission does not agree. The challenges we face are even more urgent in the face of an ageing population and global competition. Unless we reinforce our commitment to meeting them with a renewed drive and focus; our model for European society, our pensions, our quality of life will rapidly be called into question. The need for urgent action is confirmed by the report from the High Level Group chaired by Wim Kok last November. It identifies a daunting challenge. According to Kok, *"The Lisbon strategy is even more urgent today as the growth gap with North America and Asia has widened, while Europe must meet the combined challenges of low population growth and ageing. Time is running out and there can be no room for complacency. Better implementation is needed to make up for lost time"*. Faced with this challenge Europe needs to improve its productivity and employ more people. We need a dynamic economy to fuel our wider social and environmental ambitions. This is why the renewed Lisbon Strategy focuses on growth and jobs."

In order to do this, it is recommended that the following conditions are satisfied:

- ***Europe is a more attractive place to invest and work***
- ***Knowledge and innovation are the beating heart of European growth***
- ***We shape the policies allowing our businesses to create more and better jobs***

A statement in the communication such as **"*To bring all this together Member States should appoint a "Mr" or "Ms Lisbon" at government level."*** is very interesting and deserves a special elaboration. Honestly I had been advocating for a minister level representation of information society in the Turkish government since the year 2000. I am, therefore, delighted to see such a statement in a EC communication in the year 2005.

The last point relevant to ***eEurope Project*** is a European Commission press release of 1 June 2005 with the title "***Commission launches five-year strategy to boost the digital economy***" [7]:

"The Commission today adopted the initiative "***i2010***: ***European Information Society 2010***" to foster growth and jobs in the information society and media industries. i2010 is a comprehensive strategy for modernising and deploying all EU policy instruments to encourage the development of the digital economy: regulatory instruments, research and partnerships with industry.The Commission will in particular promote high-speed and secure broadband networks offering rich and diverse content in Europe."

IV. European Universities

Lisbon objectives of EU call for efforts from a wide range of players. These include the European universities, which have a particularly important role to play. This is because of their two-fold traditional vocation of teaching and research, their increasing role in the complex process of innovation, along with their other contributions to economic competitiveness and social cohesion, e.g. their role in the life of the community and in regional development, simply the service to society. Given their central role, the creation of a Europe of knowledge is for the universities a source of opportunity, but also of major challenges. After enlargement and considering the human and financial resources needed, the critical question for European universities will be if they are in a position to compete with the best universities in the world and provide a sustainable level of excellence .

In order to implement the Lisbon Objectives, the European Union has embarked upon a series of actions and initiatives in the areas of research and education, such as Bologna Process and Socrates/Erasmus Program etc..

All over the world, but particularly in Europe, universities face an imperative need to adapt and adjust to a whole series of profound changes. These changes fall into five major categories [8]:

- Increased demand for higher education ;
- The internationalization of education and research ;
- The proliferation of places where knowledge is produced ;
- The reorganization of knowledge ;
- The emergence of new expectations.

Various meetings and conferences have been held in Europe during the last decade for improvement of higher education. A key document, Magna Charta Universitatum, and a key process , Bologna Process, worth to a particular attention. In the following they will be summarized.

A. Magna Charta Universitatum

In celebration of the 900-th year of the Bologna University on September 18, 1988 in Bologna-Italy the Magna Charta Universitatum was declared. There, it was stated that

"… Looking forward to far-reaching co-operation between all European nations and believing that peoples and states should become more than ever aware of the part that universities will be called upon to play in a changing and increasingly international society. Consider:

1- that at the approaching end of this millennium the future of mankind depends, largely on cultural, scientific and technical development; and that this is built up in centers of culture, knowledge and research as represented by true universities;
2- that the universities' task of spreading knowledge among the younger generations implies that, in today's world, they must also serve society as a whole; and that the cultural, social and economic future of society requires, in particular, a considerable investment in continuing education ;
3- that universities must give future generations education and training that will teach them, and through them others, to respect the great harmonies of their natural environment and of life itself."

European Area of Higher Education is based on the fundamental principles laid down in the Magna Charta Universitatum. This is of the highest importance, given that Universities' independence and autonomy ensure that higher education and research systems continuously adapt to changing needs, society's demands and advances in scientific knowledge.

B. Bologna Declaration

The Bologna Declaration involves six actions relating to:

1- a system of academic grades which are ***easy to read and compare***, including the introduction of the diploma supplement (designed to improve international "transparency" and facilitate academic and professional recognition of qualifications);
2- a system essentially based on ***two cycles***: a first cycle geared to the employment market and lasting at least three years and a second cycle (Master) conditional upon the completion of the first cycle;
3- a system of ***accumulation and transfer of credits*** (of the ECTS type already used successfully under Socrates/Erasmus);
4- ***mobility*** of students, teachers, and researchers;
5- cooperation with regard to ***quality assurance***;
6- the ***European dimension*** of higher education.

The aim of the process is thus to make the higher education systems in Europe converge towards a more transparent system which whereby the different national systems would use a common framework based on three cycles-Degree/Bachelor, Master and Doctorate.
As far as the Europe Union is concerned, the Bologna Process fits into the broader framework of the Lisbon Objectives of the year 2000.

C. Bologna Process

Bologna Declaration was followed by Prague Declaration, Berlin Declaration, and Bergen Declaration. The next one will be held in London in 2007.

Prague Declaration - May 2001

At the Prague ministerial conference in May 2001 the ministers of education of the signatory countries of the Bologna Process set the European area of higher education

the objective of responding to the needs of ***lifelong learning*** [2] .

Berlin Declaration - 2003

In Berlin, on September 19, 2003 it was decided to speed up the Bologna Process by setting short term targets. Thus, by 2005, all signatory countries should:

- have adopted a two-cycle system ;,
- issue the diploma supplement in a major language to all their graduates free of charge and automatically ; and
- have made a start on introducing a quality assurance system.

In addition, the doctorate cycle will henceforth be covered by the Bologna reforms thus promoting closer links between the ***European Higher Education Area*** (EHEA) and the ***European Research Area*** (ERA).

Ministers reaffirmed their position that ***higher education is a public good and a public responsibility***. They emphasized that in international academic cooperation and exchanges, academic values should prevail.

Bergen Declaration – 2005

European Ministers responsible for higher education in the participating countries of the Bologna Process have met for a mid-term review and for setting goals and priorities towards 2010 in Bergen - Norway on 19-20 May 2005 [9].

At the end, they confirmed their commitment to coordinating their policies through the Bologna Process to establish the European Higher Education Area (EHEA) by 2010, and to assisting the new participating countries to implement the goals of the Process.

In the declaration, the central role of higher education institutions, their staff and students as partners in the Bologna Process are underlined.

V. Some Views

In a European University Association (EUA) publication, six major objectives for European universities were listed as follows [10]:

1- Stimulating the creativity of basic research through competition between teams at European level;
2- Making Europe more attractive to the best researchers;
3- Developing Research Infrastructures of European Interest;
4- Improving the coordination of national research programmes;
5- Creating European Centers of Excellence through collaboration between laboratories;
6- Launching European Technological Initiatives.

An overview by J.M.Barroso, President of the European Commission, is given in the EUA Glasgow Convention of 2005 as follows [11]:

"It has come at a time when more and more people are saying that education plays a vital role in the efforts to reinvigorate Europe's faltering economy". . . "It is my firm belief that education, culture, science and learning are fundamental values at the heart of our society. They matter-even before we begin to weigh up economic considerations. They are an inherent part of ourselves as human beings and inherent part of our European society." . . . Barroso defined the Lisbon Objectives as the blueprint for growth and employment that the EU adopted five years ago. He sees these proposals embody a vision of a knowledge-based society, a society which seeks to use education, research and innovation as engines for sustainable growth.

Another overview belongs to G.Winckler, EUA President, in Bergen Summit of Bologna Process as follows [12]:

"Let me conclude by four points:
1. Europe needs strong, autonomous and accountable institutions able to push forward and build on the burgeoning reform and innovation that is already underway.
2. For Europe to play its role in an increasingly global environment means that it is important not to loose sight of the European dimension of our work and thus of our common European objectives.
3. There is the crucial topic of funding: We appreciate that the draft Communiqué, in looking forward to 2010, refers to the need for sustainable funding for higher education institutions.
4. The time may have come to admit that the Bologna Process so far was, understandably, mainly concerned with the compatibility of structures and the mobility of people. Now, in 2005, the Process needs to address the vital issue of how to link the Bologna Process to the needs and challenges of the emerging knowledge society, in general, and to the Lisbon goals, in particular. We have to see that behind the Bologna Process there is a broader issue, namely – as the Commission stated in its recent Communication – "Mobilising the Brainpower of Europe". In mobilising this brainpower, and in linking the Bologna and Lisbon Processes, it should become clear that Europe needs strong universities (in the broadest sense) as "motors" in ***the knowledge triangle of education, research and innovation***.

VI. Conclusions

It appears that the goal to reach information society is a must for EU to stay as one of the world leaders. To reach that goal needs not only the actions of public and private organizations contained in Lisbon Objectives but also the universities or higher education institutions as a whole. As noted in various EC communications, after remaining a comparatively isolated universe for a very long period, both in relation to society and to the rest of the world, with funding guaranteed and a status protected by respect for their autonomy, European universities have gone through the second half of the 20th century without really calling into question the role or the nature of what they should be contributing to society. It is no more so. Universities also must change for good.

REFERENCES

[1] A. Z. Aktaş, *Structured Analysis and Design of Information Systems*, Prentice Hall, 2005, pp.1-5.
[2] M.J.Rodrigues (ed. by), *The New Knowledge Economy in Europe*. Edward Elgar, UK / US, 2002.
[3] eEurope+ Action Plan, June 2001. http://europa.eu.int/information_society/eeurope/plus/action_plan/index_en.htm
[4] Commission of the European Communities, Communication COM(2002)263 final of 28.05.2002, "*eEurope 2005: An information society for all /An Action Plan*" to be presented in view of the Sevilla European Council, 21/22 June 2002.
[5] Council of the European Union, Council Resolution on the implementation of the eEurope 2005 Action Plan, Brussels, 28 January 2003. http://www.europa.eu.int/information_society/eeurope/plus/index_en.htm
[6] Commission of the European Communities, Communication COM(2005)24 final of 02.02.2005 "*Working together for growth and jobs :A new start for the Lisbon Strategy*".
[7] European Commission Press Release: i2010 IP/05/643, Brussels, 1 June 2005. http://www.europa.eu.int/information_society/eeurope/2005/index_en.htm
[8] COM (2003) 2003/58: Communication from the Commission of the European Communities," The role of the universities in the Europe of knowledge", Brussels, 05.02.2003.
[9] http://www.bologna-bergen2005.no
[10] EUA (European University Association) Response to the EC Communication "*Science and Technology, the Key to Europe's Future*", November 2, 2004.
[11] J. M. Barroso, "*Strong Universities for Europe*", presented in EUA Glasgow Convention, 2 April 2005.
[12] G. Winckler, speech presented at the European Higher Education Ministers at the Bergen meeting, May 19-20 2005, Bergen-Norway.

A.Ziya Aktaş was born in Kemaliye/Erzincan-Turkey in 1940. He got his BS and MS in 1962 and 1963, respectively, in civil engineering, both at METU (Middle East Technical University) in Ankara. He had a Fulbright Scholarship in 1966 and went to US for a graduate study. He received his Ph.D in structural engineering in 1969 at Lehigh University, Bethlehem, Pennsylvania/US. In the same year he joined METU Department of Computer Engineering. He visited Vienna Technical University as an associate professor during the school year 1973-1974. He had taught at Purdue University School of Engineering and Technology at Indianapolis (IUPUI), Indiana, US, between 1981-1983 as a Visiting Professor.

He became full professor in 1978 as the first full professor of Computer Science/Engineering in Turkey. He served as the chairman of the Computer Engineering Department of METU for a total of nearly ten years. He is the author of the book "Structured Analysis and Design of Information Systems" printed and published by Prentice Hall in 1987 in the US. He served as the Vice President of State Institute of Statistics (SIS) of Turkey. He served for two terms as a Deputy of Istanbul in the Turkish Parliament. He had served as the Minister of Energy and Natural Resources in the Mr. Ecevit's Cabinet in 1999.

Prof.Aktaş is now the Rector of Çankaya University Ankara, Turkey.