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Title of paper: Information Society Strategies in the European Context: The Case of Greece'

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Abstract

This article sets out to analyze the policies adopted by the Greek government in its effort to accelerate the pace of reform towards a knowledge-based economy. These policies have to take into account the position that the country occupies within the emerging information society and, of course, the opportunities created by EU initiatives that aim to promote economic competitiveness and reduce regional disparities. Within this framework Greek policy makers have recognized the need for a coordinated, coherent and integrated approach, which attempts to diminish inequalities both within the country and with respect to other European Union economies. What emerges as a distinctive feature of the Greek information society strategy is the emphasis placed on the pivotal role of the state and the adoption of active interventionist policies.

Key words: Information society, digital divide, eEurope, social cohesion, competitiveness, Greek Information strategies

1) EUROPEAN UNION POLICIES TOWARDS THE INFORMATION SOCIETY

The rationale for the construction of a politically but mainly economically integrated, internal market for communications, capable of sustaining competition at an international level, has influenced the development of EU policy and action throughout the past two decades. In 1984, the 'Television Without Frontiers' Green Paper (European Commission, 1984) first signaled the EC's intention to create a strong Europe-wide market in audiovisual products and services. The Green Paper deliberations though revealed the tensions between private and

public interests as well as the conflicting intergovernmental interests in the sector. As a result, the 'Television Without Frontiers' Directive (European Commission, 1989) only came into force 5 years later and was in essence an EC effort to compromise conflicting public-private, social-industrial and national-supranational interests. Generally speaking, the EC policy towards broadcasting reveals the tensions between on the one hand the economic logic towards globalization and competitive/industrial policy concerns (i.e. achieving economies of scale and scope) and on the other social concerns of maintaining pluralistic and diversified national markets. Even today, broadcasting can be considered as a national industry, not necessarily dictated by international big business and supranational legislation.

In contrast, EC policy seems to shape much of the activity in the telecommunications sector. The 'Bangemann Report' (1994), a major reference point for early EC telecommunications policy making, emphasized the urgency to take action to enable Europe compete in global communications markets. The Report, drawing evidence from a rather pessimistic earlier Review of the Telecommunications sector (European Commission, 1992; see also European Commission, 1993a), paid much emphasis on industrial policy, the injection of private capital and the adoption of a 'light' regulatory approach to make the EU telecommunications market more competitive and enable EU to enter the Information Society. The report, by being technology-centred and focusing mostly on the potential economic benefits of privatization, commercialization and liberalization ignored social issues such as access to the new services, universal service obligations and new inequalities that could emerge in the new era. However, almost all proposals put forward in the Bangemann Report were adapted by the EC Action Plan (European Commission, 1994), whereas subsequent EC policy documentation repeated and reinforced them.

In more recent years, the EC has come to acknowledge the crucial role of Information and Communication Technologies (ICTs) to enable Europe enter

the Information Age. “Information” is perceived as a defining feature of modern society. There is a wider consensus that we are entering an “information age” and a global “information economy” that is characterized, inter alia, by the emergence of digital communication networks and the wide availability of information technologies. These fundamental technological and socio-economic changes present a challenge for governments as well as supranational institutions to adapt their policies to this new environment. At a European Union level, this need to adapt to changes has been met by the launch of a number of initiatives. The initiatives can broadly be divided into those that pay primary emphasis on competitive and industrial issues as well as on technological, industry, market and regulatory convergence[1], and those pursuing the social dimension of new communication technologies. We deal with these in turn.

1.1) Emphasis on Convergence

The set of policies that pay primary attention on business and competitive concerns has dominated the EC’s thinking and action in the past two decades. The current thinking is that an advanced communications industry is a pre-condition for Europe’s transition to the Information Society with all the economic and social benefits, which that entails. According to the EC, without efficient, high quality communications, European industry, and in particular small and medium-sized enterprises, face a major disadvantage in relation to their global competitors. The emergence of new global ICTs, multimedia technologies and interactive broadband communication networks is increasingly viewed as a means to achieve the Information Society. This rather deterministic approach assumes that the Information Society is an inevitable consequence of technological and economic change and presupposes that social benefits will automatically flow from opening up the markets into private capital. This however implies the imposition of minimum, harmonized and more flexible rules in the wider information and communications industry.

It was the 1997 Convergence Green Paper (European Commission, 1997) that was preoccupied by such an assumption. As stated in the Green Paper, in terms of economic development, job creation, cultural identities and social impact, the stakes for Europe are high. The European Commission (EC) perceives the telecommunications sector as being one of the most important contributors to economic growth in the Union, while at the same time recognizes the socio-cultural impact of the audiovisual sector, particularly broadcasting. The Green Paper indicated that if technological developments are to lead to economic growth and job creation and to allow Europe to take advantage of its rich cultural diversity, then an appropriate regulatory framework for the sectors concerned should be established.

Thus the Green Paper opened a discussion at a EU level over the need for imposing fresh rules to maximize the benefits of the digital convergence in terms of job creation, growth of industry, consumer choice, cultural diversity and political pluralism. EC's objective, as expressed through the Green Paper, is twofold: to create an economically viable EU media industry capable of competing globally, and to promote the 'public interest' (i.e. job creation, enhanced service quality, consumer choice, access to new technologies, plurality, etc). The overall objective of the Green Paper was to support the process of change and innovation. It was viewed by the EC as a means to achieve the European Information Society. Faith on convergence to create the information society appears very strong, and regulatory reform is viewed as a precondition to encourage convergence. As the Green Paper writes, the opportunities provided by convergence should not be hampered or constrained by inappropriate regulation. Although the Green Paper spelled out three different regulatory options,[2] a key message that emerged was that convergence should not lead to additional regulation.

In fact, this resembles the earlier Bangemann Report and goes well in line with the dominant industry and policy discourses (see, for example, Negroponte,

1995). Despite the Green Paper's wording that it aims to preserve the public interest in addition to promoting the industry, the simple fact is that the document drew primary attention to the significant economic, rather than social, implications of the trend towards convergence. The final version of the Green Paper, published in December 1997, by affording much greater emphasis on the economic and industrial implications of convergence and little mention of the social consequences, puts forth arguments that are both technologically and economically determinist in nature. This contrasts sharply with an earlier draft version of the Green Paper, produced in September that year, which included significant socio-cultural considerations. As a result the final outcome reveals the prevalence of powerful DGXIII (Information Society) over that of more socially oriented DGX (Information, Communication, Culture and Audiovisual Media). In turn, this reveals the prevalence of telecommunications concerns to broadcasting and also an increased reliance on competition policy rather than sector specific rules. More significantly, it reveals an intra-institutional political conflict within the Commission (Levy, 1999; Simpson, 2000).

The consultation process (European Commission, 1999a) that followed the Green Paper confirmed a support for regulatory reform to incorporate all converged sectors and services. Thus the 1999 Communications Review (European Commission, 1999b) presented a review of EU regulation in communications, and proposed the main elements of a new framework for communications infrastructure and associated services. Being in line with the principle of technological neutrality[3], it proposed that the new framework covers all communications services, therefore applying to: telecommunications networks (fixed or mobile), satellite communications, cable TV networks and terrestrial broadcast networks, which control access to services. The proposed new common regulatory framework for convergence is underpinned by five principles: clarity; minimalism; legal certainty; technological neutrality; and appropriate geographical application. There followed the Lisbon summit of EU heads of government (Presidency Conclusions, 2000), which set out a broad agenda,

intended to make the EU more competitive than the US by removing burdens on European companies. Erkki Liikanen, the EU's enterprise commissioner, has emphasized, in a number of speeches,[4] the need to improve the EU's approach to regulation, by both speeding up and slimming down its legislation.

The Stockholm summit (Presidency Conclusions, 2001), reviewed progress on competitive initiatives and re-emphasized the importance of setting out a new regulatory framework, with the following two principles: simplify regulation and speed up decision-making. In that way, regulation will avoid the risk being overtaken by the fast-moving evolution of markets and technology. In order to ensure legal certainty in the transition from the current framework to the new regulatory framework, the EC proposed five new Directives: a Framework Directive, addressing general and specific policy objectives and four new directives on Access, Authorizations, Universal Service and Data Protection, which would replace existing Directives.[5] The proposed Directives aim to establish a harmonized regulatory framework for electronic communications networks and services across the EU. They seek to respond to the convergent phenomenon by covering all sectors within their scope. Thus a convergence policy response seems to emerge at EU level.

1.2) The eEUROPE initiative

While the aforementioned initiatives focus on competition and industrial issues a second set of EC policy actions aim to guarantee that the benefits of Information Society are available to all European citizens in both quantitative and qualitative terms. The 1993 White Paper on Growth, Competitiveness, Employment (European Commission, 1993b), the 1996 Green Paper on Living and Working in the Information Society (European Commission, 1996) and, in particular, the eEurope initiative,[6] launched in December 1999 as a dedicated information society policy with detailed objectives and target marks, are classic examples of such policies.

The global competitiveness is hampered by regional disparities that exist within the EU. The levels of political, economic and technological integration in the EU are much lower than those in the US and Japan. It could not be otherwise as the EU consists of 15 Member States with different traditions, cultures and levels of technological and economic development. One can observe varying levels of access to Internet at affordable prices and different penetration rates of digital radio, television and other new communication technologies across Europe. As we shall see below, new media has so far been limited to a small segment of the entire EU population.

The EC views the introduction and fast take-up of new communications services as a real chance to reduce regional disparities. Information and communications technologies (ICTs) could, on one angle, be used as instruments to enhance social cohesion and, on another, reduce the significance of distance. Nevertheless, these benefits can only be achieved if information society services are available for everybody at affordable prices in all regions of the EU. This means existing obstacles for access to information society, whether economic, educational, social, cultural or geographical, should be eliminated. Appropriate policy measures are thus needed to overcome those obstacles to ensure the beneficial effects of information technologies.

The European Commission also recognizes that in the emerging information society, there is a risk of aggravating social inequalities or creating new ones, therefore leading to the so-called digital divide. The term ‘digital divide’ refers to the gap between individuals, households, businesses and geographic areas at different socio-economic levels with regard both to their opportunities to access information and communication technologies (ICTs) and to their use of the Internet for a wide variety of activities” (OECD, 2000a). The digital divide thus reflects various differences among and within countries both in terms of access to information through the Internet and other ICTs and in terms of skills,

knowledge and ability to use those technologies. Access to enhanced telecommunications services differs across the European Union, depending on the level of infrastructure, the degree of competition and the regulatory framework. In addition, the ability of citizens and businesses to use and take advantage of new communication technologies varies significantly across Member States as well as within those States.

Preventing exclusiveness and achieving inclusiveness is therefore a top priority. EC's answer to remedy the digital divide between developed and less developed Member States was the launch of the eEurope initiative on 8 December 1999. The initiative was subsequently welcomed by Member States at the Helsinki European Council of 10 and 11 December 1999. Following a positive reception for eEurope from Member States, the European Parliament and key actors the Commission submitted a Progress Report to the Lisbon European Council of March 2000. At that Summit, the Heads of State and Government committed themselves to a number of measures, including target dates, to bring eEurope forward. In essence, eEurope is a political initiative to ensure the European Union fully benefits from the changes brought about by the entry into the information age. Above anything else, this is underlined by the new strategic goal devised for the Union namely, to become the most competitive and dynamic knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion (Presidency Conclusions, 2000: 2).

In particular, the eEurope initiative addresses the challenges of the digital age through three major sets of actions:

- Develop a "cheaper, faster and secure Internet"
- Invest in people and skills (i.e. ensure that every citizen is equipped with the necessary skills to live and work in the knowledge society)
- Stimulate the use of the Internet in different areas (i.e. e-commerce, e-learning, e-government, e-health, e-transport).

It can be seen from the above that the comprehensive strategy the Commission has devised aims at achieving inclusiveness by narrowing or eliminating existing inequalities in the ability to access and use information. This can be seen as both a social objective (i.e. contributing towards social cohesion and democratic society) and a major competitive asset (i.e. enabling Europe to compete globally). As knowledge and information are increasingly becoming the foundation of economic and social relationships, Europe wants to take full advantage of those key factors for both economic prosperity and social inclusion. A key strategy is to achieve access for all by taking the following measures:

- Preventing the digital gap to materialize or widen for new generations. The school must provide European youth with the essential digital skills they need to live and work
- Mending the ICT skills gap by adapting higher educational systems and encouraging more young people to embrace scientific and technological careers
- Ensuring the employability of people already on the job market, by allowing them to adapt their skills or acquire new ones
- Preventing the social gap and fighting digital exclusion (Liikanen, 10 May 2001).

The Lisbon European Council requested the Commission to implement eEurope using ‘an open method of co-ordination and benchmarking’. The main objectives of eEurope benchmarking will be to enable Member States to compare their performance, to identify best practice, to provide insight into the factors of importance for widespread diffusion of digital technologies, and to enable remedial action to be taken. A significant barrier to that is the lack of harmonized cross-country data collection for measuring relevant phenomena. The benchmarking eEurope programme, agreed on 30 November 2000 by the Internal Market Council after extensive consultations with national experts, is

addressing that problem by measuring and monitoring developments, which are indicative of what is happening in the Information Society. eEurope benchmarking is based on a list of 23 key indicators, including: cheaper and faster Internet; secure networks and smart cards; European youth into the digital age; working in the knowledge-based economy; participation for all; accelerating e-commerce; government on-line; and health on-line.[7]

In June 2000 the eEurope Action Plan was adopted by the Feira European Council. It detailed the policy actions that are required to meet these objectives by 2002 (European Commission, 2000a). Since its launch, eEurope has had a broad impact, strengthening existing initiatives and fostering the development of new ones. It has become a policy concept at both European and national levels. E-initiatives of one kind or another are now common practice within the Union, with the launch by individual Member States and regions of new initiatives and support programs.[8] At the Stockholm European Council, an initial progress report was submitted on the contribution which eEurope has made to the development of a knowledge-based society, with some encouraging results regarding the availability and accessibility of new communications technologies (Presidency Conclusions, 2001).

Taking into account the preceding discussion it can be concluded that the European Commission's recent initiatives towards the Information Society have two main objectives: to enhance EU's global competitiveness and to promote social cohesion. In this respect eEurope constitutes a qualitative new phase compared to earlier European Union initiatives which were far less comprehensive and narrower in scope. Moreover, eEurope re-focuses on the social dimensions of the 'European model' in line with the 1993 White Paper 'Growth, competitiveness, employment' and the 1996 Green Paper 'Living and working in the information society'. While the policies to promote convergence focus on the technological and infrastructure challenges and the regulatory

economic environment, eEurope initiative emphasizes the social aspects of information society developments.

2) GREECE IN THE EMERGING INFORMATION SOCIETY

Undoubtedly, between the Member States of the European Union (EU) there are important differences in all the sectors of the economy and society that jointly shape the new environment. Greece in particular, compared with other EU countries, remains to a large extent traditionally focused in manufacturing and in services[9], with insufficient research and investments in new products and production processes, a small rate of diffusion of new technologies and a relatively small information technology and communication sector.

It can be argued that the advent towards an information society may be viewed on three interconnected but distinct levels. The first is that of learning, the initial acquisition of knowledge and expertise and reflects to individuals personally. Recent studies show that the level of information of Greek companies about the potential of the Internet is very low while a very high proportion of owners and general managers in small and medium sized enterprises declares that their companies do not have a web site or do not use the Internet at all, because it does not interest them (Eurobarometer, 2000). Overall, in 2000, Denmark had the best Internet set-up (with 69%), followed by Germany, Ireland and the Netherlands. At the other end of the scale Portugal and Greece had the worst score with 34% and 40% respectively (Eurobarometer, 2000: Figure 9). Small and medium-sized companies make up the backbone of the Greek private sector. At the same time the diffusion of personal computers remains at a relatively low level (see Table 1) and the educational system is adapting slowly to the new conditions and needs associated with the advent of the digital era.

The second is that of access to information and the adequacy of infrastructure. A distinction can be made between basic services consisting

mainly of public voice telephony and value added services covering data transmission, mobile communications and a number of activities introducing either new ways of accessing networks and services or advanced functionality. Greece is above the OECD average as far as access lines per 1000 inhabitants is concerned but the development of value added services is rather slow (OECD, 1999). This can be partly explained by delays in the introduction of necessary legislative changes for liberalization of telecommunications networks and services. Moreover, voice telephony provision remained an exclusive right of the publicly owned Greek Public Telecommunications Organization (OTE) until 31 December 2000. Despite some progress in recent years, access to Internet is lagging behind in comparison to other European Union countries and the number of hosts per 1000 inhabitants is the lowest among the countries of the EU.

The third level is that of applications, content and services. Two important indicators that can be used to assess the progress towards the information society are first the degree of digitalization of traditional audio-visual and music content and second the development of multimedia services via physical media or – more significantly – the Internet. The structure of the market and the characteristics of the main players (relatively small and inward looking companies) have prevented large-scale investment[10]. As a result the digitalization of content production and delivery is progressing at a slow pace. The first digital satellite TV network started its program transmission as late as December 1999 (Iosifidis, 2000a, 200b) while cable TV is practically non-existent (Iosifidis and Kiki, 2000). The number of Greek sites is also relatively small while the percentage of enterprises involved in e-commerce is negligible. In July 2000, the number of secure servers that are essential for e-commerce per 100,000 inhabitants was 9.2 in Sweden, 7.4 in the United Kingdom and 6.5 in Ireland, but only 0.8 in Greece, well below the EU average at 4.4 and certainly far away from the corresponding figure for the United States at 24[11].

Let us now examine at greater detail three important indicators (personal computer use, Internet access and digital TV) to assess progress towards an Information Society and the relative position of Greece vis-à-vis other Member States.

2.1) Computer use

Perhaps the most important indicator of the digital divide is “PC density” - describing the number of personal computers in a country in relation to its population by measuring the ratio PCs/1000 inhabitants. Table 1 shows that Sweden, Denmark, Luxembourg, Netherlands and Finland are leaders with a PC density of more than 350 PCs per 1000 inhabitants in 1999, whereas the density falls below 100 PCs per 1000 inhabitants in the Mediterranean countries of Greece and Portugal and just above 100 in Spain.

Table 1: Personal Computers per 1000 inhabitants (1994-99)

Country	1994	1995	1996	1997	1998	1999
Austria	112	162	174	211	235	260
Belgium	158	178	217	245	285	313
Denmark	192	271	305	360	378	414
Finland	160	235	274	312	350	361
France	116	134	151	162	192	220
Germany	151	179	209	239	279	297
Greece	**29**	**34**	**35**	**45**	**52**	**61**
Ireland	156	184	210	241	271	320
Italy	72	84	92	113	174	191
Luxembourg	n.a.	n.a.	375	383	389	396
Netherlands	169	201	232	283	326	362
Portugal	43	55	68	75	81	93
Spain	49	61	79	97	109	122
Sweden	183	250	294	339	396	452
United Kingdom	170	202	216	240	269	304

Source: ITU World Telecommunication Indicators 1999; EUROSTAT
Note: The above data do not take into consideration different types of computers and do not differentiate between residential and business computer usage

The situation is not much different when it comes to computer use at schools. Nearly all European schools are equipped with computers and 9 out of 10 schools (but less than half in Greece) already have an Internet connection. However, there are important discrepancies between the member states as far as the qualities of computer equipment, connectivity and web resources are concerned. While the average school in the EU has a computer for every 12 pupils and an Internet-enabled computer for every 24 pupils the corresponding figures for Greece are 20 and 53 respectively. Moreover, the amount of teachers who use computers and /or the Internet as well as usage frequency varies significantly between countries and seems largely determined by the level of school equipment and connectivity. The higher the level of equipment and connectivity, the higher the usage levels. Indeed regarding the percentage of teachers who use off-line computers there is a sharp contrast between countries like Belgium, Denmark, Ireland, Netherlands, Finland, Sweden and UK with figures above 80% and Greece with only 12%. Inevitably, teachers' average weekly computer usage hours with pupils also varies significantly from a high point of 6 hours in the UK to a low point of 0.4 hours in Greece. In the European Union as a whole the corresponding figure is 2.6 hours (Eurobarometer Surveys, 2001a, 2001b).

2.2) Access to Internet/Internet Use

Undoubtedly, Internet penetration is growing fast in Europe. Accessing and using the Internet via a computer has become commonplace. Accessing and using the Internet via a mobile phone, or a TV set-top box will soon become widespread. Liberalisation of telecommunications services has been crucial to the growth of access lines (fixed and mobile), alternative access technologies, price reductions, Internet access and use. By the end of 2000, there were more than 80 million Internet users in the EU and that number is expected to double by end 2003 (see Table 2). Regarding home Internet access, more than one third of

EU homes are currently connected to the Internet (see Table 3). In addition, business to consumers and business to business e-commerce[12] is growing and forces companies to restructure their activities (European Commission, 2001).

However, the main source of concern is the important discrepancies between EU countries. Although Internet penetration at home is showing encouraging levels of growth and the overall total of Internet users in the EU (including those accessing the Internet in non-domestic environments, particularly at work and at school/college) comprised about 36% of the population in 2001 (Eurobarometer, 2001a, 2001b), the gap between developed and less-developed EU states remains extremely high. In Greece, *Internet access in households* was 11.7% in June 2001, well below the EU average at 36.1%. On the other end of the scale there are countries like Sweden, the Netherlands and Denmark with figures between 58% and 64% (see Table 3).

Table 2: Internet User Forecast (2000-2003)

Internet users ('000s)

Country	End 2000	End 2001	End 2002	End 2003
Austria	2,200	3,374	3,922	4,559
Belgium	2,500	3,751	4,489	5,371
Denmark	2,220	2,732	3,061	3,431
Finland	2,300	2,848	3,146	3,475
France	8,580	11,054	14,891	20,056
Germany	16,870	25,085	30,389	36,807
Greece	**1,250**	**1,777**	**2,251**	**2,851**
Ireland	154	174	186	199
Italy	11,000	16,504	20,897	26,454
Luxembourg	95	130	167	214
Netherlands	5,780	7,904	9,028	10,310
Portugal	1,334	1,761	2,173	2,681
Spain	4,386	7,320	9,589	12,558
Sweden	4,360	5,081	5,559	6,082
United Kingdom	18,960	22,641	26,292	30,528
European Union	**81,989**	**112,136**	**136,040**	**165,576**

Source: Net Profit (<http://www.net-profit.co.uk/nfdemo/quickstats/3.html>).

Table 3: Internet Access in EU Households

Country	March 2000	June 2001
Austria	18.2	46.2
Belgium	20.8	34.7
Denmark	46.1	58.9
Finland	28.5	48.1
France	13.5	26.2
Germany	14.9	37.9
Greece	**7.2**	**11.7**
Ireland	18.9	46.2
Italy	19.6	32.9
Luxembourg	28.5	43.6
Netherlands	47.2	58.5
Portugal	8.8	23.4
Spain	10.9	23.4
Sweden	48.1	64.3
United Kingdom	24.5	46.5
European Union	**19.4**	**36.1**

Source: Eurobarometer 2000 and 2001, Flash Numbers 78, 103; OECD, 2000a.

High-speed Internet connections are still lagging behind in Europe. ISDN technology is being used by only 15% of EU connected households (European Commission, 2001). Even so, ISDN is not broadband; it enables faster Internet access but cannot support multimedia services and applications. Its natural follower ADSL technology, which allows broadband, is only available to 1.1% of EU Internet households (OECD, 2000b: 6). The main reason for such narrow diffusion is that competition in the local loop (the so-called last mile) commenced as late as in January 2001 in the majority of EU countries. Local loop unbundling (ULL) was mandatory and effective under national legislation only in Finland (1996), Denmark (1998), Germany (1998), Austria (1998), Sweden (2000) and the Netherlands (2000). However, even among this first group of countries the situation is far from being homogeneous. In Austria, where the legislation was already passed in 1998 like in Germany, unbundling has proved to be much

slower than in Germany and, by end-2000, only very few lines had been unbundled. In countries like Greece, Ireland and Portugal, which only recently adopted national legislation pertaining to ULL, unbundling might be delayed until end-2002, given the amount of preparatory work necessary.

In any case, ULL, which has now been formally introduced, following agreement at Community level at the end of December 2000,[13] is expected to stimulate the deployment of ISDN and ADSL technologies. According to an independent expert paper prepared for the European Commission (Gual, J. and P. Seabright, 2000), the main benefits from unbundling are likely to come not from more competitive provision of traditional voice telephony services but from provision of high-bandwidth services. Indeed, investment in new infrastructures in countries that have already introduced ULL, is almost entirely for high-bandwidth purposes, since the existing copper pairs are already present in sufficient capacity in most places for the provision of traditional voice telephony. As competition progresses, small EU countries, like Greece, are expected to adopt a similar pattern.

The introduction of competition in the previously monopolistic market of local loop is also expected to contribute towards the reduction of the Internet access costs and consequently the usage of Internet. OECD (2001) has estimated that between March and September 2000 costs for 20 hours a month at off-peak times (representative of private household use) reduced by an average of 8.6% in the EU. For 40 hours at peak times (the more relevant costs for business), prices have fallen by 23% in six months. OECD though stated that crucial differences in costs remain between Member States, which are broadly correlated with penetration rates and the degree of competition. Greece has followed these trends but Internet access rates remain relatively expensive.

2.3) Digital Television

Digital Television (DTV) can be seen as a medium that serves two different, although interrelated, aims: first, to offer television services similar to those offered by the current analogue TV; second, DTV shows great potential to offer full Internet access and bring broadband access to a large number of potentially excluded households. Viewers can access an array of innovative interactive services based on the TV set: e-mail, news on demand, NVOD (Near Video on Demand), TV shopping, access to Internet sites, etc. By allowing broadband access via a familiar terminal, which is already present in 97% of EU households, it enables those who may be reluctant to buy a computer to become part of the network, through a significantly cheaper investment (Liikanen, 2001b). That is why, the EC states that "Member States should co-operate to facilitate the introduction of digital television services with Internet capabilities" (Presidency Conclusions, 2001). In that sense, DTV has the potential to diminish the digital divide.

DTV grows rapidly in Europe: the number of DTV households has increased from only 395,000 at the end of 1996 to 4.9 million in December 1998, 10.2 million at the end of 1999 and 18.7 million at the end of 2000 (IDATE, 2000). That represents a 12.5% penetration rate of European TV households. IDATE (2000) forecasts rapid growth and take-up of digital TV services. Over the next years there will be a huge proliferation in broadband delivery channels and devices. It will drive up demand for more content, accelerate convergence and increase pressures on the traditional public service broadcasters.

However, the European DTV landscape in the year 2000 is still far from being stabilised and penetration rates differ substantially among EU Member States (IDATE, 2000). In certain countries, most notably the small ones such as Greece,[14] DTV has not yet resulted in a significant share of the television market; in most of the EU national markets, the availability of digital TV remains partial (see Table 4); digital satellite has attracted most business interests, whereas digital cable is mostly developed in heavily cabled Scandinavian countries. Digital

terrestrial TV is in its infancy and thus far is only present in the United Kingdom, Sweden and Spain.

Table 4: Digital Households in % of TVH (1999, 2000)

COUNTRY	1999	2000*
United Kingdom	10.3	27.4
Spain	10.3	15.5
France	10.4	14.4
Italy	5.2	10.3
Denmark	4.0	9.5
Ireland	3.2	8.5
Germany	4.0	8.2
Sweden	2.6	6.0
Netherlands	3.4	5.8
Belgium	1.8	5.5
Luxembourg	0.0	4.3
Austria	2.0	4.1
Finland	0.4	3.3
Portugal	1.7	3.2
Greece	**0.1**	**1.0**

Source: IDATE, 2000
*** IDATE estimate**

It can be inferred from the above that Greece, despite some progress in recent years, remains relatively behind vis-à-vis other EU countries in the course towards the Information Society and considerable effort must thus be put for its active and equal participation in the new digital era. In the following sections, we present the priorities and specific goals put forward by the Greek information society strategy as well as the means, initiatives and mechanisms for achieving them.

3) AIMS AND PRIORITIES OF THE GREEK INFORMATION SOCIETY STRATEGY

Efforts to improve the conditions under which Greece participates in the emerging global Information Society commenced in the second half of the 1990s.

A number of projects, funded by the Second Community Support Framework for Greece, aimed at the development of telecommunications infrastructure and networks, the modernization of public administration and the creation of educational material and software. In the interval between 1994-1999 about 620 billion Greek drachmas (1.8 billion Euro) were spent for Information Society projects under the Second Community Support Framework. However, those projects were of an ad hoc nature and their impact was limited. Greece failed to overcome its structural weaknesses and the relative backwardness with respect to the diffusion of the new technologies and the development of new services and human capabilities. With the aim of furthering the Information Society in a cohesive manner, the Greek government proposed in 1999 and started implementing a year later a comprehensive strategy that is in line with recent EU initiatives. This strategy sets out four priorities.[15]

First, to offer better services to citizens and firms, through the modernization of the state operation and greater access and transparency and to improve quality of life, through the application of information and communication technologies in health and welfare[16], the environment and transport. An immediate priority is the development of on-line applications and use of the new technologies to simplify and redefine procedures and communication within and between public services in all public administration, especially in the economic and financial sector, health and social security, justice, regional development and administration, and the services dealing with emergencies and special incidents.

Particular emphasis is given in modernizing the public administration. The networking between the various systems of the public administration is being completed while a series of small pilot, expandable, projects are planned in fields where the implementation of large-scale projects is not immediately feasible. At the same time, the government is planning the creation of a general framework for electronic transactions with the state following the philosophy of one-stop services.

The second priority is to create an educational system adapted to the digital age by developing the use of new technologies in education, and the networking of schools and universities[17] and to promote Greek culture and civilization through the documentation of cultural heritage, protection of the Greek language and contact with Greeks abroad. In accordance with the objectives set out in the eEurope document, all schools in Greece must have access to the Internet and to multi-media resources, together with satisfactory support services via the Web, by the end of 2001. By that date also, fast Internet access will be secured for researchers and students, with the continuing upgrading of the Greek academic network. The aim is that by the end of 2003, all school-leavers should be digitally literate.

The third priority is to realize faster economic growth, through fostering the creation of new firms and increased productivity and competitiveness and to increase employment by supporting the expansion of new forms of work such as telework and upgrading skills. In the context of developing the digital economy, particular emphasis is given to actions that will promote:

- The use of e-commerce applications to enable Greek companies to adopt electronic ways of doing business.
- The creation of a regulatory framework, which will make it easier to conduct electronic transactions in an environment which will ensure consumer confidence.
- A strengthening of the infrastructure which is necessary for the operation of electronic business (providing for example certification, standardization, information and networking services).
- The development of a content industry, with the production and distribution of multi-media products (relating, for example, to ancient and contemporary Greek culture, tourism, etc.).
- The establishment of high-tech small and medium-sized enterprises in the applications and information and communications technologies sector

through the development of mechanisms such as venture capital, “incubators” and the like.

♦ The use of tele-working systems and applications for business established in remote and islands regions.

The fourth priority is to develop the national communication infrastructure, through new investments, regulatory reform in telecommunications and universal service requirements and to encourage the use of new technologies in mass media by creating a regulatory framework which helps entrepreneurial activity. As a result the fast, friendly and cost-effective storage, handling and processing of digitized information will become a reality leading to the widespread provision and advanced telecommunication and audio-visual services by the public and private sector at low cost.

The immediate implementation priorities are the creation of an environment of full market liberalization in the telecommunications sector, the encouragement of competition and compliance with open competitive procedures. In this context, the government is undertaking initiatives for the costing, financing and implementation of universal service, as well as for the formulation of competition rules (as to interconnection, numbering, licensing and spectrum management) and supervision of their implementation in deregulated telecommunications.

In sum, Greek policy makers have recognized the need for a broad based, multi disciplinary approach to the new challenges presented by the Information Society. Table 5 shows a number of important targets for 2006 that have been set in the Operational Program for the Information Society. They can be used as indicators in order to assess the progress towards the Information Society. It is expected that by 2006 Greece will have narrowed significantly the gap with other European Union countries that exists today.

Table 5: Important targets for 2006 set by the Greek government

Indicator	Starting point	Level at starting point	Target for 2006
Internet users / 100 inhabitants	2000	5	50
Number of pupils per PC	2000	51	10
Percentage of schools connected to the Internet	2000	5	100
Number of PCs per 100 civil servants	2000	15	50
Percentage of health centers connected	2000	0	100
Percentage of small and medium-sized enterprises involved in e-commerce	2000	<1	15
Percentage of the population covered by frequency spectrum monitoring systems	2000	5	80
Information society expenditure, percentage of GNP	2000	4.1	6.2

Source: Operational Program for the Information Society. URL (consulted December 2001): http://www.government.gr/info/public.index.html.

4) PROPOSALS FOR IMPLEMENTATION

The realization of the government's Information Society strategy largely depends on funding initiatives in the context of the Third Community Support Framework. Altogether, it is estimated that some 2.2 billion Euro of public funds and some 600 million Euro of private funds will be spent between 2000 and 2006 under a separate Operational Program for the Information Society that has been drawn up on the basis of the possibilities offered by the Third Community Support Framework. This amount represents approximately 2.4% of Greek G.D.P. in 1999 and the actual utilization of such a large sum constitutes a sizeable challenge.

The practical application and the implementation of plans have always been the weak point in many governmental initiatives in Greece. The most well planned strategic framework is left void of content when implementation

mechanisms are absent or malfunctioning. For this reason, extensive organizational and regulatory interventions are required, providing the context for individual actions in the different thematic areas. Indeed interventions are underway in the following fields:

- Institutional and organizational reforms. Reorganization of information technology support services in the public sector, upgrading of supervision services, improvement of the legislative framework for public Information Technology projects by establishing specific rules and procedures promoting such Information Technology systems deployment under greater transparency.

- Regulatory initiatives. Completion of the institutional framework for regulatory reform in the telecommunication sector; reinforcement of the role and the conditions for the operation of independent regulatory agencies, discussion on their future role in the context of technological developments, as well as on greater use of market self-regulating mechanisms.

- Public investments. Within the framework of the state's role in fostering and supporting economic development, the incentives and support mechanisms currently used are examined and modified, in order to increase the effectiveness of public investment and to achieve a more efficient use of public funds.

- Co-ordination of government policies. Each Ministry or supervised entity, as well as each region, has undergone initiatives or actions for the development of information and communication technology and applications. However, this may result in a lack of co-ordination and in overlapping actions. In order to overcome this problem issues of general policy and overall coordination are dealt with in organizational frameworks

in which a number of Ministries participate, whilst the role of existing supervisory mechanisms (e.g. Audit Department, the independent authorities for mass media and telecommunications) is strengthened.

The implementation of the Operational Program for the Information Society is entrusted to four new authorities that are created for this purpose. They are: (1) the Operational Program Monitoring Committee composed of representatives from the ministries and bodies concerned and representatives of various management and labor bodies, (2) the Single Operational Program Management Authority the powers of which are described in the Community Support Framework regulation and implementing provisions, (3) the Information Society Public Limited Company the main aim of which is to provide technical support for the various bodies involved as regards specific multifaceted problems relating to the implementation measures, and (4) the Information Society Observatory, which will comprise various high-ranking members including high-level experts and will be responsible for the transfer of international cutting edge know-how, the dissemination of best practice, provision of training tools, carrying out supervising comparative studies etc.

The Central Role of the State

The Greek government has on many occasions emphasized that the Information Society will develop based on market mechanisms and rules and the institutional and regulatory framework should facilitate the development of new entrepreneurial initiatives and of the culture of innovation. However, the government also recognizes the need for an active interventionist policy on the part of the public sector that will help overcome the structural weaknesses of the economy and speed up the process of reform. Consequently, the role of the state is seen as central in implementing the reforms. On the one hand, the state is acting as a catalyst in order to make companies and citizens aware of the stakes of the Information Society and to ensure an appropriate institutional framework.

On the other hand, the state is the major player in the development and modernization of the infrastructure, the health care system, education and public administration.

The central role of the state is reinforced by the emphasis given to social considerations. According to the Greek government, the primary consideration of its strategy is to ensure that all citizens will have access to the opportunities, knowledge and the markets opened up by the new technologies and that solidarity, the rights of citizens, freedom of expression and access to information will be safeguarded. In this respect there is an important difference from national strategies which focus mainly on measures which attempt to improve productivity and the competitiveness of the economy (as is the case in Ireland[18] and Britain[19]) or adopt a more narrow perspective and give priority to the speed with which information and communication technologies are disseminated and appropriated by society (as is the case in Portugal). Greece's Information Society strategy appears to follow a paradigm - also followed by France (France, 1999) and the Nordic countries (Henten, A. and T. M. Kristensen, 2000) - which emphasizes that the progress towards Information Society must embrace solidarity and look for ways to strengthen social cohesion.

For the state to play an important role in the new era though, the Greek government should take appropriate steps to rationalize and speed up internal operational methods, and to communicate with the public more efficiently. The public service should be capable of answering citizens' inquiries, offer guidance for specific requests and genuine on-line procedures. One possible way of doing so would be to allocate tasks to regional administrative offices. A decentralized state, offering decentralized services may offer a good opportunity to fully manage information and ensure it is made available to the entire public as efficiently as possible.

5) CONCLUSION

The spread of Information and communications technologies in Europe is fast and supports more rapid knowledge creation and diffusion. Access to Internet is soaring, business and residential use of the Internet is increasing rapidly, digital TV penetration rates are rising, connectivity and the available web resources are improving. However, countries' readiness for the new ICTs, their diffusion and impacts differ substantially. While the overall trends are clear, large differences remain within the EU area. There is a noticeable gap between Northern EU countries on the one hand and Southern EU countries on the other regarding ICTs. For example, while about 60% of households have Internet access in Sweden, Denmark, and the Netherlands, in Spain, Portugal and France less than a quarter of households have access to the Internet, and the figure falls to only 12% in the case of Greece. The Nordic countries appear to be leaders in the transition to a knowledge-based economy, as high investment in infrastructure, rapid innovation and the pace of diffusion of ICTs indicate. Other countries, notably the Mediterranean ones, appear to lag in important areas, including diffusion of ICTs, research and development and the educational system.

The information society policies of the EU have evolved in recent years from a more technology and market oriented focus to an emphasis on broader social concerns. Thus, in the mid-nineties, under the influence of the Bangemann Report, the emphasis was much more on the issues of liberalization of telecommunications and the primacy of the private sector in the development of an information society. The Green Paper on Convergence with its emphasis on the enabling role of technology and the regulatory environment reflects this market-oriented approach. The launching of eEurope initiative constitutes a qualitatively new phase and the social aspects of information society developments have taken the lead in EU policies combined with a focus on Europe's competitiveness in a globalized economy.

Greece has responded to the emergence of a new set of information society priorities at EU level by developing its own coherent and integrated program aiming at achieving a networked society while promoting social cohesion and diminishing digital divide. The policy took on definitive form and substance with the implementation in 2000 of a separate operational program for the information society drawn up under the Third Community Support Framework. The operational program is structured around the areas of education and culture, quality of life and services to citizens, development and employment and – finally – communications and the Internet. The overall government strategy for the information society is based on the principles of equal opportunities and access for all, the creation of an environment that is conducive to economic competitiveness and state modernization and the protection of the rights of the citizens and their ability to take advantage of the opportunities associated with the new digital age.

The achievement of the targets set in the operational program for the information society pressuposes a fundamental change in scale and unprecedented growth in the dissemination of ICTs in Greek society. Thus, this plan is a qualitative leap and also a break with the past. Above anything else it demands a new type of partnership between the public and private sectors and calls for the mobilisation of both human and corporate resources.

What differentiates Greece from many other EU countries is the emphasis placed on the pivotal role of the state. As a result, the successful implementation of the operational program to a large extent depends on a series of institutional and organisational reforms, regulatory initiatives, new administrative structures and a general re-organisation of information technology departments in the public sector. The emphasis on the role of the state bears the hallmark of a Socialist concern for social cohesion and equal opportunities but also reflects the structural weaknesses of the economy and the need to speed up

the pace of reform. On the other hand, it could well prove the achilles' heel of the Greek information society plan. Clearly, state interventionism takes new and on many occasions more 'indirect' forms than in the past; nonetheless, an active state seems to emerge as a key characteristic of the Greek information society policy.

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Notes

[1] Convergence - the delivery of similar, existing or new, media, telephony and Internet services via the same transmission platform - can be present at three different, although interrelated, levels: the technological level (mainly due to digitisation of broadcasting, IT and telecommunications networks), the structural level (as a consequence of corporate alliances across different sectors), and the services and markets level (here we are referring to the new value-added and multimedia services). That process calls for regulatory convergence at an institutional level and for a relaxation of rules across communications sectors. For more information and an overview of the situation in Europe, see Petros Iosifidis (2002).

[2] The Green Paper presented three possible alternative regulatory options:

- The separate development of current regulatory structures in IT, print industry, telecommunications and broadcasting
- The setting up of a separate horizontal legislation to oversee new convergent services in conjunction with existing ones
- The development of a fresh comprehensive common horizontal regulatory regime for all ICT services.

[3] 'Technological neutrality means that legislation should define the objectives to be achieved, and should neither impose, nor discriminate in favour of, the use of a particular type of technology to achieve those objectives' (The 1999 Communications Review, p.13). The principle means that the provision of services should be regulated in a homogeneous way regardless of the communications infrastructure on which they are carried. In that way, the regulatory framework does not distort competition.

[4] See, for instance, "eEurope: A framework for the New Economy" Nice Sophia-Antipolis, 19/10/2000; "Better Regulation: from Principles to Practice" Brussels, 6/2/2000; and "IT in the Future eEurope" *Helsinki,* 15/6/ 2001. URL (consulted December 2001) : http://europa.eu.int /comm/commissioners/liikanen/media/speeches/index_en.htm.

[5] Proposal for a Directive of the European Parliament and of the Council on a Common Regulatory Framework for Electronic Communications Networks and Services, Brussels, COM (2000) 393, 12 July 2000. The EC has already succeeded in passing legislation liberalizing the last mile in telecommunications (Regulation (EC) No 2887/2000 of the European Parliament and of the Council of 18 December 2000 on Unbundled Access to the Local Loop, OJ L 336, 30 December 2000).

[6] On 8 December 1999 the EC adopted the eEurope initiative, which was subsequently welcomed by Member States at the Helsinki European Council of 10 and 11 December 1999.

[7] The full list can be found in the Note by the French Presidency for the Nice European Council on the eEurope Action Plan. Also available at URL (consulted December 2001): http://europa.eu.int/information_society/eeurope/benchmarking/index_en.htm.

[8] For an account of national e-initiatives and progress reports, see URL (consulted December 2001) http://europa.eu.int/information_society/eeurope/action_plan/index_en.htm.

[9] According to World Bank statistics, in 1997, high technology exports as a percentage of manufacturing exports were only 12% in Greece compared to 62% in Ireland, 44% in the Netherlands and 41% in the United Kingdom. See World Bank, World Development Report 1999-2000, Table 19.

[10] For a discussion of the characteristics of the Greek media market see Leandros, 2000.

[11] The full data is available in the Benchmarking section of the eEurope web site at URL (consulted December 2001): <http://europa.eu.int/eeurope>.

[12] Of course, e-commerce is far less developed in Europe compared to the USA, reflecting discrepancies in the number of secure servers referred to above. According to an OECD report, the value of transactions of business to consumers (B2C) e-commerce in 1999 was US$24,170 billion, representing a penetration rate of 0.48% of retail sales, while the value of transactions in Germany was US$1,199 billion (0.30% of retail sales), in the UK the value was US$1,040 billion (0.37%), in France US$345 million (0.14%), in Portugal and Spain just US$70 million (0.06%) and negligible in Greece. See OECD (2000b).

[13] The EC adopted a Regulation mandating local loop unbundling on 30 December 2000 (OJL336), which came into force on 2 January 2001.
[14] For a review of the situation in Greece, see Petros Iosifidis, 2000a and 2000b.
[15] The main axes of Information Society actions and initiatives are described in the Regional Development Plan 2000-2006 that Greece has submitted to the European Union. URL (consulted December 2001): http://www.government.gr/info/public.index.html.
[16] The improvement of health services is a significant target of the Information Society strategy. The most important aspects of the actions that have been (or will be) undertaken include the design and development of information systems for supporting procedures, administrative services, clinical decisions, epidemiological studies of basic and clinical research etc, at all levels of the health care system and for every department in every hospital, clinic or health care center. In this context, there is a plan for the development of telecommunication applications (tele-consultation, tele-conferencing, tele-training etc.) as well as navigation services aimed at helping users filter the volume of available information. However, it must be pointed out that many of these initiatives are currently in a pilot phase, while others have not yielded the expected results.
[17] In order to support the educational process, a number of initiatives are aimed at supporting the production of educational multimedia applications. Other initiatives aim at strengthening the production and distribution of digital educational material via networks. They include, among other things, the creation of new digital libraries and their connection to the educational network, the digitalization of existing educational and cultural material or the production of new material and projects concerning the setting up of information technology laboratories at school level.
[18] In Ireland, an information policy report came out in 1997 (Ireland (1997). Despite an Information Society rhetoric though, government funding bodies and agencies perceive new communications technologies and, in particular, the development of multimedia content for the Internet, purely on economic terms and in relation to the production or localisation in Ireland of internationally traded services based on standardised content. It has not been accompanied by any increased understanding of multimedia as cultural form with an important role to play in constructing and reconstructing cultural identities (see Aphra Kerr, 2000: 308).
[19] In Britain, information policy reports were produced in 1997 and 1998 by the DTI and DCMS respectively (UK 1997 and 1998). See also The Communications White Paper of 12 December 2000, a joint effort of DTI and DCMS, where it is made clear that the creation of a dynamic market with minimum government intervention and regulation can best protect the public interest in the digital converged era. URL (consulted December 2001): http://www.communicationswhitepaper.gov.uk).