GREECE IN THE INFORMATION SOCIETY

STRATEGY AND ACTIONS

2002

Foreword

Information and telecommunication technologies are rapidly changing the way we work, play, communicate, and are transforming the bases of economic competition. They create, on a global scale, a new Information Society with new conditions and new opportunities for development, prosperity and the quality of life.

Greece's participation, as an equal, in the emerging Information Society is a major priority for the government. At a time when other countries are moving rapidly in this area, the absence of a comprehensive strategy and any delay in its implementation entails the danger of cutting Greece off from developments in Europe and in the world.

This text is the government White Paper for the development of the Information Society in Greece in the coming years. Set against the background of what has been achieved to date, it presents a comprehensive strategy, defines priorities and specific goals for the future, as well as means, initiatives and mechanisms for achieving them. It was requested by Prime Minister Costas Simitis and was presented in its original form in the Council of Ministers in 1999. In its current form it has been updated by incorporating initiatives for the Information Society during 2000 and 2001.

The text presents the main priorities, individual actions and goals in all the sectors of the economy and society that jointly shape the new environment: in public administration, in education, in the economy and the labour market, in health and welfare, in environment and transport, in culture and mass media, in the telecommunications infrastructure and in regional development.

At the same time the text aims at making citizens aware of the opportunities and risks involved in the course towards the Information Society. The challenge of the Information Society is a challenge for us all, and its shape in the future depends largely on the active participation of all citizens.

This text is intended to serve as a starting point in a public dialogue on Greece's course towards the Information Society and as a reference and basis for future action and initiatives by the public and private sector in the years to come.

The main tool for the realization of Information Society initiatives in Greece is the 3rd Community Support Framework. In this context, the White Paper presented here forms the basis for the funding initiatives that are included in the *Operational Programme fo r the Information Society* of the 3rd CSF which was approved by the European Commission in April 2000.

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Summary

Towards the Information Society

New conditions and new opportunities for growth, prosperity and quality of life. Information and telecommunication technologies change rapidly the way we work, play, communicate, and transform the bases of economic competition. They constitute a tool for the modernisation of the state and the competitiveness of enterprises, while creating new ways of work, new skills, and the need for continuing learning and adaptation of the education system. At the same time they allow the provision of better health, welfare, and environmental services, and contribute to the promotion of our cultural heritage and the Greek language. The government's concern is to ensure that the emerging Information Society will be a society for all, without discrimination between information haves and haves-nots, and while safeguarding citizens' rights and the freedom of expression and information.

The overall government strategy for the Information Society is based on some basic principles: equal opportunities and access for all, the creation of an environment that is conducive to enterpreneurship and innovation, and safeguarding of personal freedoms and of the operation of democratic institutions. Based on these principles, a number of goals are set, whose implementation requires co-operation between the public and the private sector, and citizens actively participating in the formation of the character of Information Society:

- Better services to citizens and firms, through the modernisation of the state operation, and greater access and transparency.
- An improved quality of life, through the application of information and communication technologies in health & welfare, the environment and transport.
- An educational system adapted to the digital age, by developing the use of new technologies in education, and the networking of schools and Universities.
- Faster economic growth, through fostering the creation of new firms, the emergence of new sectors, and increased productivity and competitiveness.
- Higher employment, by supporting the creation of new jobs, upgrading skills, and developing of new forms of work such as telework.
- The promotion of Greek culture and civilisation, through the documentation of our cultural heritage, protection of the Greek language, and contact with Greeks abroad.
- Use of new technologies in mass media, by creating an appropriate regulatory framework, and safeguarding pluralism and free expression.
- Equal participation of all regions of Greece in the Information Society, through decentralisation and the encouragement of regional and local initiatives.
- The development of a national communication infrastructure, through new investments, regulatory reform in telecommunications, and universal service requirements.
- Protecting the rights of citizens and of consumers and upholding democratic institutions and participation in the digital age.

Open and effective government

The new technologies constitute an important tool for the creation of a modern democratic state, via the modernisation of public administration, the improvement of relations between the state and the citizens. Information technology systems are already operational or in their implementation phase in the public administration, with the objective of improving services to citizens and firms. Their further development is aimed at the conversion of existing information into digital format, the creation and maintenance of databases, the provision of information and electronic transactions with citizens and firms. To this end, the departments for the development of IT public projects are being strengthened, implementation procedures are being improved (by awarding contracts on a service level, by establishing common standards), while the creation of a networking environment in public administration is being promoted.

Information Society, knowledge-based society

The Information Society is first and foremost a society based on knowledge, and this creates the need for changes in education. In order for the education system to be adapted to the requirements of the 21st century, the government promotes the familiarisation of students with computers and multimedia, in all education levels, and trains teachers in the new technologies. With the active support of local communities, computer labs are being created, schools are being connected to the Internet, while at the same time the production of digital multimedia content for education is being supported. Finally, for the participation of the research community in the global quest for knowledge and the propagation of knowledge sources, the infrastructure for interconnection between universities and research institutes is being enhanced.

Technology for economic development and competitiveness

In the digital age, economic competition is increasingly based on technology and knowledge. A number of initiatives are thus aimed at improving the exploitation and use of new technologies in the economy: interventions in the product, labour and capital markets, initiatives for the upgrading of the IT industry, and support to small and medium size firms are all examples. For the development of electronic commerce, the government is establishing the proper regulatory framework by amending legislation regarding transactions by electronic means, adopting electronic payments and measures creating a climate of trust and protection for consumers. There are also support measures for the introduction of pilot electronic commerce applications in the private sector. Finally, with the aim of fostering industrial innovation, incentives are offered to enterprises and research entities for co-operation in joint programs.

New jobs, new skills, new work arrangements

In the Information Society new jobs are created, new skills are in demand, and new work arrangements develop. In this context a number of government initiatives are aimed at creating an environment which encourages new employment opportunities in emerging sectors and in professions that are in increasing demand. Initiatives are also addressing the decline of job opportunities in specific sectors and professions; they involve redeployment programs, and incentives for the revival of areas and sectors that are in recession. In order to better prepare young people so as to remain competitive in the work environment of the Information Society, there are a number of study programs and programs of life-long training. Interventions are also planned for the promotion of new work arrangements such as teleworking: diffusion of best practice, amendment of the legislative framework, promotion of pilot projects in the private and public sector, and development of tele-centers in remote areas. Particular attention is given to the inclusion of people with special needs and groups that are threatened with social exclusion.

A better quality of life: health and welfare, the environment, transport

A main goal of the use of the new technologies in Information Society is the improvement of the quality of life. In the health sector, initiatives are aimed at the introduction of IT systems in hospitals, their interconnection with the national communication infrastructure, the training of health personnel in new technologies, and the provision of incentives for tele-medicine applications. The development of a unified electronic patient file will is being promoted while measures are being taken for the safety, confidentiality and reliability of tele-medicine services. For the environment, initiatives encourage the production of goods using fewer raw materials, while actions are aimed at the use of telematic services for the documentation and protection of the natural environment. Initiatives in transport aim at the development of 'intelligent transport' systems, with better management of road traffic, the upgrading of the air traffic control system and the development of systems for electronic reservations.

Promoting Greek culture

Actions for the promotion of Greek culture are very important in the framework of the Information Society, especially in view of the 2004 Olympic Games to be held in Athens. The relevant policies take advantage of the capabilities of information and communication technologies and multimedia for protecting the cultural heritage (through document/monument documentation), promoting Greek cultural content, supporting artistic creation and the use of new ways of expression, reinforcing and cultivating the Greek language in the new globalisation environment. Current initiatives are also using the new network technologies for maintaining substantial contact with Greeks abroad (through the provision of information, language teaching, common initiatives) and for the preservation of the Greek identity in the digital age.

Mass media in the Information Society

The provision and the concept itself of information and entertainment change radically as a result of the development of digital cable television, the increase in the number of channels and the ability for interactive communication, the Internet, electronic newspapers, the exchange of information in networks and open access. In response, the government is creating a regulatory framework, which encourages entrepreneurial activity in a competitive environment, while at the same time safeguarding pluralism, the freedom of expression and the rights of citizens. In this context, legislative and regulatory provisions are being formulated for the provision of subscription-based TV and the role and operation of independent regulatory entities is being strengthened.

Equal participation of the regions in the global Information Society

Greece's geographical particularities constitute a challenge for the exploitation of the opportunities afforded by new technology for achieving a balanced development. With the prerequisite of universal telecoms service and broadcasting coverage, actions focus on strengthening the communication infrastructure, promoting new tele-services (for work, medicine, education, transactions), strengthening local firms (active in information science, telecommunications, education), developing on-site services to the public (electronic service centres), encouraging the use of information banks, and locally implementing centrally planned initiatives (e.g. forest register, land use register, property register). Actions will be implemented with the support and participation of local communities and the respect of local particularities.

Developing the national telecommunications infrastructure

The national telecommunications infrastructure constitutes the backbone of the Information Society. Its development will allow fast, friendly and cost-effective storage, handling and processing of digitised information. The goal is the widespread provision of advanced telecommunication and audio-visual services by the public and private sector at low cost. In achieving this goal, the investment plans of telecommunication companies will be of particular importance, as will be the ongoing regulatory reform of the telecoms sector and its alignment to an environment of technological convergence between broadcasting and telecommunications. 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.

Protecting the rights of citizens

The changes that technology brings with it put to the test the adequacy of existing laws and impose their re-orientation from the institutions of the industrial society to those of the Information Society. In this context, legislative and regulatory initiatives undertaken or contemplated cover a broad range: the protection of the rights of citizens (access to information, protection of information of a private nature), the protection of consumer rights, intellectual property issues (copyright, digital exploitation of works), legal aspects in electronic transactions (validity of transactions, identification of digital signature, encoding framework), labour and insurance legislation for telework, as well as penal matters (crime in cyberspace, unlawful/unethical Internet content, the protection of minors).

From goals to results: Implementation of the action plan

For the implementation of the strategy, interventions are foreseen on many levels: organisational, regulatory and interventions for executive planning and follow-up. In a medium-term perspective, it is foreseen that actions be financed in the context of the third EU Community Support Framework, so that an appropriate planning and implementation mechanism will be of vital importance. Finally, for the enhancement of the knowledge base for decision-making, the establishment of an Observatory for the Information Society is foreseen.

1 Moving towards the Information Society

1.1. Defining the Information Society

The new information and communication technologies (ICTs) are already part of our everyday lives. We use them every time we make a call on a mobile phone or use a credit card, when in the supermarket checkout the codes of the products we buy are scanned, and more generally whenever we come across one of the thousands of products and services involving or based on ICTs. In a more or less visible manner, these technologies change the way we live, work, play, learn or communicate.

At the threshold of the 21st century, the rapid evolution of information and communications technologies, their wide diffusion in the entire economy and their integration in nearly all aspects of everyday life build a global Information Society with new opportunities for economic development, jobs, prosperity and the quality of life. The concern of the government is to ensure that this emerging Information Society will be a society for all.

A society based on transparency and democracy. The new technologies constitute an important tool for the creation of a modern democratic state, via the modernisation of public administration, the improvement of relations between the state and the citizens, and the reinforcement of democratic institutions. The digitisation and better structuring of the huge volume of information possessed by central, regional and local administration permit a more effective and rational administration, more and better services to the citizens and greater transparency and democratic participation of citizens in matters of public interest.

A society based on robust economic development. In the digital age, economic competition is increasingly based on technology and knowledge. Through the diffusion of new technologies and globalisation, industrial economies are being transformed into economies directly based on the generation, distribution and use of knowledge and information, with new methods of production and types of consumption. The nature of the new technologies affords new possibilities and opportunities for equal participation in the global marketplace for smaller countries like Greece.

A society based on education and employment. The new technologies change work patterns and conditions, creating new requirements for new skills, and new ways of work such as telework. The accumulation and effective distribution of knowledge are now recognised as the main lever for the increase of productivity and economic growth. In this new environment, adaptability to change and flexible structures in employment are vital for economic efficiency and competitiveness. At the same time, the emphasis on knowledge and skills creates the need for continued life-long learning and imposes changes in the education and training systems.

A society with quality of life. A main goal of the use of the new technologies in Information Society is the improvement of the quality of life. The applications of informatics and telecommunications permit better health and welfare services (with greater access to medical knowledge and expertise), greater safety protection from crime, better and safer transportation, as well as conservation of the environment and natural resources, of the language and the cultural heritage.

In the emerging Information Society, Greece has a unique opportunity to upgrade its position in the global economy and to improve the quality of life of its citizens.

From the information revolution to the Information Society

The term “Information Society” refers to a form of social and economic development where the acquisition, storage, processing, assessment, transmission and diffusion of information leads to the generation of knowledge and the fulfilment of needs of individuals and firms and thereby plays an important role in economic activity, the generation of wealth and the quality of life of citizens. In developed economies, various sectors with an emphasis on knowledge, such as informatics and communications, education or provision of consultancy services to companies, reach up to 50% of the GNP and employ an increasingly large share of human resources.

A society for all. The widespread diffusion of new technologies entails the risk of creating new divisions between information haves and haves-knots, and marginalizing particular social groups and workers. There is in other words a danger that a new form of illiteracy accompanies the dominance of information and communications

technologies. Other risks concern the functioning of democratic institutions and the safeguarding of personal freedoms in the electronic age. The duty of the state is to ensure that the Information Society affords equal opportunities, solidarity, safeguarding the citizen's rights.

1.2. The challenges and opportunities for Greece today

Compared with other developed countries, Greece is relatively behind in the course towards the emergence of the Information Society and considerable effort must thus be put for its active and equal participation in the new digital age. Inactivity, lack of appropriate initiatives and of preparation for the circumstances of the new emerging society risks cutting us off from European and global developments.

The course towards the creation of the Information Society constitutes a constant dynamic change of economic and social structures, policies and practices. A series of measures and bold interventions are necessary on the part of the state, new initiatives by the private sector and the research community, and active contribution by all citizens.

The structure of the economy. The most drastic changes brought about by the new information and communication technologies can be seen in the economy. Compared with other developed countries, the structure of the Greek economy remains to a large extent traditionally focused in manufacturing and in the services, with insufficient research and investments in new products and production processes, a small rate of diffusion of new technologies and a relatively small IT sector. All these are factors inhibiting development. The successful modernisation of the industrial fabric is rendered more complicated also by the geographical fragmentation of the country by a process of economic development that is often based on a single-product industry in several vulnerable sectors and areas.

A need for structural reform. In order to deal with such weaknesses, it is necessary to constantly improve the "framework conditions" which determine investments and the generation of economic activities and jobs based on new technologies. The current macroeconomic policy and structural interventions in labour, capital, product and service markets aim in this direction, with the creation of a more dynamic environment for the development of entrepreneurial initiatives.

The functioning of the public sector. The problems that exist currently in the provision of government services and more generally in the mechanisms of the public sector in Greece constitute an important factor inhibiting the emergence of the Information Society. Unsuitable structures, bureaucracy, inadequate staffing, deficient planning and lack of assessment and feedback impede the successful introduction, assimilation and use of new technologies in the public sector and the provision of better services to citizens.

A series of governmental initiatives for the reform and modernisation of the operation of public services are aimed at more efficient procedures and better services for citizens and firms. At the same time, it is expected that the government program for the privatisation of organisations or companies currently under state control will result in the introduction of improved incentives and dynamism in the provision of services.

The adequacy of networks and of the communications infrastructure. A prerequisite for the emergence of the Information Society is the creation of the necessary communication networks for handling new services in the digital society. It is therefore necessary to accelerate the creation of suitable telecommunication infrastructures in a deregulated environment with an adequate and flexible regulatory framework on the part of the state. To the major investment plans of OTE for the digitisation and upgrading of the telecommunications infrastructure of the country are added today new networks for specific categories of users (firms, schools, research community) as well as a series of new communication services.

The Information Society, a policy priority in many countries

The increasing interest in Information Society issues in Europe and in the rest of the world is manifest in the significant political initiatives undertaken in a number of individual subjects (e.g. electronic trade, rights of the citizen, telecommunications deregulation) as well as in more general policy documents on the Information Society. Initiatives such as the creation of "Information Super-Highways" undertaken by the US Vice President in 1993, the Japanese program for the development of "Information Highways", the White Book of European Union on "Development, Competitiveness and Employment", the "Bangemann Report", the European Information Society Forum, texts by France, Austria, Portugal, etc., and the e-Europe initiative all reflect the importance accorded to the preparation for the Information Society at the highest political level.

In Greece, the first relevant text of a strategic nature was presented in 1995 by the then Minister of Industry and now Prime Minister Mr. C. Simitis. Since then, other texts have followed which describe actions towards the Information Society, such as those of the Communications Forum established and operating under the aegis of the Ministry of Transport and Communications.

The present text "Greece in the Information Society: Strategy and Actions" was prepared following a request the Prime Minister and was presented at the Ministerial Council in 1999. It was subsequently posted on Internet (www.primeminister.gr and www.infosociety.gr) and in its current form has incorporated recent development and initiatives in this area.

It aims to present a concrete governmental strategy for the development of the Information Society in Greece, by adopting priorities and specific targets for the future, as well as means, initiatives and mechanisms for attaining them. At the same time, it presents in a concise manner governmental work implemented or under implementation.

Education and vocational training. Interventions are also necessary in education and in vocational training for the development of suitable education infrastructures (in courses, personnel, material) in all education levels and of adequate human resources with the proper skills and adaptability that are is necessary for the Information Society.

Mobility in the private sector. Despite the undoubtedly many and complex problems that Greece is faced with in its course towards the Information Society, there is a great deal of activity in our country today and a large number of initiatives by both the public and the private sector. In the private sector and the research community, the creation of a number of new technology-based firms, the considerable research undertaken in universities and the constant diffusion and acceptance of many new technologies by consumers are all signs that indicate a new dynamism.

Public sector initiatives. In the public sector, there are a number of initiatives for modernisation through the introduction of IT systems, as well as regulatory and legislative initiatives for the development of new services and the protection of citizens in the new digital environment. Other interventions are aimed at the development of IT applications in sectors such as health, education, or the environment. In addition to actions by the central government, a number of initiatives are undertaken by regional and local government entities for their participation on equal terms in the new digital age.

The IT revolution suits Greece. In the history of our country, technology and civilisation have always gone hand in hand. Today, the nature itself of the information and communication technology revolution (knowledge- and skill-intensive, with fewer of the disadvantages of small size and of distance from decision-making centres) gives Greece a unique opportunity. Characteristic Greek traits such as resourcefulness, the willingness to take risks and to find solutions and an experimentation-based approach to problems are also helpful in this respect.

At the present juncture, with the integration in the Economic and Monetary Union and the European unification, a new perspective presents itself. We must put to advantage this opportunity, given that in the new distribution of roles in the Information Society the largest benefits will go to societies that will be first in putting the new production tools to use for improving the quality of life of their citizens and their position in the international economic and political environment.

The eEurope initiative

The goal of the eEurope initiative launched by the EU in December 1999 is the creation of a digitally literate Europe that is based on entrepreneurship while eliminating social exclusion. It is the "framework-text" for all Information Society development actions in Europe. The Feira European Council approved the eEurope 2002 Action Plan in June 2000, while the progress report on the Action Plan was approved by the Nice European Council in November of the same year. Actions are targeted to serve three goals:

1. A cheaper, faster and more secure Internet
2. Investment in skills and human resources
3. Promotion/spread of Internet use

(http://europa.eu.int/information_society/eeurope/index_en.htm)

1.3. Principles and aims of the Information Society strategy

The need for a comprehensive strategy. Information Society issues are essentially horizontal. Each Ministry or supervised entity, and every region in the country, has certain plans,

initiatives or actions for the development of information and communication technology applications. There is therefore a pressing need for a comprehensive government strategy for the development of the Information Society, outlining complementary actions and initiatives.

The strategy for the Information Society in Greece is based on certain basic principles:

- **Innovation and entrepreneurship**. 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 a culture of innovation.
- **Democracy and freedoms**. The Information Society should strengthen democratic processes and safeguard the rights of citizens.
- **Equal opportunities and solidarity.** The Information Society should enable all citizens to have access to the opportunities, the knowledge and the markets opened up by the new technologies, and should show solidarity towards those who fail to become integrated.

Based on these principles, the policy framework for Information Society is expressed in a number of general goals. A prerequisite for achieving these is the development of the appropriate communication infrastructure.

- **Improved services for the citizen** with the use of ICTs for the modernisation of the state operation, better provision of services, access to information and transparency;
- **A better quality of life** with applications of ICTs in health, environmental conservation, and the improvement of the transport infrastructure;
- **Robust economic growth** with the creation of new technology-based firms, the emergence of new sectors, and improved competitiveness;
- **Increased employment** with the improvement of workforce skills and the creation of new jobs;
- **An education system for the 21st century,** with the equipment and networking of all educational establishments, the education and training of teaching staff, and the use of multimedia-based curricula TEXT
- **Broadening of democracy** by encouraging greater participation of citizens in matters of common interest, as well as by taking measures for the protection of citizen rights in the digital age;
- **Promotion of the Greek cultural identity** via the protection of the cultural heritage, promotion of Greek civilisation and the cultivation of the Greek language;
- **A strong Greece** with the use of ICTs for enhanced domestic security and national defence, the advancement of Greek interests and for making Greeks living abroad "active Greek citizens".

The proposals of the 1995 text on Information Society strategy

"Greek Strategy in the Information Society: A tool for Employment, Development and Quality of Life" was the first text of its nature in Greece. It was presented in 1995 by the then Minister of Industry and now Prime Minister, Mr. C. Simitis, and it set out four milestone goals:

- To limit the gap between us and our partners in the use of advanced information infrastructure within the next 10 years
- To ensure that a considerable part of Greek firms should be able to have ready access to the markets associated with the information infrastructure within 15 years
- To enable an increasing number of family units to have ready access to the information infrastructure within 15 years
- To carry out the greatest part of transactions with the state in an electronic manner within 15 years

For the implementation of such goals, the text proposed a number of actions, such as the development of a national infrastructure backbone, the creation of "Information Cells" for easy access to the networks by each citizen, the establishment of an independent entity for securing constitutional guarantees, the establishment of a standing parliamentary committee on the Information Society, the development of an information network for companies, the opening up of the state to electronic transactions with the public, and pilot applications of social benefit.

Many of the above actions are underway or have been implemented, while others have since been reviewed or abandoned in order to better service the stated goals in the framework of new developments in technologies and institutional reforms.

1.4. The role of the state, the private sector and citizens

The future form that the Information Society will take is not predetermined. Nor is it a mere passive adaptation to the arrival of new technologies. It will depend on the role and activities of the state, the private sector and of citizens, as well as on the participation and contribution of all social entities, each with discrete but complementary roles.

The role of the private sector is fundamental. The main tools for the emergence of the Information Society (computers and peripherals, software for applications, infrastructures for networks permitting information transmission) are produced and supported by the private sector. Therefore the private sector has a decisive role in the investment in the new technologies, in the production of the new products, and in the generation of new jobs in the Information Society.

The experience of other countries shows that a considerable part of the products and services that are based on ICTs are the result of new entrepreneurial initiatives. The same is true for the development of an increasing part of the basic communication infrastructure following the breaking up of "natural monopolies" in telecommunications. The improvement of the opportunities, vehicles and circumstances for the creation and viable growth of new firms is therefore of great significance.

The role of the state is strategic. In the course towards the Information Society, the role of the state remains significant but is fundamentally different from that of the past. Its role is to promote adjustments in the economy and the society, to invest in human resources and in economic activities that, while socially desirable, are not privately profitable, while safeguarding the rights of citizens in the digital age.

The state has also an important regulatory role to play in the development of the market in the Information Society. This role is fulfilled with the establishment of a flexible and evolving institutional framework and with the safeguarding of conditions for a competitive environment for firms.

For the provision of services to the citizen, the state promotes ICT applications in public services, in education, health and welfare, in the environment, in transport, and in cultural services. At the same time, for the effective management of public funds, the support of the production and use of services based on new technologies is carried out through interventions that are compatible with the incentives and mechanisms of the free market. This means identifying the requirements of users and offering them the option to select themselves, when feasible, the appropriate technological solution.

The state also uses the new technologies for guaranteeing the security of citizens, the functioning of democracy and constitutional freedoms, access by all citizens to the new communication media and services, and the protection of the privacy of the citizen in transactions. Finally, it shows solidarity and supports those citizens who face difficulties in their participation in the digital age.

Citizens must participate actively in creating the Information Society. Technology should be at the service of society. Therefore, the Information Society will be a democratic society only when citizens actively contribute to its development, both individually and via collective bodies, in a constant dialogue and interaction with the public and the private sector.

In our country today there is a tendency to distinguish the few (but rapidly increasing in number) users of computers and communication networks such as the Internet from the many who treat the new technologies at best as a mystery and at worst as a danger for their future. This difference in outlook is up to a degree attributable to a generation gap and, given the greater familiarisation of the young with the new technologies, it is bound to attenuate with time. The state has however a duty to provide relevant information and training in order to facilitate and shorten the transition period.

Despite the fact that the tendency towards information digitisation and greater use of ICTs in the economic and social life is not reversible, many of the options in the framework of Information Society are essentially of a political nature and are not technologically pre-defined. Citizens who are familiar with the use as well as the dangers of the new technologies therefore take such decisions on more solid ground.

The course towards the Information Society depends on the co-operation of the state with the private sector and the active participation of citizens.

The Informatics Council

The objective of this Council is to create the conditions for improving collaboration among public sector entities and the IT community so as to promote effective utilization of information and communications technologies in the public sector in the context of a healthy market framework. Its remit includes advising on IT planning and strategies and drafting proposals for interventions and measures for procedures relating to the implementation and operation of IT in the public sector, as well as operating rules for the IT market. The council includes representatives of ministries, scientific bodies and the IT industry, and reports to the Minister for the Interior, Public Administration and Decentralization.

1.5. From goal to result: implementation of actions

A realistic framework of action with concrete milestones. In order to convert general goals to practical results for the economy and society, a realistic framework of action is required with concrete milestones. The government strategy and the most important initiatives in individual thematic areas are outlined in some detail in the chapters that follow. Actions are of three types: activities completed (with an emphasis on their practical usefulness), actions in progress, and presentation/ announcement of new activities.

Problems and means for implementation. Implementation has 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, a number of horizontal interventions are required, providing the context for individual actions in the different thematic fields. These interventions (which are presented in more detail in the last chapter of the text) are:

- *Institutional and organisational reforms*. Reorganisation of IT support services in the public sector, upgrading of supervision services, improvement of the legislative framework for public sector IT projects by establishing specific rules and procedures promoting such IT systems deployment under greater transparency.
- *Regulatory initiatives*: Completion of the regulatory reform in the telecoms sector, reinforcement of conditions for the operation of independent regulatory agencies, discussion on their future role in the context of technological developments, 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 will be reviewed, in order to increase the effectiveness of public investment and to achieve a more efficient use of public funds.

Co-ordinating government projects and public dialogue

A **Secretariat for the Information Society** has been set up at the Ministry of Economy & Finance to facilitate the co-ordination of government projects in the Information Society domain. This body operates in two areas, the main of which is the responsibility for the management of the 3rd CSF Operational Programme for the Information Society. Its second area of operation is to develop policies for the new economy, helping to shape political initiatives in this direction and monitor their implementation.

The **Operational Programme for the Information Society (OPIS)** is the main funding tool for the implementation of the government's goals in the IS area. All ministries take part in the OPIS, while the Ministries of Finance & Economy and of the Interior, Public Administration and Decentralization share the overall responsibility for the programme.

The following have been set up for managing, monitoring and implementing the OPIS:

- The **Monitoring Committee**, composed of representatives of the Ministries and organizations involved and of the social partners
- The **Managing Authority** of the OPIS in the Ministry of Finance & Economy's Special Information Society Secretariat, which is responsible for integrating projects into the OP, monitoring and auditing their execution, and evaluating the results
- The **"Information Society S.A.",** which operates under the supervision of the Ministry of the Interior, Public Administration and Decentralization (MIPAD) to provide back-up services – using outside consultants – to the implementing bodies while they are planning and carrying out the actions and later in the productive operation of the projects
- An **Information Society Observatory** is also being set up, which will systematically survey and regularly record, analyze and present IS developments in Greece and internationally, share know-how and disseminate best practices

2. Open and effective public administration

2.1 The new technologies at the service of citizens and firms

In modern societies, public administration should provide to citizens and firms high quality services, in a timely and cost-effective manner. The information and communications technologies offer the necessary tools for this, while at the same time promoting transparency and democratic participation in the operation of public administration.

A public administration dedicated to the goal of an open and effective government:

- establishes comprehensive structures and mechanisms for the creation, management and availability of public information, meeting the information requirements of citizens and firms, and
- contributes to the emergence of the Information Society by creating the appropriate regulatory environment, and facilitating the creation of a critical mass of users and information producers.

Modernising the public administration. In the last few years a number of institutional and organisational changes in the Greek public sector are underway. The decentralisation of responsibilities to the regions and prefectures changes the role of ministries and emphasises their function as centres for the strategic planning and formulation of policy. The merging and suppression of public entities, the reorganisation of services, and the listing of publicly owned companies in the Stock Exchange, all change drastically the functioning of the state. Public administration services are gradually becoming an effective tool for shaping public policy and supervising its implementation.

The introduction of the new information and communication technologies in public administration is an integral part of the overall government policy for the decentralisation of authority, and the reorganisation of public services.

New technologies. The success of the attempted changes depends to a large extent on the ability to exploit the potential of information and communications technologies. Despite the implementation of a number of projects in the last decade, information technologies have not yet penetrated the public administration to a satisfactory level. This delay has created a vicious circle with the preservation of the traditional bureaucratic and inefficient structures, mechanisms and mentalities. The effort to increase the rate of deployment of IT systems therefore forms part of the broader reform program.

The National Centre for Public Administration

The National Centre for Public Administration was established in 1983 with as a goal the training of personnel for the Public Administration, either through attendance in the National School of Public Administration or through attendance of education seminars and training programs at the Training Institute.

During the last five-year period, more than 44.000 employees have attended 2107 courses of continuing training of a total duration of over 153.000 hours, while 12.085 employees have attended over 700 IT courses of a total duration of 44.000 hours.

Development of human resources. The modernisation of the public administration depends largely on upgrading its human resources. In this respect, and in order to take advantage of the new technologies, interventions are focused on:

- modifying the qualifications required of newly hired employees, by adding knowledge on computers and new technologies.
- increasing the presently insufficient number of specialised IT staff
- training employees in matters of organisation, administration and IT.

The "Politeia" Programme

The "Politeia" Programme was set up in May 2000 and outlines the general direction of the on-going public administration reform. This framework is completed by the Operational Programmes "Management by Results" and "Evaluation and Performance Indicators". The "Politeia" Programme as presented and implemented to date covers the policy principles and basic actions that have been developed for the transformation of the public administration (and local government) in Greece. Law 2880/2001 concerns the mechanisms for implementing and monitoring this policy and for evaluating its application.

The planning of training courses covers all levels of administration, from newly hired employees to senior and top executives, and has the following targets:

- the development of the skills of public servants so that they become competent users of the new technologies,
- the improvement of the performance and efficiency of employees and of their work environment, and
- that the reform effort be embraced and supported by the executive hierarchy in order to ensure continuity and consistency of the actions under implementation.

2.2. Information systems for better management

A number of information systems are already operating or are under implementation in the public sector. Such systems support, mainly, important management functions of the administration and, on a secondary level, databases for information fundamental to the operation of the state.

In the framework of the 2nd Community Support Framework information technology projects of a total budget in the order of Drs. 200 billion are being implemented in public services and organisations. Such projects:

- Improve the performance and efficiency of important sectors of the public administration, such as the formulation and implementation execution of the budget, the assessment and collection of taxes and social security contributions, the granting and payment of pensions, the collection and processing of statistics, the provision of health services, the calculation and payment of benefits and subsidies, etc.
- Permit a rational management of available resources and contribute to the decrease of cost and the improvement of the quality of services.
- Create the proper technical environment for the support of the administrative process via office automation systems and decision-making tools.
- Contribute to the creation of databases with data on companies, professionals, employment, industry, commerce, general economic activity, land usage, the environment, transports, health.
- Set the foundations for the creation of an interdepartmental and intradepartmental network infrastructure, which ensures system interfacing and interoperability.
- Help deal with the needs arising by the Millennium Bug and the introduction of the Euro in transactions.

Addressing the Year 2000 Problem

The Year 2000 Problem, the incompatibility of information systems with the electronic recognition of dates after 1/1/2000, was recognized in time as a real and urgent matter and was successfully addressed in both the public and the private sectors in Greece. Indeed, the opportunity was taken to replace a significant number of outdated systems, and to establish the use of tried and tested systems development, operating and maintenance methods.

The Ministry of Interior Informatics Development Service began to prepare the public administration for the problem in 1997-8, while the final co-ordination of Greece's effort to deal with the issue was handled by the inter-ministerial "Action Group 2000", which operated from December 1998 to March 2000, with the participation of representatives of private corporation collective associations, information scientists and informatics companies.

The effort to deal with the Year 2000 Issue and the positive results achieved demonstrated on the one hand the particular need for close and substantial collaboration between the public and the private sector and, on the other, the opportunity for change that is presented by every problem and that ought to be properly exploited.

Actions in progress. Further development of IT systems for public administration, to be mainly financed by funds of the 3rd Community Support Framework during the period 2000-2006, aims at the implementation of projects in fields critical to the operation of the state and in fields where a relatively larger delay has been ascertained.

The new information and communication systems improve the operation of the state and the services offered to citizens and firms.

The 2nd CSF Operational Programme "Cleisthenes"

The "Cleisthenes" Operational Programme for the Public Administration was implemented in the framework of the 2nd Community Support Framework. The main objective of this programme was to create the conditions for continual modernization of the administration through technical, organizational and educational

interventions. The programme had a total budget of 96.4 billion drachmas for the period 1994-1999, and financed:

- organizational and informatics projects in areas of fiscal, social and economic interest
- introductory and continuing vocational training programmes for public administration personnel
- studies and applications for the use of new technologies in the public services and for the creation of the necessary common infrastructure.

The total financial commitment was 329 million euros (116% of the total budget), while total expenditure amounted to 288 million euros, representing an absorption rate of 101%. The "Cleisthenes" Operational Programme included projects relating to the administrative modernization of the public administration, the development of integrated information systems in the public administration and the education and training of human resources.

In particular, for the next eight-year period, information technology and re-organisation projects are being promoted in fields such as revenue and expenses, all types of payments, social security, health, public order, justice, education, employment, land planning, the environment, transport, regional and local administration, etc. 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.

2.3. Production, management and availability of public information

The state is the largest owner of information in Greece. Because of the nature of its activities, the state is the largest owner, producer and user of information in the country. Such information is important:

- for the public sector itself in the context of exercising its normal duties and, in particular, for supporting decision-making procedures.
- for citizens, both in the context of their democratic rights and in their capacity as consumers of state services,
- for private sector firms that require various types of information for their operation and decisions on strategy, and
- for the information (content) industry that uses information as raw material for value-added products and services.

Adapting IT systems to the euro

With regard to adapting to the euro, studies were carried out by the Ministries of Finance and Interior to determine the economic, organizational and technical aspects of the issue. Particular attention was paid to the changes that would have to be made to information systems in the public and private sectors so as to assure a smooth transition to the new currency. On the basis of these studies, the adaptation of IT systems in the broader public administration sector is progressing, financed by the OP for the Information Society under the 3rd CSF.

The overall responsibility for the country's transition to the euro is in the hands of the Inter-Ministry Action Group for the Euro ((http://www.euro-hellas.gr/), which was set up by joint decision of the Ministries of Finance and Interior and includes representatives of those two ministries plus representatives of the Ministries of National Economy and Development, the Bank of Greece, the Federation of Greek Industries (FGI), the General Confederation of Labour of Greece (GCLG) and the Hellenic Bank Association (HBA), under the presidency of the General Secretary of the Ministry of National Economy. The Action Group began its operations in May 2000.

The digitisation of information. The conversion of existing public information into digital format, its structuring in databases and ensuring electronic access to such databases for citizens and companies is a primary goal for the public administration. The gradual creation of databases will enable the provision of essential information to citizens and firms and, in general, the provision of complex and upgraded services.

The public administration network

The "Syzefxis" project relates to the creation of the national public administration network and aims at the creation of a uniform technical and operational communication environment for public services with other public services and with citizens and firms. The Informatics Development Service of the Ministry of the Interior, Public Administration and Decentralisation is implementing the project in the framework of the "Klisthenis" program. After the completion of the first pilot phase of the project (connecting certain ministries and regions), its full implementation will start in 2002.

The necessary infrastructure. The generation and use of information presuppose the existence of office automation systems for public services, the necessary interconnections for accessing databases and information banks and the ability to communicate via the exchange of at least electronic mail messages.

Given the rapid increase of the use of the Internet in Greece, access to and creation of web pages in the World Wide Web, as well as the provision of E-mail services, all are prerequisites for an information "processing" system. These prerequisites will be fulfilled for nearly all public services and in a cost-effective manner during the next three years.

The use of open source software in the public administration

Open source software (www.opensource.org) is the model for the development of software whose source code is available to anyone who is interested in it. It is distributed on terms that must meet specific criteria, most notably the freedom to use, copy, redistribute and improve it to serve the needs of the person or group adapting it. The advantages of open source software include the lower cost of related programmes and applications, and the possibility of providing increased compatibility, security and effective control in the public administration. Open source software may also present certain disadvantages, including, in certain cases, the open philosophy itself, the difficulty to date of providing integrated support services, and the fact that it has not become entrenched on the international level except in certain specific initiatives. The promotion of open source software is something eEurope is committed to for the development of e-government, while many countries (Germany, France, Belgium, etc.) have already launched pilot adaptations of basic public administration operations to open source software.
(http://europa.eu.int/ispo/ida).

Information provision. For reasons of transparency, and given that the state is required to provide information to citizens and firms, specific categories of public data and processed information are available free of charge and are accessible by all. Processed information or information that is made available to private entities which "add value" for commercial purposes are made available to interested parties for a fee.

The goal is the conversion of all existing public information into digital format and to ensure that citizens and firms have electronic access to it within a time period of eight years.

For specific administrative, technical, economic and legal information, deemed necessary for the operation of firms in the private sector and economic activity in general, the creation of relevant databases is already underway, irrespective of whether they will be available free of charge or not. With this rationale, a number of databases such as those of the National Printing House and the Standing Legislation Code ("Raptarchis") are being created.

The society and the economy have increased requirements for safe and low-cost access to high-quality public sector information. To achieve this, a complete framework for the provision of information is now being formulated, as regards the range, limitations and exceptions of the right of access to public information, the rules for the commercial distribution of information (tariff policies, intellectual rights, fair competition practices) as well as for the respect of the rights to privacy.

In order to provide better services and facilitate citizens, the goal is to provide electronic points of communication with the public administration in various public spaces.

2.4. Access to public information

Transparency in the operation of the state. A fundamental goal for public administration in the context of the Information Society is the promotion of transparency. In this context, the administration is not only concerned for the availability of information but also for providing access to it to citizens and enterprises, taking into account security requirements. Given the existing lag in the penetration rate of computers in households and small businesses, the goal is to provide electronic points of communication with the public administration in various public spaces. Such points take on a special importance in geographically remote areas, as in the case of small business and minority groups of citizens.

The "Ariadne" Programme

In the light of the need for e-government actions, many parallel initiatives have been grouped together in this programme: these include the electronic version of the Citizen Guide, the 1464 call centre, the "Asterias" programme, the creation of One-Stop Shops and e-forms, the simplification of administrative procedures, etc. The "Ariadne" programme is designed to improve communications with the public and the quality of service the citizen receives from the country's

public services. It signals the collaboration between the central public administration and local government authorities, and will be implemented through both central and decentralized actions. The citizen will be able to access administrative information and data (e.g. e-forms) in the following ways:

1. By telephone

2. Via the Internet

3. Through service structures on the local level.

These structures, providing a total of about 1000 service points, have already begun to be set up in local government authorities across Greece. These 1000 citizen service points will also be public Internet access points.

Confidentiality in transactions. The benefits of the Information Society and the realisation of its potential depend to a large extent on the ability to ensure a total framework for electronic transactions. The protection of the individual against unlawful use of personal information is one dimension of this aspect (see chapter 11).

The presence of the public administration on Internet

All ministries have access to Internet (and to basic services offered by it) and most have web pages providing various types of information and, often, interactive services to visitors. Some characteristic cases:

- the Ministry of Foreign Affairs, providing information in Greek and English on the current developments in national issues and international problems,

- the Ministry of National Defence and the Ministry of Public Order, informing the public on sensitive matters of their jurisdiction, thus promoting transparency, and

- the Ministry of Education, providing the results of university entrance examinations for students, year-book information for teachers, and University openings for the academic community.

The presence of many Ministries in Internet remains, for the time being, a pilot project, with little information for citizens and limited capacity for the provision of on-line services. The content of sites is however constantly enhanced.

Public Administration on the Web

According to a survey carried out on behalf of the European Commission in November 2001 (http://europa.eu.int/information_society/eeurope/news_library/documents/bench_online_services.doc) in all EU member states, 39% of Greece's basic public administration services are available on the Internet.

In general, all the ministries and most administrative authorities have their own web sites, and the range of services offered is continually expanding.

Ministries and General Secretariats
Ministry of National Economy
http://www.mnec.gr/
Ministry of Foreign Affairs
http://www.mfa.gr/
Ministry of National Defense
http://www.mod.gr/
Ministry of the Interior, Public Administration and Decentralization
http://www.ypes.gr/
Ministry of Development
http://www.ypan.gr/
Ministry of Agriculture
http://www.ypge.gr/
Ministry of Justice
http://www.ministryofjustice.gr/
Ministry of Public Order
http://www.ydt.gr/
Ministry of National Education & Religious Affairs
http://www.ypepth.gr/
Ministry of Labour & National Insurance
http://www.labor-ministry.gr/
Ministry for the Environment, Planning & Public Works
http://www.yme.gr/
Ministry of Culture
http://www.culture.gr/
Ministry for the Press and Mass Media
http://www.minpress.gr/
Ministry of Health & Welfare
http://www.ypyp.gr/
Ministry of Mercantile Marine
http://www.yen.gr/
Ministry of Transport & Communications
http://www.yme.gr/
Ministry for Macedonia & Thrace
http://www.mathra.gr/
Ministry of the Aegean
http://www.ypai.aegean.gr/
General Secretariat for Sports
http://www.sport.gov.gr/
General Secretariat for Greeks Abroad
http://www.mfa.gr/ggae/
General Secretariat for Public Administration
http://www.gspa.gr/yddka/start.htm

General Secretariat for the Greek Tourism Organization
http://www.gnto.gr/
General Secretariat for Research and Technology
http://www.gsrt.gr/
General Secretariat for Trade & Commerce
http://www.gge.gr/
General Secretariat for Adult Education
http://www.gsae.edu.gr/
General Secretariat for Youth
http://www.neagenia.gr/
General Secretariat for Information Systems
http://www.gsis.gov.gr/
General Accounting Office http://www.mof-glk.gr/

The other dimension has to do with the ability to identify the party carrying out an electronic transaction with a public or private entity. Technology offers a range of products and devices, such as smart cards, digital signatures and cryptography, meeting the requirements for confidentiality and safety in transactions as far as the technical aspect is concerned. The relatively small use of such products and devices in Greece, and in public administration in particular, requires that they be reviewed and adopted where necessary, in a co-ordinated and systematic manner.

Call Centres

As of February 1998, citizens can dial "1502" and apply by phone for the issuance of a number of certificates, such as birth/death/marriage certificates, tax clearance, military status and penal record certificates. Applications are electronically transmitted by OTE to the relevant public service. The certificates are delivered by mail, for a minimum charge. "1502" already receives more than 600 applications per day for issuing certificates. 600,000 calls were placed in the year 2000, and nearly 680,000 in 2001. Of the total number of calls placed in 2001, 328,000 were converted into certificates.

The 1464 centre served about 500,000 people in 2000 and 1,300,000 in 2001. This centre already handles the information services for the National Printing House and the Ministry of Transport, and provides information about TAXIS and other matters connected with the Ministry of Finance

2.5. Services to citizens and firms

Priority to the citizen. The improvement of services to citizens and firms is one of the most important goals in the effort to modernise the public administration.

Today, citizens and firms have great difficulties in their transactions with the state because public services are unable to handle transactions effectively and to re-use information already known to them from previous transactions with the same parties. The improvement of the service provided is based on the creation of a suitable technical and operational communication environment of between public services, whereby it is the file, rather than the citizen, which moves between departments.

Despite the fact that the lack of "customer-oriented" applications and the absence of a complete networking environment constitute significant limiting factors, the IT and communications projects implemented in public administration form the basis for higher quality of services and a better response to the requirements of the private sector.

Actions by the Ministry of Finance

The Ministry of Finance implements a considerable number of IT projects in the fields of taxation (TAXIS program), customs offices, treasury-budget, etc., as part of the "Klisthenis" program, financed by the 2nd Community Support Framework. Such projects refer to critical areas to the operation of the state and significantly contribute to the improvement of services provided to all parties carrying out transactions with the Ministry, the effective support of the decision-making procedure, the stamping out of tax and duty evasion, and the curtailment of public expenses. Furthermore, the Ministry of Finance promotes the development of a pilot system for the electronic exchange of receipts and, in particular, the electronic filing of Value Added Tax statements. The Ministry is also currently considering the possibility of supplying taxpayers with a smart card identifying its holder in order to allow economic transactions and issuance of standardised tax certificates at special points of service.

TAXISnet

TAXISnet (www.taxisnet.gr) provides services to individual and corporate tax-payers, including electronic submission of VAT forms and payment of VAT via banking system services, electronic submission of income tax forms, personalized electronic notification of the results of the tax return clearance process, and the electronic issuing of certificates by fax. Some of these services, as well as some other general information services, are also available via the telephone call centre service and via the General Secretariat for Information Systems website (www.gsis.gov.gr). The services provided

by TAXISnet, like those provided by the TAXIS Tax Information Systems and the Customs Information Systems (ICIS), have fully converted to the Euro, while and the response of the general public and businesses to the utilization of the online services provided by TAXISnet has been exceptionally positive. As a measure of this response, between its entry into productive operation (May 2000) and January 2002, an average of about 500 new users per (working) day signed up. The total number of registered users is more than 200,000, while about 400,000 declarations have been submitted electronically, representing a total sum paid of more than 600 million euros. The electronic Proof of Tax Compliance issuing service has processed more than 144,000 applications, and the online information service for settlement of income tax obligations has handled more than 5 million calls.

Online transactions. As far as the online communication of citizens and firms with the public services is concerned, it is expected that this will be secured within the next three years. 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 traditional ways of transaction (physical presence, correspondence, telephone, fax) will be maintained, but electronic transactions will gradually prevail.

IKAnet (www.ikanet.gr)

As part of its modernization programme IKA, the Greek Social Insurance Institution, has developed two new services, which serve as a springboard for the provision of further quality services to employers and employees or pensioners. One of the basic tools for the modernization and upgrading of IKA services is the use of the Internet and of the new e-government technologies for communication between users and the Institution. These new electronic services fall into two categories:

- Information Services

- Transaction Services

The first transaction service to be introduced will be the electronic submission of the Analytical Periodical Statement, aiming at improving transactions with IKA, and eliminating the need for the physical presence of the employer in transactions with the Institution.

The electronic communication of citizens and firms with the public administration in the context of a generalized environment of online services will be completed within three years.

2.6. Institutional interventions for the implementation of modernisation programs

In order to obtain the goal of better services to citizens and firms and successful implement actions planned and, in general, for the public administration to contribute effectively to the course towards Information Society, the government is promoting institutional interventions aimed at:

- Reinforcing the department responsible for the strategic planning, co-ordination and supervision of the implementation of individual actions.
- *Co-ordinating the deployment of information technology in the Public Sector*. Overlapping will be eliminated, with the goal of avoiding wasting valuable resources;
- *Creating flexible and correctly staffed IT units in public services*. The role of IT units is redefined, Information Technology Committees are established in each Ministry and specialised personnel is hired.
- Defining a single environment for the development of IT systems based on specific technical, functional, organisational and administrative standards.
- *Finding better ways for implementing IT projects*. Implementation procedures for public IT projects are simplified, outsourcing is gradually introduced, as is the description of requirements on a service rather than a technical level.
- *Improving procurement procedures*. This involves establishing flexible procedures for the procurement of standardised IT products and services.

Along with the above interventions, mechanisms for constant follow-up and assessment of actions and initiatives relevant to the Information Society in the public administration are established. In addition, close co-operation with European and international organisations is encouraged in matters of public administration, state purchasing, technical standards, system security, legal aspects, etc.

2.7. The role of the public administration in the development process

A central government goal is for public administration to contribute decisively to the course towards the development of the Information Society in Greece. This can be

achieved both with actions of a regulatory nature and with actions which are aimed at the creation, within a short period, of a critical mass of users of IT products and services and the reinforcement of Greek firms active in this area. Such actions are aimed at:

- *Formulating a regulatory framework* for the creation, handling and processing of information in the public and private sector.
- *Creating specific institutional arrangements* for safeguarding confidentiality, electronic signatures, protection of citizens, protection of intellectual rights, teleworking, etc.
- *Establishing standards and registers*, thereby facilitating market growth.
- *Providing information to citizens and firms* on new technologies in a comprehensible manner, in order to facilitate their acceptance.
- Formulating a regulatory framework that ensures competition in the IT industry and eliminates disincentives for investments.
- *Gradually establishing electronic transactions with public services* (e.g. in matters of taxation, state purchasing, etc.) and, in general, helping the development of new ways of doing business such as electronic commerce.

BOX MISSING!!!

3. Information society, knowledge-based society

3.1. New technologies in education and scientific research

Knowledge for progress and growth. The increasing use of the new information and communication technologies in almost every facet of our society marks the emerging of a new era characterised by the need to handle information and the rapid renewal of knowledge. This generates increased requirements for the continuous training and lifelong education of human resources.

A modern education system. The education system is faced with this challenge of preparing tomorrow's citizens who will live in an increasingly knowledge-based society. The main concern is to ensure equal and sufficient participation for all in the emerging Information Society. The government is required to provide equal opportunities to all children to learn and acquire the skills, which will enable them to follow technological developments and familiarise themselves with them, and to participate actively in tomorrow's digital world.

The importance of research and innovation. A country's position in the global scene of the new millennium will be defined to a large extent by its participation in the production and enrichment of knowledge and innovation, through the development of research activities in strategic and innovative fields. Greece has the opportunity to play a significant role by using its comparative advantages associated with temperament, tradition, and the potential of its scientific community. By creating the necessary infrastructure and the appropriate framework and by putting emphasis on innovative research activities, our country can considerably improve its position in a unified Europe and in the global Information Society.

Knowledge and innovation are the foundation of the emerging Information Society and the prerequisites for the equal participation of all citizens and countries in it.

The policy framework. In order to ensure the equal participation of all citizens in the Information Society and to improve Greece's position in Europe and the world, the government education and research policy is defined around the following axes:

- Teaching of information science and new technologies as a core subject, and teaching all subjects with the use of new technologies
- Adapting curricula to the use of ICTs as an educational tool
- Training all teachers in the use of IT, adapting basic teacher training and encouraging teachers to exploit new technologies in the classroom
- Improvement of infrastructures and communication networks in schools, universities and research centres
- Strengthening of the production and diffusion of educational software TEXT
- Strengthening of research; use of the new technologies in research; and diffusion of research results.
- Strengthening IT-related studies at university level and in vocational education with the aim of reducing the 'skills gap'

3.2. A new approach to education in the 21st century

A need for increased investment in human resources. The times we live in require increased investments in human resources. As is the case in every transitory period, all countries are faced with the opportunities to improve and strengthen their international position. Countries that adequately prepare their human resources for active participation in the global Information Society, will acquire a considerable advantage and stand most to gain. They will be pioneers in defining and determining the priorities for the future.

The eLearning Initiative

The initiative "eLearning: thinking the education of tomorrow" was approved by the European Commission on 24 May 2000. This initiative, following the conclusions of the Lisbon European Council, presented the principles, goals and lines of action of eLearning, which is defined as "the use of new multimedia and Internet technologies for improving the quality of learning and facilitating access to resources and services, as well as exchanges and distance collaboration". The eLearning initiative received a very favorable response from the Ministers for Education and from the Feira European Council in June 2000.

Greece is currently faced with this challenge, and

it can meet it by drawing from its heritage in the field of education and science, creating the appropriate circumstances for progress and growth within the framework of a unified Europe. In this context, the reassessment and redefinition of the education system, taking into consideration the progress to date and the way that new technologies may affect it, is a pressing need.

A primary government responsibility is to ensure equal opportunities in learning for an active and equal participation of all citizens in the digital world.

Information science and technology as core subjects in schools. In order to allow both teachers and their students to participate in the Information Society, it is necessary to make them aware of the new technologies and to provide them with the necessary basic knowledge and skills. The teaching of information science and new technologies, as well as the familiarisation of students with the use of electronic and audio-visual and communication media, should be core subjects in all education levels. Only by doing so will the equal participation in tomorrow's digital economic and social developments be secured.

The Information Society & Education:

an Investment for the Future

The state has an obligation to ensure equality of opportunity for learning and for the acquisition of the skills that will enable tomorrow's citizens to follow – unhindered – and become familiar with technological developments, participating actively and on an equal footing in the digital world.

The use of the new technologies in education presupposes:

- The equipment and networking of schools and post-secondary institutions
- The training of teachers in the use of ICTs
- The development of digital educational material.

Keeping teachers up to date with the new technologies requires the development of suitable educational multimedia applications, the promotion of certification for educational software applications, the creation of links to digital libraries and the establishment of tele-education centers for students and teachers.

Teaching with the help of ICTs and audio-visual media. Our goal is to create a school that is modern and attractive for students. New technologies can contribute to the improvement of the quality and the re-orientation of the learning process, making schools into places for knowledge discovery, for the exchange of ideas and views, and for the development of creativity.

Learning to learn. Students must acquire the ability to explore, seek, discover, collect and produce information. They should be able to manage this information, to process it with a critical mind and critical methods, to present it in an appropriate form and to diffuse it. They should learn to work together by developing a team spirit and appropriate social behaviour while at the same time allowing their individual preferences and talents to develop. They should learn to learn, adapting to a society which requires life-long training and education.

An emphasis on the information and training of teaching staff. New technologies redefine and upgrade the role of the teacher in the education system. Far from simply imparting dry knowledge, the teacher can become an instructor in the pursuit, processing and production of knowledge.

A primary goal and critical factor for success is the constant information, training and familiarisation of all teachers in the use of new technologies, so as to enable them to use them in the teaching process as well as in their personal pursuit of knowledge sources. A target has been set to complete the training of all teachers in the new technologies by 2002. A similar effort is also being made for the administrative staff of schools and the central and regional departments that exercise and implement education policy.

Teacher Training Programmes

Primary Education

In primary education, actions relating to ICT training have included the "Uniformity of Diplomas" project, in which about 5000 teachers received training, the pilot project "Isle of the Phaeacians", which was part of the "Odyssey" programme and involved 15 primary schools, and the pilot project "All-day School", in which 560 teachers received in-school training in the 28 all-day schools.

Secondary Education

Teacher training programmes were developed in the framework of the "Odyssey" project, while the seminars conducted by the Ministry of Education's Regional Training Centers provided training in the use of computers and office

applications to about 3000 educationists.

Within the framework of the "Odyssey" programme, three of Greece's universities (the National Kapodistria University of Athens, the Aristotle University of Thessaloniki and the University of Macedonia) developed one-year post-graduate programmes to train educationists in aspects of the introduction of ICT in education, preparing them for Ministry of Education senior staff training positions in this sector. A total of 120 cadres have been trained in this way, and are already being used in training programmes. In the 385 schools participating in the "Odyssey" programme about 2000 teachers have received in-school training in the use of ICT in the educational process.

In another ambitious training programme that has recently started, 75,000 primary and secondary school teachers will be trained in the educational use of computers and the Internet by the end of the year 2003

Distance training. It is also necessary to create a permanent training and support mechanism for teachers, exploiting all the advantages of distance training. The development of a network of training centres will serve in particular the needs for continuous training of teachers and students in remote and isolated areas in Greece, as well as that of Greeks living abroad.

This effort should be supported by the Pedagogical Institute and the Division of Studies of the Ministry of Education and the higher education establishments and institutes in Greece. The private sector and local entities (municipalities, Chambers, scientific associations) should provide further support.

The permanent information, training and familiarisation of all teachers with the use of new information technology are a critical factor for success. The goal is to ensure that all Greek teachers have received training in this area..

3.3. Infrastructure and networks in schools

The use of information science and new technologies for the improvement and development of the educational system requires the existence of the necessary infrastructure in schools and focuses on the following targets:

- *Creating and equipping information and communication technology and audio-visual media labs* in all Greek schools. These laboratories will be used for education in information and communication technologies and in other subject areas. They can also play a role in other activities of the education community. It is envisaged that by solving the problem of lack of classrooms and eliminating double shifts in schools, the necessary infrastructure will be established in each school allowing students to practice, in their free time, in using the new technologies. The students who stand to benefit most from this are those who do not have the necessary equipment at home. Local government and the local community in general (scientific associations, private companies, Chambers, etc.) can make a valuable contribution in this process by creating suitably equipped areas and making them available to young people.
- *Creation of local networks and of an integrated educational network* connecting all schools with higher education and technical education establishments, research institutes, libraries and museums and other educational sources, as well as with the Internet. It is necessary to create both the human and the physical networks that will exploit the existing infrastructures in the academic and private sector (GU-NET, EDET, TEN-34/135, Internet providers). The development of digital and cable television also create a great potential for the provision of information and educational services. The target is to set up a school network that can provide every teacher, pupil and student with basic online services (e-mail, web sites, participation in electronic discourse, etc.) and advanced telematic educational services such as participation in and auditing of courses, use of educational web tools and digital libraries, distribution of educational material, collaborations via web applications for following seminars, etc. Every school will have its own website and e-mail address
- *Equipping each classroom and each teacher with multimedia computers* and the necessary peripherals and projection devices and audio-visual media.

Actions for equipping and networking schools

Equipment in primary and secondary education

The investment in PC equipment for the educational process ought to be amortized through significant use and to return the necessary added value before becoming outdated. The rate of investment, therefore, has to match that of parallel investments in teacher training in the use of ICT, in the development of educational content and in the development of a schools network to disseminate this material.

In the period 2001-2002 the Ministry of Education completed the planning of all the necessary supplementary projects (training and educational material) and is pushing ahead with the procurement of computer lab equipment and the replacement of old and outdated PC labs.

In the period 1999-2000 a total of 439 computer labs with the very latest technology (1999-2000) were installed in schools (262 Gymnasiums (secondary schools), 80 Lyceums (high schools), 46 Technical High Schools and 51 Vocational Schools).

In 2001 another 1000 up-to-date technology labs were installed (70 Gymnasiums, 778 Lyceums, 107 Technical High Schools, 45 Vocational Schools).

Today projects are under way to provide and install another 3600 computer labs in primary and secondary schools before the end of 2002.

Network Infrastructure

The Greek Schools Network (http://www.sch.gr) is the web access for primary and secondary education and implements the Ministry of Education's policy for the operational restructuring of Greece's educational services. The Schools Network does not develop its own backbone network, but uses the Greek Research & Technology Network (GRNET). The Greek Schools Network is linked to the GRNET at seven key points (Athens, Thessaloniki, Patras, Heraklion, Larissa, Ioannina and Xanthi). The Network was created with funding from the Operational Programme for Training and Initial Vocational Training in the framework of the 2nd CSF "Sacks of Aeolus" and EDUnet projects, and is now being upgraded and expanded with funds from the Operational Programme for the Information Society in the framework of the 3rd CSF. The full basic education network currently has 51 nodes covering every prefecture in Greece and provides dial-up access and Internet linkage to every school in the country.

At the same time, every computer lab that is installed also provides networking equipment so that all the workstations in the school are linked to one another and have Internet access at connection speeds greater than 64 Kbps.

The management of the network and its networking services and applications is handled by the same mechanism that handles the university network, thus assuring primary and secondary schools of access to the pioneering technologies that are applied on the university network.

At the end of 1999, only a small percentage of secondary students had access to the Internet in their schools, while Internet access in the primary schools was virtually nil.

With the completion of the 2nd CSF projects (end of 2000) the school networking situation had changed significantly. Today almost 100% of secondary schools and 17% of primary schools have Internet access.

In addition, in the framework of the creation of 500 secondary school libraries, workstations with Internet connections were set up in these, thus introducing a new dimension of knowledge through the worldwide web. In the period 2001-2006 another 500 school libraries will be created in public schools.

In this effort both the public and the private sector have an essential role to play. The public sector undertakes to supply the initial equipment and its development for the educational procedure, creating the necessary infrastructure.

The fast obsolescence of electronic equipment and the constantly increasing requirements for its enhancement and expansion, imposed by rapid technology developments, make the contribution of private initiatives indispensable. Co-operation is needed with Internet access providers, as with manufacturers of educational material and software for pricing agreements and favourable terms for the members of the education community (schools, teachers, students). There also is an important role for local communities (municipalities, companies, associations and chambers) who can encourage and support student activities.

3.4. Production and diffusion of educational content

In order to support the educational process, the following initiatives are aimed at supporting the production of educational multimedia applications:

- Establishment at the Pedagogical Institute of an office that deals with the certification and standardisation of educational material and software as regards its suitability for educational use. This will help teachers, students and parents to select suitable educational material and software.
- *Supporting the production of educational software and multimedia applications* by higher education establishments, research institutes and the private sector, in order to assist teaching in schools.

Greek Open Source Software Initiative

The Greek initiative for Open Source Software / OSS is designed to promote the use of OSS in Greece (http://www.open-source.gr). This initiative is primarily addressed is those involved in primary, secondary and post-secondary education (pupils, students and teachers). The advantages of OSS go beyond no-cost acquisition and upgrading, and may be summed up in four points:

- The availability of the source code ensures the possibility of adapting it to the needs of the user as required.
- The source code can be studied, thus improving collective technical knowledge.
- The fact that open source user permits allow free modification of the software contributes to the creation of better quality software.
- The philosophy of the open source movement (often referred to as the free software movement) is closer to the spirit of collaboration and study for the achievement of better results, an attitude inseparable from the educational process.

The initiative that has been developed in this direction has already launched endeavors to translate popular software products into Greek in an attempt to create a fully user-friendly working environment. The basic parameters for the selection of software for translation are its user-friendliness, operational stability, ease of learning and ease of adaptation to it. In addition, international examples of the application of OSS in education are being studied so as to benefit from international experience and achieve optimum results.

Many initiatives aim at strengthening the production and distribution of digital educational material via networks.

- *Interconnection of digital libraries through the educational network*. The Ministry of Culture has put training material into digital form and has made it available on Internet (the Ulysses site). It contains constantly information on archaeological sites and museums in Greece.
- *Creation of new digital libraries and their connection to the educational network*. The digitisation of existing digital educational and cultural material and the production of new material contribute to its conservation while also making it accessible to the entire educational community, including Greeks living abroad. The government, various cultural associations and the business community are supporting this effort.
- *Encouraging schools to create their own digital educational material*, putting to use the experience and the ability of the teachers as well as the enthusiasm of the students. To this end, a group will be created for the support and evaluation of such educational material, with the participation of educational institutions. The material to be produced will be made available on Internet and will also constitute an important source of information for Greeks living abroad, who can actively participate in its production.

3.5. Tertiary education and scientific research

The increased demand for high-quality knowledge, permanently upgraded and enhanced, forms the basis for the policy lines for tertiary education.

Equipment, Study Programmes and Human Resources in Post-secondary Education

The IT infrastructure equipment in all Computer Departments (and other Departments as well) has been significantly improved, and a number of Departments specialized in new technologies have been created in Greece's universities and technical & vocational institutions. As a result Greece currently has 18 university departments and 13 technical & vocational institution departments providing training in new technology fields. These departments currently (since 2001) admit a total of 6,500 students a year. There are also 27 post-graduate study programmes in Greek universities. The total number of graduates is expected to reach 5,000 after 2005. The current annual number of graduates is about 2000-2200. Based on estimates showing that an annual turnout of 4500–5000 graduates is required to meet the new needs that are being created, there is a deficit of 15,000 – 20,000 places that will have to be covered.

General education of a high quality. The trend towards greater specialisation in knowledge, which marked the last decades, no longer corresponds to today's requirements for frequent and rapid changes in the knowledge and skills of highly educated professionals. University departments should therefore a high level of general education, while at the same time offering the possibility for specialisation in short time periods.

Facilitating access to tertiary education. The Information Society puts specific demands on the overall level of education, both in terms of quality

and quantity. Improved access to tertiary education will make a significant contribution to meeting those demands. The goal is to give all students who finish Senior High School access to higher education by the year 2000. This goal will be achieved through an increase in positions in tertiary education departments, the Optional Study Courses and the Open University.

Reforming coursework, teaching with new technologies. Networks and the use of multimedia constitute an important tool in the enhancement and upgrading of academic education and research activities. There is a need to reform all courses in tertiary education, irrespective of subject matter. The introduction and use of new technologies in higher education will contribute to the creation of the human resources that will staff the industrial fabric and constitute the critical mass for the introduction of new technologies in all everyday activities.

The government policy on tertiary education and scientific research in the Information Society aims to achieve a general education of high quality, to improve access to tertiary education, to enable the use of new technologies in all courses offered, to strengthen graduate studies, and to improve infrastructure and communication networks.

Lifelong training. The changing demands in the job market create a need for flexibility and adaptability of the qualifications and skills of professionals in all age groups. The educational system needs to adapt to these changing demands. The Open University is particularly suitable for this. New technologies offer a considerable potential for the implementation of distance education. University departments will be encouraged to make their courses available on Internet. Furthermore, centres for distance education will be established. These centres will provide courses in a multitude of scientific fields with the help of new information technology.

Strengthening of graduate studies. The specialised knowledge demanded in the job market requires the organisation and operation of an increased number of graduate courses. It is intended that an adequate (as concerns both quality and quantity) number of graduate courses will be established to respond to the new requirements in the job market. The contribution of the business sector is necessary, both in terms of financial support, and in terms of facilitating contacts with industry. It is particularly important to establish interdisciplinary graduate courses with emphasis on applications of information science and new technologies in other sciences (e.g. Medicine, Biology, Linguistics).

An emphasis on research. Scientific research is a major - and increasingly important - factor in the growth and prosperity of a country. Greece, putting to advantage the quality of its scientific resources, as well as its favourable climate, environmental and cultural conditions, should support the existing research centres, and create new ones, increasing its participation and influence on international developments. Our country has the potential to enhance its rich human resources by attracting a large number of foreign scientists and encouraging the repatriation of eminent Greek scientists. A dynamic policy to achieve this potential consists of the following elements:

- *Putting new technologies to use in scientific research and the diffusion of scientific results*. New technologies offer a considerable potential to track knowledge sources and diffuse scientific discoveries. This potential has contributed to the globalisation of research and offers scientists throughout the world the possibility to actively participate in research activities, irrespective of their distance from science and research centres. Therefore, the use of these technologies by the academic and research community will greatly help increase and diffuse the research work produced in Greece.
- *Reinforcing research in leading-edge technologies*. Emphasis must be given to research involving leading-edge technologies, especially in IT applications in other scientific fields (biology, medicine, etc.) that will determine the international position of countries in the future.
- *Developing educational research*. Support for research in the field of education will enable the evaluation of educational work and help the development of new modern and efficient forms of teaching. The formulation of educational scenarios with the use of new technologies in teaching, in particular network applications, improves the quality of education.
- *Reinforcing research in linguistic technology*. Research in linguistic technology is one of the most sensitive and strategic investment areas for Greece, on account of the Greek language. As information and knowledge are increasingly drawn from the Internet, the use in education and research of languages spoken in countries with relatively small populations will decrease. The need to conserve and spread Greece's cultural heritage, as well as the need for contact with Greeks abroad, impose that particular effort be put in this direction.

- *Improving the communication infrastructure and networks of universities and research centres*. The use of new information technologies in the academic and research area requires the availability of equipment and the necessary infrastructure. The Government's goal is that by 2002 all further and higher education establishments should be properly equipped for meeting these requirements. Furthermore, the network infrastructure for the interconnection of universities and research institutes and for their connection with foreign establishments will be upgraded and enhanced (GEANT, GRNet, GUNET).

Networking and tele-education in post-secondary education

Networking

With regard to upgrading internal networks, the centers providing advanced telematics services in post-secondary education and the services of the Greek University Network (GU-Net), the situation is currently as follows:

In the framework of the 2nd CSF, the Operational Programme for Training and Initial Vocational Training I promoted important interventions in the domain of post-secondary education.

a) In the framework of the GU-Net project, a university network was designed and launched. This completed the linkage of the country's 18 universities and 14 technical and vocational institutes with high speed lines, the provision of basic services to all institutions and the implementation of pilot applications.

b) With the implementation of the University Network the possibility of linkage and direct international communication was upgraded and extended to all institutions, providing access to global sources of information. The linkage was realized via the backbone network "Greek Research & Technology Network" (GRNET) and the international linkage in the framework of the EU projects TEN-34, TEN-155/QUANTUM and GEANT.

The GUNET does not develop its own backbone network but uses the Greek Research & Technology Network (GRNET), the most advanced network in Greece, with national and international linkages, high know-how, efficient management, pioneering services and collaborations with international research centres.

Tele-education

With regard to tele-education, the National University of Athens, the Athens School of Economics and the National Polytechnic have fully equipped tele-education facilities not only as a resource for their own students but also to support teleconferencing with the domestic and foreign academic community. The University of Macedonia, the Aristotle University of Thessaloniki and the Center for the Greek Language have created specially equipped studios designed particularly for use in the creation of educational material and in seminars for the tele-training of primary and secondary school teachers. Proposals have already been submitted by the entire post-secondary sector for the creation of tele-education facilities, and these will be implemented in 2002.

4. Economic development and competitiveness

4.1. New technologies, growth and competitiveness

Economic policy today. Following the macroeconomic stabilization of the Greek economy, there has been a shift in economic policy towards development policy, centering on microeconomic policies and interventions of a restructuring nature. Macroeconomic adjustment will have to be completed by the structural adjustment of the Greek economy to current developments.

Greece's strategic aim is the active and creative adjustment to the trends and conditions that are prevailing internationally. Delaying adjustment only leads to greater economic and social costs. Moreover, development cannot be conceived as a simple process of quantitative growth, however necessary that may be: rather, it is a broader process of expansion of the rights and freedoms of citizens, including access to information, since digital exclusion is a real and tangible danger.

The new direction is signaled by the target of "convergence of competitiveness", with Greece participating as an equal partner in e-Europe. For modern Greece, participation in EMU was an event of historic importance, but the inevitable consequence is that the country's businesses have to operate in a climate of more intense competition. It is only natural that, with promotion to the first division of the world competition league, the standard of competition conditions and requirements should also be raised, and indeed in circumstances of rapid technological change and essential institutional adjustments.

One of the items on the agenda is therefore the issue of bridging the competition gap with regard to the other members of the European Union, and the world economy in general. Greece's economy, despite having moved up the world chart in different measures of competitiveness in the 1990s, is still lagging behind its partners in the EU and other countries.

Technology is the engine of growth. Economies today are in a phase of transition from the industrial to the post-industrial era, increasingly relying upon the production, distribution and use of knowledge and information. Technology is now the main driving force behind productivity gains and economic development. Innovations based on the new information and communication technologies generate new or better products and services and change the structure of the economy.

Globalisation and competition. The rapid development and diffusion of technology, together with the elimination of protective borders for trade, foreign investment and the movement of capital, all unify national economies and change the nature of global competition. The competitive pressure brought about by globalisation increases investment, innovation and economic efficiency accelerates the international diffusion of technology, and leads to higher growth rates and incomes.

Structural reforms. Globalisation also increases the pressure for adaptation and restructuring of economies, pressure that affect most unskilled workers as well as firms and industries that are vulnerable to international competition. The greatest benefits for economies and societies in the digital era will go to the pioneers, so that the most successful national strategies for realising the gains of technology and globalisation while simultaneously limiting the costs of the process are those that involve maximum openness and adaptability based on a broad consensus for change.

IT in business. No firm or organisation can afford today to ignore information technology. Doing so would mean ignoring a factor that can improve its services, expand its markets, increase its profits or instead put its very existence at stake. Companies that are successful at effectively combining information technology with their total business strategy are those that stand a better chance at survival, growth and increase of employment.

In the Information Society, growth and competitiveness are based on the assimilation and use of new technologies. It is the pioneers that stand to gain most: the firms and the countries that are most effective in putting the new production tools to use will be those to derive the most benefits.

A framework for action. Action is therefore required both on the part of the public and the private sector in order to convert the risk of technological unemployment and decline into an opportunity for full employment and prosperity. Action should be based on the new infrastructure of information and communication technologies for the development of commerce and industry. This infrastructure gives the opportunity to firms to upgrade their operations, both with respect to

the added value offered and their networking and interaction with the international markets.

The goals that the government has set for the Information Society will work in synergy with its more general policy goals, forming a coherent approach to achieving this adjustment and to upgrading the country's productive forces. The basic engines that will drive this change are:

a) technological upgrading and innovation,

b) an open business policy, and

c) support for employment (qualitative and quantitative).

More specifically, the main goal in relation to the digital economy is the development of the new economy in Greece, with:

- the creation of new intelligent and flexible businesses
- the development of new sectors in the new economy
- the increase in the productivity and competitiveness of Greek businesses through the new technologies
- the creation of new sets of skills for the new markets

4.2. Technology, industry and new firms

New products and services. In the Information Society, the networks and communications infrastructure renders to a large extent the production of "products" independent of geographical or geopolitical restrictions. Furthermore, the type of "products" produced and exchanged changes. The greatest share of production and employment is now at the tertiary sector of services, in which high technology activities are gradually becoming increasingly important. At the same time, we are witnessing a shift from the use of intermediate products and services aimed at increasing the efficiency of production systems, to the development of multimedia services used by the end user as consumer goods.

Innovation and new technologies create new firms, renew the industrial fabric and improve the competitiveness of the Greek economy.

The impact of new technologies on economic policy

Information and communication technologies affect macroeconomic trends as well as and fiscal and monetary policy in a number of ways that are only now beginning to be understood and taken into consideration by governments.

When the higher quality of modern information and telecommunications equipment is not fully reflected in price indexes, inflation tends to be overestimated, while productivity increases tend to be underestimated. The problem is particularly important for countries that index social benefits, such as unemployment benefits or pensions, based on price indexes that suffer from such measurement errors.

In monetary policy, the introduction of electronic money raises questions as to the definition of money in circulation and its stability. In fiscal policy, electronic commerce may facilitate access to tax heavens and corrupt the taxpayer base while rendering difficult the collection of certain taxes. The establishment of rules is therefore often required, in the framework of international agreements.

New business activities. The creation of new technology-based firms and the development of enterpreneurship in general are keys to the revival of the industrial fabric. In countries who are leaders in the course towards the Information Society, the majority of the new products and services and new jobs are created by new business initiatives. At the heart of dynamic and competitive economies lies the entry of new companies in the market.

The New Economy Development Fund

The New Economy Development Fund Limited (TANEO S.A.) was set up by article 28 of Law 2843/2000. It is a venture capital 'fund-of-funds' whose goal is the co-financing of venture capital funds that will invest in innovative business activities in their initial stages of development.

TANEO S.A. will take a minority share in the venture capital structures in which it invests. These structures will be managed by the private sector, and investment decisions will be based on private sector financial criteria.

TANEO S.A. has an investment committee composed of institutional representatives, professionals with experience in the new economy and recognized figures from the economic life of the country. This investment committee will assess the soundness and solvency of all proposed new venture capital investment structures in which TANEO is proposing to invest, and its approval will be required for any TANEO investment.

The High Technology Venture Capital Fund (KESYT)

A high technology venture capital fund (Greek acronym: KESYT) is being set up to support the business activity of young professionals and entrepreneurs in new technology sectors and fields of knowledge.

The KESYT will develop activities in the following sectors:

- financing new businesses, entrepreneurs and professionals whose activity is in the new technologies and new business models sector
- providing administrative support, infrastructures and consultancy services that will contribute to business planning and to the organization of new businesses, entrepreneurs and professionals whose activity is in the new technologies and new business models sector
- collaboration with venture capital funds and financing bodies for joint investments in new businesses in the new technologies and new business models sector at their first stages of development
- equity participation in financing bodies whose objects are similar to those of KESYT.

Regulatory reform and investment support. In order to facilitate the creation of dynamic technology- and information-based firms, and more generally for the restructuring of the industrial fabric, a number of interventions that relate to regulatory reform and to investment support are now in the planning or implementation phase:

- *Structural reforms in labour, product and service markets*. The initiatives adopted include the simplification of administrative formalities for firm creation and the removal of restrictions in market entry.
- *Better financing of new companies through venture capital funds*, aimed at the development of venture capital financing in Greece via the creation of public-private funds managed by private sector fund managers with the ultimate aim of their conversion into self-financed private funds.

New technologies and the role of Greece in the Balkans and the Mediterranean. Greece has played and will continue to play an important role in the broader geographical area, putting to use its high quality human resources, technological progress and the fact that is a member of the European Union. The exploitation of the new information infrastructure gives our country the ability to establish its role as a pole of attraction for the provision of services in the Information Society both in the Balkans and the Middle East.

Any delay in the creation of such an infrastructure would condemn us to be a permanent laggard internationally. It would also take away any technological advantages we may currently have which allow us to put to use the opportunities of the Information Society as a lever for economic development and for the improvement of our relations with neighbouring countries. For this purpose, the actions planned are:

- *Strengthening of the presence of Greek companies active in information and telecommunications technologies* in neighbouring countries via common business initiatives and know-how transfer, with the assistance of European programs and initiatives.
- *Conclusion of cooperation agreements* with governments of neighbouring countries in matters of research, institutional initiatives and establishment of Greece's role as a European Union initiative co-ordinator for the Information Society in the broader geographical area.

In this framework the Greek Research & Technology Network has already concluded collaboration agreements with similar bodies in various countries in SE Europe and as an outcome of these has set up a joint venture that recently submitted a proposal to the EU's IST Programme for the development of a contemporary network infrastructure for the region's academic and research institutions.

Upgrading the role of the ICT sector in the economy. Greek firms active in the ICT sector can be expected to play a crucial part in the course towards the Information Society by developing the technologies that will be used for the benefit of all firms, irrespective of size or sector in the economy. By providing a high quality infrastructure and new products and services, they can contribute to the provision of high value-added services, the attraction of foreign investment capital, and the increase of employment through the creation of a large number of new jobs.

Initiatives that are already in place or in the planning stage are aimed at:

- *The development of products and services*

for the Information Society with priority on the emerging industry of electronic information content (cultural heritage, educational programs, and entertainment).

- *Regulatory interventions for the development of a competitive sector of telecommunications and broad-band services* (e.g. cable television) via the deregulation of the market, the creation of the necessary regulatory/legal framework, while making use of the public sector as a pioneering user.
- *Attracting foreign enterprises with high technological content* as well as regional specialisation centres (e.g. educational centres, centres of development of customised solutions) and international companies under a special incentives regime (taxation, technological parks), with the help of the Greek Investment Centre.

4.3. New technologies and the competitiveness of firms

ICTs are key for the competitiveness of firms. In order for enterprises to take advantage of the opportunities presented in the Information Society, they have to review their activities and adapt them to the new possibilities that open up. Information technology shortens the production cycle for products and services, improves the quality and response time, and helps formulate new ways for product promotion and customer service.

Opportunities for Greek companies. Greek firms have the potential to be quite successful in the Information Society. The new technologies render less important the disadvantages of small size and of distance from decision-making centres and markets. At the same time, knowledge as a decisive production factor makes the quality of manpower, resourcefulness and flexibility, dominant factors in success.

Particular importance is accorded to the assimilation of small and medium-sized Greek firms into this new environment, so as to facilitate their industrial and commercial activity in Greece, in other European Union countries, the Balkans, Cyprus, Middle East, and international markets in general. Also, with a view to increasing their productivity, their transactions with the public sector will be simplified and automated, and they will be assisted in dealing with technical and institutional problems. Interventions planned or implemented in these areas involve:

- *Incentives for the introduction and operation of innovative IT applications* in manufacturing and services, if they entail a high degree of risk, allow the restructuring of companies and provide new services/products in the framework of a business plan.
- *Initiatives for the creation of electronic content* for network applications used by firms within a given sector (e.g. banks, shipping agencies, tourist organisations), with the help of professional associations and Chambers in order to ensure common specifications, standards, etc.
- *Initiatives for improved communication between universities and industry,* for a more effective specialised education in information science and a more rational development of human resources.
- *Studies and measures on the social/economic impact* of information technology, with an emphasis on the necessary organisational changes, on the new structure and conditions in the labour market and in industry, and on the changes in industrial relations.

For Greek firms, information technologies and network telecommunications render less important the disadvantages of small size and distance from decision-making centres and markets, allowing them access to the global market.

Actions realized by the Ministry of Development under the 2nd CSF in the framework of the Operational Programme for Industry

E-commerce Centers

Associations of Chambers have created 12 e-commerce centers to help mainly small and medium-sized businesses adopt new technologies. These e-commerce centers were set up at a total cost of 4.4 million euros and with 60% public participation. In most cases their services are already available on their web sites

Business support for the development of original e-commerce projects

In the framework of the action “Original e-commerce projects”, which had a total budget of 7 million euros, support was provided for 41 networks involving 140 businesses in all sectors for the realization of the corresponding projects.

EDI Sectoral Projects

In the framework of the action “EDI Sector Projects”, which had a total budget of approximately 5 million euros, support was provided for a total of 20 networks involving 190 businesses in all sectors for the

realization of networking projects based on the EDI standard.

The Athens Chamber of Commerce & Industry Clearing House

The ACCI's "clearing house" project, with a total budget of 1.7 million euros, has also been implemented. This project was designed to promote the use of EDI technologies in businesses and to facilitate the exchange of electronic messages both between businesses and between business and the Public Administration.

National E-Commerce Infrastructure

The National Confederation of Hellenic Commerce (NHCH) has developed the National E-Commerce Infrastructure, a support system to help commercial enterprises adopt e-commerce practices and technologies. A total of 15 commercial associations from across the country were active participants in this project. The resulting system, which is the principal outcome of the project, is now fully operational, one year after completion of the project, with 100% availability and an average visit rate of nearly 80,000 a month from all over the world.

Support for Investment Projects in the ICT sector

During the period 1996-2000 27.5 million euros worth of financing was advanced to investment projects designed to improve the international competitiveness of 28 companies in the IT and associated sectors.

Access and use of information infrastructures by small and medium sized firms. While large firms in general have the human and financial resources to undertake the necessary changes, small and medium size firms require particular attention. They nonetheless possess the flexibility to turn information technology to their advantage and make their presence noted internationally without particularly high investments. To this end, there are:

- Initiatives aimed at ensuring that the majority of Greek SMEs have easy access to the markets connected with the information infrastructure within a period of 10 years, in order for them to increase their international competitiveness.
- Initiatives for the permanent support of SMEs with respect to information, know-how, human resources and investments for the introduction and use of information technology with a view to overcoming the problems encountered (relevant to financial resources mainly) in the adoption of new practices and technologies.
- Particular incentives for the creation of virtual clusters of SMEs for the development of common business procedures and the creation of virtual enterprises with an emphasis on the electronic distribution of products wherever this is feasible.

Simplification and automation of the transactions with the public sector. The government recognises that IT issues, information provision in general and transactions with the pubic sector are of vital importance for firms and, under the present conditions, often lead to competitive advantages. As a consequence, the competent authorities are currently planning and implementing actions with the following goals (these issues are also covered in chapter 2):

- *Prompt and electronic provision of information to firms* so that, through the Internet, they may be constantly informed as concerns laws, decisions, regulations, announcements, etc. by central, regional and local administration, in an easy and cost-effective manner.
- *Simplification and automation of the transactions of firms with public organisations* through the use of Internet, Infokiosks, Smart Cards, etc. so that in 5 years the most important and time-consuming transactions may be carried out electronically with considerable benefits for both enterprises and the state.
- *A gradual move towards e-procurement,* comprising the incorporation of the concept of such purchases in the bill on purchasing, the start of pilot programs in the Ministry of Development and the experimental operation of public procurement systems so that within 5 years 1/5 of state purchases be carried out electronically.
- *Ensuring the existence of a Greek character set in PCs and the use of international standards* in electronic billing or with respect to user health and safety, aiming at the appropriate use of technologies in the framework of international agreements and standards.
- *Establishing mechanisms for the certification and standardisation of products and applications/services* for the IS through the creation of appropriate institutions in co-operation with industry, academic research establishments, etc.

- *Securing the existence of an adequate electronic banking infrastructure* for the majority of banks both for regular banking transactions and for the creation of the necessary infrastructure for international commercial transactions.

An information network for agriculture and the countryside

Information and communications technologies are not only relevant to industry and services. The primary sector, especially large in our country, has a lot to gain from the use of such technologies for access to information relevant to production processes, market conditions, etc.

The first attempt for the establishment and operation of an information network for the agricultural sector was undertaken in the framework of a EU two-year pilot program on telematics elaborated by the FRIENDS Consortium, members of which were, inter alia, the Association of Young Farmers of the District of Argolis, OTE, and the American Agricultural School of Thessaloniki.

Subsequently, following a private initiative, the "Agrinet" has been set up and put in operation; this is a network providing information to farmers and information on special topics (legislation, bio-agriculture), on market conditions, on events of importance to the agricultural sector, etc. This network is already being expanded from its original services, while there is a plan for its expansion so that it covers topics relevant not only to agriculture but also issues of a broader interest for citizens living in the countryside, and for all the bodies involved in all stages of the agro-food chain (e.g. businessmen, exporters, etc.).

Under the 2nd CSF the Ministry of Agriculture completed the installation of its regional services information system, setting up 57 local networks covering 57 Rural Development Directorates across the country.

The objective of this action was the implementation of national and community programmes in the framework of the exercise of the National and Community Agricultural Policy, the effecting of audits and payments, the realization of studies, communication, information, and the improvement of the services provided to bodies involved in agricultural activities.

4.4 E-commerce and e-business

New methods for transactions. Electronic commerce gives the possibility to conduct transactions with the use of computers and network infrastructure technologies. It is based on electronic data processing and transmission, while it can be supplemented with text, sound and video. It comprises activities such as electronic exchange of goods and services, electronic billing of cargoes, electronic auctions, electronic payments, co-operation in product design and production, consumer marketing, etc.

E-business aims at the automation of communication between commercial partners for the purpose of simplifying commercial transactions, the creation of new services/products, increased competitiveness, and the creation of a "world market" mainly via the boost given by the use of Internet.

Electronic commerce as a catalyst. Electronic commerce acts as a catalyst and demolishes facts and assumptions that a few years back were considered as inviolable rules for international trade. Countries that up until recently were in the shadow of other more powerful countries have acquired considerable strategic advantages by putting to use the capacities offered by modern technology.

In order for society to profit from the opportunities afforded by electronic commerce a policy framework is required that facilitates its development. The formulation of such a framework is not an easy task at the onset of a phenomenon that may change so radically the manner transactions are being carried out. Many say that today's juncture is similar to the one at the beginning of the century when the automobile was introduced. Even though then, just like now, it was clear that the impacts would be important, specific forecasts were hard to make when very few knew how to drive, most roads were unsuitable for cars and there were no car mechanics. It could be relatively safely said that there would be a considerable impact on the plastic and steel industries, but who could predict pollution, traffic jams or the increased geopolitical significance of the Middle East?

Electronic commerce applications

Starting from zero a few years back, international e-commerce transactions have rapidly increased: from 88 billion US in 1999 to 172 billion in 2000, 324 billion in 2001 and are expected to surpass 1 trillion US dollars in 2003.

Four different types of electronic commerce can

been identified, depending on the involvement of the parties to the commercial transaction:

Business to Business: transactions regarding electronic ordering and economic transactions via telecommunication networks. It is clearly the most developed form of electronic commerce.

Business to Consumer: The greatest part of such transactions is carried out through the Internet, since it provides the possibility for a more effective promotion of products and services to a broad range of customers.

Business to Public Administration: This category comprises transactions such as those relating to tax payment or other transactions between private companies and the public administration.

Public Administration to Citizen: Some first steps are currently undertaken in this category, and it is expected that this category of transactions shall change the picture of electronic commerce in the future.

Policy framework. The vision behind the e-commerce actions is aimed at making Greece an equal and strong partner in the international commercial environment. The use of electronic commerce technologies and practices can give Greek firms competitive advantages, with as a consequence the increase in productivity and international competitiveness for the whole country.

The creation of an appropriate regulatory and legislative framework. In electronic commerce, the role of the state focuses mainly on the provision of a concrete and cohesive legal framework and the creation of an environment promoting competition in which electronic commerce can flourish. More particularly, the main lines of the policy on electronic trade are summarised as follows:

- *Building trust*. Electronic transactions cannot develop unless measures are taken for the security and privacy of transactions and data as well as for consumer protection. The government initiatives concern mainly the formulation of a framework of guidelines for the protection of privacy, for commercial transactions via a network, as well as legislation relevant to cryptography and authentication/ certification of digital signatures and access rights to the electronic network.
- *Formulating the rules of the game*. Greece participates in the formulation of international "rules of the game" so that commercial law, taxation, trade policy and market access policy ensure transparency and fair competition conditions for electronic transactions. In such matters, only international agreements or the formulation of international codes of conduct with the participation of the private sector can support the development of electronic commerce on sound foundations.
- *Access and use of infrastructure*. The development of electronic commerce depends to a large extent on the increased possibilities for access to telecommunication networks and on the convergence of technologies and services of the IT and communication sectors. In the context of telecommunication deregulation and the growth of Internet, initiatives regard also the need for setting managerial requirements such as those relating to the common standards of connectivity, access and interoperability.

e-Business Forum

The ebusiness forum (an initiative of the Ministry of Development's General Secretariat for Industry that is implemented by the Greek Research & Technology Network) is a permanent mechanism for consultation between the state and the business and academic worlds as well as the social and professional partners for the elaboration of positions and proposals relating to competitiveness and e- business activity in the digital economy.

It is a forum for the exchange of views, ideas and experience, designed to encourage the transfer of knowledge relating to the progress of the digital economy. The members of the forum and the Working Groups in which they participate identify current problems relating to accelerating the penetration of digital economy technologies in Greece and propose, to the state and the other parties involved, measures and actions that, once adopted, would lead to the successful establishment of e-business in Greece. The business community and the general public seem already to be well aware of its activity, since the number of visits to its site (www.ebusinessforum.gr) is increasing rapidly.

Electronic commerce favours pioneering firms. The use of electronic commerce brings immediate benefits to companies, such as lower costs and expansion to new markets. It further helps develop new ways for accessing markets and understanding their mechanisms and

functions. Two-way interaction in electronic transactions and the ability for individualised trade helps the design and creation of new products/services, based on the individual needs of consumers. This involves however considerable investments and reorganisation of processes, and to this effect a number of actions are being planned:

- *The encouragement of the introduction and use of e-commerce applications in private firms,* involving the creation of new services/products, the reinforcement of the role of information agents, the creation of virtual enterprises, electronic design, production and distribution of products, etc.
- *Creation of regional/local electronic markets for the upgrading of transactions/* relations in local communities, for the participation of local SMEs in the global commercial environment and for the creation of a readily accessible electronic market.
- *Development of electronic commerce centres* which, as Third Trusted Parties in the electronic commerce environment, provide services of handling, certification and storage of electronic messages and transactions, as well as issuing and certifying digital signatures.

Greece as a strong and equal partner in international electronic commerce. Greece possesses all the qualities that are necessary in order to become one of the main players in international trade in its broader geographical area. Its geographical location, export orientation, long commercial tradition and its strength in various sectors associated with trade, services and transport (e.g. tourism, shipping) are important elements for the participation of our country in the modern trade environment at the threshold of the next century.

4.5 Research and Innovation in the Information Society

Innovation is the foundation of the Information Society. The government encourages innovation as well as programs assessing the magnitude of changes that the Information Society may bring to the economy, society, culture and the quality of life.

Remarkable results with limited funds. The funds available for research and development are small (about 0.7% of GNP) and the support of research by the private sector is limited. The percentage of research financed by the private sector in Greece is one of the lowest among developed countries (one quarter of total R&D expenditures). TEXT

The General Secretariat for Research and Technology (GSRT of the Ministry of Development) planned and implemented between 1990 and 1999 a number of national R&D programmes funded by the 1st and 2nd EU Structural Funds frameworks. These programmes required the participation of firms, actively encouraged the collaboration between university and research institutes and private sector firms and acted as a catalyst for a significant increase in the research effort. At the same time, they created a critical mass of R&D infrastructures and researchers in a number of firms (especially in the ICT sectors) that facilitated an increased presence in international R&D programmes.

Thanks to proper use of the second Community Support Framework and the opportunities opened by the 3rd CSF, research activities in Greece are being upgraded and are today considered as significantly improved compared with the recent past.

A characteristic example is Greece's research community in the domain of the Information Society which, despite heavy competition and the pressure of technological change, continually achieves high performances in the corresponding Community R&D Programmes (Framework Programme). The activities of Greek groups secure, through highly competitive procedures, about 4-5% of the resources available under these EU programmes in IS sectors. This fact is particularly encouraging given the size of the country in relation to the EU-15 and given the relative size of its research community (just 1-1.5% of the EU's total research population).

The government actively encourages innovation and the diffusion of its results in the Information Society.

Policy for innovation and technology diffusion. Innovation policy in Greece aspires to the balanced advancement of knowledge, via the development of scientific research, and to contribute to the increase of the economy's productivity and thus the improvement of the quality of life of citizens.

Following international trends, policy in Greece has gradually moved from exclusively focusing on the support of research activities to acknowledging that productivity gains for the entire economy are acquired mainly through the process of technology diffusion and economic exploitation.

A series of policy measures have already been implemented in order to assist companies in absorbing and using new technologies. However,

many such policy initiatives (such as the institutes for industrial research or the technology mediators) had disappointing results with little contribution to industrial modernisation. This is partly due to their close relation and dependence on state bureaucracy that limited their capacity to attract specialised personnel and promote their services to companies as well as because of limited demand for technology products by industry.

Development of a research base. The upgrading of the quality of the Greek research force in order to further improve its competitiveness is necessary. Equally necessary is the upgrading of the infrastructures of existing research centres and the creation of new ones in several geographical areas for balanced development. Actions proposed:

- *Support and restructuring of basic research*. A strong research capability is a complement, not a substitute, to the use of technology by industry. Along with sufficient funding, greater independence and restructuring of state institutes will be sought in an effort to separate operational management from scientific research, to target funding on scientific areas with potential for distinction, and to seek international cooperations and "critical mass".
- *Upgrading of the quality of the Greek research force*, enriching the productive sector with personnel trained in Greek or international research centres and Universities, through the support of initiatives such as human networks for the diffusion of scientific and technological knowledge, co-funding, research scholarships, collaboration with firms or research entities in Europe, creation of innovation-related employment positions in firms, upgrade of the quality of products and services, etc.
- *Strengthening of the newly established research institutes* (Xanthi, Thessaloniki, Patras) for a balanced distribution of the research force and in order to accommodate scientific requirements. Such institutes comprise the Institute on Informatics and Telematics located in Thessaloniki and having a Balkan perspective, and the Institute of Cultural and Educational Technology located in Xanthi having as scope the cultural promotion of Macedonia and Thrace in the framework
- *Upgrading and modernising the research infrastructure* by supporting the National Network for Research and Technology (EDET) not only for use by the Greek scientific community but also for its interconnection with the scientific networks of Balkan and Mediterranean countries.

Initiatives by the General Secretariat for Research and Technology of the Ministry of Development concerning research and innovation in the Information Society

3rd Community Support Framework

- Promotion of excellence in R&D in relation to businesses and R&D research institutes.
- Support for research teams for the standardization and commercial exploitation of research results. Identification and utilization of research results with the creation of new spin-off companies (PRAXE Phases 1 and 2)
- Support for knowledge incubators, R&D Parks, research centers with business participation (ELEFTHO)
- Programme for Industrial Research and Technology Development (PABET)
- Programme for Industrial Research and Technology Development for new businesses (PABET-NE)
- International collaboration in industrial research (EUREKA): priority sectors – ICT
- Promotion of demonstration and innovation projects (PEPER): priority sectors – Informatics
- Development and networking of innovation and technology services organizations (technology brokering)
- Research Joint ventures in priority areas: e-learning, e-business
- ICT employment support programme (PENED)
- ICT researchers from abroad programme (ENTER)
- Placement of research personnel in firms (HERON)
- HERON –P for the creation of employment positions for researchers in the ICT sector
- Upgrading libraries of research centers using ICTs
- National Research and Technology Network (EDET)
- National Information System (National Documentation Center)

- *Development of a National online library* offering the best and cheapest access to information relevant to science and knowledge and giving researchers and citizens the best possible conditions for seeking and acquiring the necessary information and knowledge.

- *Development of National R&T Information System.* This project concerns the management of digital content for the provision of individually tailored science and technology information services to the entire scientific community in Greece and beyond.

  The project focuses on actions relating to the development, organization and distribution of – mainly – Greek digital content relating to science, research and technology and to solving technology problems relating to the creation of digitized archives of various types (text, image, audiovisual material, etc.) and the distribution of this material via network services.

Putting research results to work. The biggest problem with research projects is putting their results to use, either because they do not cater to actual needs or because firms consider research costs a luxury, or because there is no mutual trust. It is necessary to develop this co-operation and to find ways to exploit the results. Actions proposed include the following:

- *Creation of research consortiums for industrial development* with the co-operation of private entities with research teams in major projects that address complicated research problems with a large economic importance. For IT, emphasis is on Shipping, Tourism, Health, Electronic commerce via demonstration projects;
- *Technology (Information) agents* for the purpose of accelerating the flow of technology from abroad and from the bodies producing and managing scientific/technological information to the economy and society, and also for supporting the development of the market for new technologies;
- *Reinforcement of the association between research and production via the development of mediator agencies* between Higher Education Establishments/research centres and enterprises, the strengthening of the infrastructure of laboratories providing services so that they are more in-touch with the requirements of industry and solve specialised problems of production and finally by incentives to firms and research entities showing sustained and effective co-operation in common innovation programs;
- *Commercial exploitation of innovative products and services* through their common use by research centres and companies, and provision of strong incentives to researchers and research centres for the establishment of "spin-off" companies for the exploitation of innovative research results.

Scientific research and innovation at the service of the citizen. Further to the exploitation of research by the business sector, research in information and communications technologies can be used in order to improve the quality of life of citizens, to create new jobs with high requirements of knowledge in new technologies, as well as for dealing with specific problems. TEXT

Actions of the General Secretariat for Research & Technology in relation to eLearning and eBusiness

***e*Learning**

The general aims in the context of the education and employment promotion policy are:

- Increased business productivity
- Creation of experienced personnel with post-secondary degrees, offering both knowledge and experience.
- Retraining of the country's unemployed or underemployed work force (e.g. unemployed recent graduates of post-secondary institutions) to fill existing vacancies (e.g. deficit of about 40,000 qualified persons in the next 5 years in the ICT sector).

The basic objective of the action is to develop and demonstrate technologically innovative eLearning products and services (on the basis of a specific business plan). Technological innovation relates to the integration of technologies, materials, methods, products, the development of new technologies and services, and the development or adaptation of technologies that can be used to promote e-learning products and services

Achievement of these goals will ensure:

✓ The development and transfer of know-how with the creation of experienced cadres

✓ The provision of equal education opportunities to remote areas and special categories of users and the adaptation of educational systems and software and related digital services for greater accessibility for those with special needs

✓ The technological facilitation of further, lifelong and distance learning

✓ A focus on suitable technologies

eBusiness

The general aims in this sector are:

- Support for research, development and dissemination of use for e-Business in the framework of the Information Society, focusing on the completion of technology solutions with operationally functional models (new or traditional).
- The development and adaptation of services and methodologies for accelerating the convergence of telecommunications and information media including mobile telephone and digital television environments with a view to creating modern *e*Business environments and products.
- The creation of advanced environments for more efficient communication and collaboration with clients and buyers (e.g. business partners), utilizing new business models (eModels).
- The exploitation of cutting-edge technologies in the development of pioneering integrated solutions with the emphasis on security and reliability as the specification for all individual targets.

In these projects emphasis will be laid on the realization of final products and services, and on demonstration in one or more enterprises.

Programme for Technology Foresight in Greece. Supplementing the above Information Society actions, synergies are also expected to emerge from the important Technology Foresight Programme launched by the GSRT in 2001 (on the model of similar undertakings in other countries) and included in the Operational Programme for Development. This Programme will be opened to the entire research, scientific and business community and to the country's social agencies, and its principal object will be to forecast the progress of the Greek economy and Greek society over the next 15-20 years (and particularly to achieve the Greek version of the Community of Knowledge) and the role that science, research and technology, particularly ICT, are expected to play in shaping the future.

5. Employment in the Information Society

5.1 The dynamic adjustment of the labour market

The changing nature of work. Information and communication technologies change in a number of ways the nature of work: IT systems and communication networks render many work activities independent of time and space, while the changes in business practices that accompany them render obsolete to a large extent the concept of steady job duties. These two factors in turn affect the institutions that guide work practices, the systems of economic reward as well as those of employment regulation and protection.

A new employment system. The employment system that was based on mass production with workers having only one occupational qualification no longer exists. In the digital age, knowledge plays a vital role in the reshaping and organisation of work, creating an economy based on professional qualifications and adaptability.

Each year, at least 10% of the total number of jobs disappear and are replaced by others, often in new firms, requiring new specialised qualifications. The concept of steady and viable employment is radically and rapidly transformed, while the view that work is normally performed in a "regular" work environment during "regular" working hours is put into question.

The need for adaptability. The high and persistent unemployment levels and the social polarisation that is evident in many countries are today indicative of a failure to adapt to the important structural transformations that are occurring in advanced economies. As the skill threshold for jobs is raised, as jobs for low-skilled workers become increasingly scarce, as unemployment rates for the young remain high, and as the difference in pay depending on education levels widens, adaptability becomes increasingly crucial.

At the same time, the evidence shows that the net employment increase is higher in countries that have invested most in the application of new technologies and in skill upgrading. Such countries are succeeding to create a labour force capable of meeting the new demands and jobs which are created by the applications of new technologies in an increasing number of sectors of the economy.

The goals of governmental policy. Against this background, the policy goal is to create the institutional framework and undertake initiatives so as:

- To support the creation of new job positions, mainly in new sectors and in professions with increased demand,
- To upgrade manpower skills through programs for training workers and the unemployed,
- To develop new forms of work such as telework, within a framework that safeguards the rights of workers,
- To create jobs for persons and groups with special needs, thus encouraging their social integration.

5.2 New technologies and jobs

A complicated but ultimately positive relationship. The new methods of production have an undoubtedly negative impact on part of the work force. Workers whose skills are in declining demand and those working in sectors in decline under the pressure of international competition and rapid technological change, are often faced with unemployment.

At the same time, the development of more efficient methods of production and new products accompanies the process of structural change and reinforces the appearance of new sectors of activity providing new job opportunities, so that employment as a whole increases along with the rapid evolution of technology. It is therefore necessary that the increase of productivity as a result of the application of new technologies go hand in hand with the simultaneous growth of the market, so that it results into an overall increase in jobs.

So far, information and communication technologies have created employment mainly in the tertiary sector of services and in highly skilled workers, while employment has declined in industry as a whole and among low-skilled workers. The most innovative firms and sectors present an above average productivity and employment growth. Firms with greater know-how systematically displace others. Individuals possessing more know-how and skills occupy better-paying jobs.

New technologies are a source of new employment opportunities but at the same time create the need for difficult adjustments.

New technologies and unemployment

The extremely fast diffusion of new technologies throughout the economy, and their ability to automate many production processes and thereby decrease the demand for labour, has created fears for widespread unemployment. Some analysts recently went so far as to speak of the "end of work".

Such fears are not new. In every major industrial revolution there have been predictions of mass unemployment and poverty. Every time, the facts have shown otherwise: the increase in productivity and the creation of new products and therefore of demand for new jobs has led to a net increase in employment and incomes.

This does not imply that the current fears are totally groundless. The process of technological change is a dynamic transformation of the production process and the job market, with particularly negative implications for workers with low skills. The overall impact on employment is the result of a series of processes at the level of the firms, the sector and the economy in general, and depends on the existing policy framework.

The initial tendency for a decline in the demand for labour as a result of the introduction of labour-saving technology is counteracted by the increased demand for products and services that follows the higher productivity, lower prices, and the creation of new markets for the new products and services.

In order for sufficient jobs to be created, it is necessary to establish a policy framework for the labour, product and service markets which facilitates such dynamic adjustment, encourages the necessary new investments, and prepares the labour force for the new skills that will prevail in the job market.

5.3 Employment policy in the Information Society

The general policy framework. ICTs touch nearly all sectors of the economy and thereby the majority of workers, while changing at the same time the skills required in many professions. The general employment policy framework in the Information Society combines takes account of both developments in technology and in the labour market. It is characterised by regulatory reforms aimed towards achieving greater flexibility in the labour market and a turn from passive to active labour market policies aimed at the upgrading of human resources and developing the "employability" of the labour force.

Experience shows that policies which focus on safeguarding existing jobs in declining sectors and professions at all costs cause significant delay in the renewal of the industrial fabric with adverse consequences for healthy companies. It is therefore necessary to establish an institutional framework for the labour market where the restructuring of jobs and skills can take place faster and easier.

Employment policy in the Information Society aims at creating a flexible institutional framework for the labour market and is accompanied by initiatives for training and the upgrading of skills.

Efficiency with social justice. Such a policy is both effective and socially just when it is supplemented by well-structured and targeted initiatives for compensation, training and continuing education. A policy is successful when it combines effectively support for innovation and technology diffusion with efforts for the constant upgrading of the specialisation and skills of workers.

The "skills gap"

One of the most important job market issues in the Information Society is the so-called "skills gap", that is, the simultaneous co-existence of skills that do not correspond the new requirements of the job market and positions waiting to be filled in the new sectors and occupations of the Information Society.

To address this phenomenon, bridge the gap and cover the lack of ICT specialists, many initiatives have been launched by countries all around the globe. In Greece, initial estimates (SEPE, e-Business Guide 2001, Cyberce Ltd) suggest that some 50,000 ICT specialists will be required in the next few years. The solutions may be direct or indirect. In this area the main factors are the education system, the occupational/vocational training system, the ICT industry, the scientific and professional bodies, the unions and the state. In the domain of education and training, the means that need to be used have to combine traditional training models with more advanced ones, such as eLearning and practical training sessions in businesses.

Structural reform and public investments. The government is committed to pursuing both structural reform and public investment initiatives aimed at the creation of new jobs in emerging

dynamic sectors and professions in demand. Such initiatives include:

- *Direct support of business initiatives* focused on new technologies through incentives and provision of technical assistance,
- *Creating the appropriate conditions for investment in new technology-based activities* with the development of investment venture capital and the attraction of foreign investors,
- *Job creation through regulatory reform and the liberalisation of infrastructures* and services in the telecoms sector, the development of IT systems in the public sector, the encouragement of the introduction of information technology in all sectors of the economy, etc.
- Reforms in the tax system and the social security system to make them more favourable to job creation.

Dealing with job losses in specific sectors, professions and areas. The negative impact of the introduction of new information and communication technologies is usually centred on specific sectors and professions, and often also has a geographical dimension. Well-focused actions are therefore necessary:

- *Programs for manpower training* with the provision of information and advice, initiatives for re-skilling and redeployment, and actions for the support of employment in specific geographical areas.
- *Incentives for the revival of areas and sectors in decline* through tax exemptions and other favourable arrangements.
- *Early retirement plans* for older workers who cannot be easily integrated into training programs.

Policies for training and upskilling. Perhaps the most visible impact of new technologies on the labour market relates to the decline in demand for low-skilled workers and the corresponding increase in demand and wages for skilled manpower. This emphasis on skills creates the need for new training and life-long learning programs, since knowledge and skills associated with the new technologies are constantly changing.

The private sector should play an important role in the formulation and financing of training programs so that they may be better adapted to actual needs. For its part, the government's aim is to address the education and training requirements of a population that comprises, in addition to people not currently in the labour force, also people currently employed but whose position is at risk due to the lack of access to training facilities.

Initiatives by the Ministry of Labour and its supervised bodies

There are a number of initiatives carried out by the Ministry of Labour and Social Security and its supervised bodies that directly concern employment in the Information Society.

The Labour Manpower Organization (OAED) under its new structure (as described in Law 2956/2001) and especially through the 3 agencies that are created in the context of its reorganization (Employment Support S.A., Vocational Training S.A., Observatory for Employment S.A.) supports entrepreneurship and labour mobility, applies personalized support techniques for the unemployed and upgrades the knowledge and skills of the labour force according to current needs.

In the field of training, priority is focused on programmes that relate to the use of ICT. European programmes such as NOW, HORIZON, YOUTHSTART, ADAPT are used, which give unemployed the opportunity to familiarize themselves with new technologies. IT actions form also a large part of European Social Fund initiatives.

Under the 2nd CSF, which was implemented on the basis of certified structures, a special thematic training field was developed in the informatics sector. In this framework, the various Operational Programmes, and especially:

"Further Training & Promotion of Employment",

"Combating Exclusion from the Job Market", and

"Regional Operational Programmes",

- implemented training actions for:
- employed and unemployed workers, relating both to the acquisition of basic skills and to the development of specialized ICT skills,
- persons at risk of social exclusion, for the acquisition of basic ICT skills.

In addition to the above, the on-site training programmes "stage", "training/employment linkage", "promoting employment (New Jobs – New Professionals)" implemented via the Manpower Employment Organization also targeted ICT-related jobs.

Finally, the pilot programmes "Tele-work", "Tele-training" and "New Forms of Entrepreneurship" were realized through the Community Initiatives "Employment" and "ADAPT".

Such policies should provide basic skills for adults with low education levels and support the education and training of the rest of the population. A number of initiatives aim at this direction:

- *New study programs* with an emphasis on the use, operation and development of information services/products,
- *New programmes for basic IT training* for both employed and unemployed, using flexible training methods. Particular attention is put on including disadvantaged groups and women.
- *Advanced ICT training programmes,* aimed at retraining unemployed graduates in an effort to reduce the existing skills gap for ICT professionals
- *Programmes for training basic IT trainers and educators* so that they can act as catalysts for IT diffusion in the general public
- *Certification of the skills of those trained* in order to ensure training quality and effectiveness
- *Lifelong learning programs* for social groups requiring new or improved skills
- *Continuous training of specialised IT personnel* whose required skills change constantly, in co-operation with industry and the education community, for the reformulation of courses, the adaptation to the international structure of skills for IT professionals, etc.

Targets for basic and specialized skills

The government's basic priority is guaranteeing employment and facilitating the adaptation of workers and businesses to the new economy. This is to be achieved principally through the provision of basic and specialized skills and the transformation of the organization of the labor market.

The target for 2006 is to provide basic skills training to a total of 150,000 people (75,000 unemployed and 75,000 in work). With regard to specialized skills, the target for the same period is 15,000 (7.500 unemployed and 7,500 in work).

5.4 Recognition and promotion of teleworking practices

New work patterns in the Information Society. The labour market is constantly changing, and the pace of change is extremely rapid in certain areas. One of the most important aspects of this change is the increased use of teleworking. Information and communication technologies give many workers the ability to work at home or in some other place away from their usual workplace, with the help of a personal computer and a telephone line. Even though the percentage of workers making use of such facilities is still small in our country, the international experience shows that, as a form of organisation of work teleworking will spread. The government invites its social partners to cooperate with it for the formulation of an institutional framework favouring the spread of teleworking while safeguarding the rights of workers.

The positive consequences of telework. In today's societies, telework has a series of positive consequences. First, it gives workers new control over the management of their time. It can also improve everyday life, by saving energy and decreasing traffic loads.

Teleworking can lead to a geographical redistribution of the labour market and its diversification by relocating activities to less favoured areas, while also allowing population groups (parents who have to be at home, the handicapped) for which employment in its classic form is difficult, to participate in the labour market.

The most important impact of telework is however the role it can play in the competitiveness of firms. In an international environment in which competition is increasingly based on technology and knowledge is a scarce resource, teleworking allows Greek enterprises to attract workers with the appropriate knowledge and skills and to produce new products and services on the basis of a flexible organisational scheme.

Telework offers workers greater administrative and organisational control over their time, allows the participation in the job market of new population groups and is a tool for the competitiveness of enterprises.

Possible risks. The generalisation of telework is not without risks. Risks include the disappearance of collective forms of work, the often temporary nature of teleworking, as well as divisions such as those between a core of well-paid workers with steady jobs and a crust of underpaid and insecure workers. An important

risk is also the creation of a feeling of alienation from social processes for workers who work away from a professional environment.

Adapting the legislative framework and examining the consequences of telework. The development of teleworking practices based on sound foundations has positive consequences for the economy and society. The government intends to facilitate this development with a number of interventions, such as:

- *Adaptation of the legislative framework* so that there is a balance between the conditions facilitating faster development of teleworking and the protection of workers
- *Provision of information*, awareness and diffusion of best practice.
- *Promotion of pilot/demonstration projects* aiming at the creation of networks between employers located in metropolitan areas and experts that are located in remote areas, the development of tele-centres in such remote areas, and the support of the commercial exploitation of their services.

6. Quality of life: Health, transport, the environment

6.1. Technology at the service of society

Government policy aims to ensure that technology is at the service of society. This means that in the course towards the Information Society, government initiatives will place particular emphasis on the development of IT and telecommunication applications that improve the daily life of citizens.

The potential offered by technology for the digitisation and systematisation of information, as well as for its transmission at low cost, open prospects for the improvement of health and welfare services, for better and safer transportation, and for sustainable development.

The government has set the following goals for the improvement of the quality of life in these fields:

- Better provision of services and more rational resource management in health and welfare;
- Greater access to health care services, with medical expertise and experience a resource available to all;
- Improved environmental conditions, through applications of information technology that reduce the use of natural resources;
- Production of new environmentally-friendly products with the use of information technologies;
- Better management of land, air and sea transportation.

6.2. Improvement of health services

One goal of the Information Society is that all citizens have access to primary, secondary and tertiary health care services, in the context of a decentralised system where medical expertise and experience is available to all. Information and telecommunication technologies can make a significant contribution to these basic goals.

e-Health Forum

The e-Health Forum is a mechanism for consultation between the state, the social partners and the private sector in matters of Health and Welfare. During 2001 there were 3 meetings in the framework of the e-Health Forum on matters relating to the role the Forum can play in the new Health and Welfare landscape, as this is currently being shaped in the framework of the Information Society in Greece. In addition, the Forum also presented, debated, commented and advised on the Operational Action Plan in the Health Sector in the framework of the 3rd CSF's Operational Programme for the Information Society.

Better services and more rational resource management in the health sector. ICTs can contribute significantly to the improvement of health services and to a more rational management of resources. The introduction of integrated information systems and the access by hospitals and health centres to the national telecommunication infrastructure will reinforce the efficiency and effectiveness at al levels of health care (patient diagnosis, treatment and rehabilitation). Hospitals and health centres, and the health sector in general, can cut their operating costs through the introduction of rational management procedures.

The government's goal is to ensure that in the Information Society access to health care and welfare services is enhanced, and medical expertise and experience are made available to all.

Activities of the Ministry of Health and Welfare

The Ministry of Health and Welfare is implementing a number of projects for the improvement of health and welfare services with the aid of information technology and telecommunications:

- Integrated information systems in 25 hospitals. In the 'pilot' hospital G.GENNIMATAS.
- An information system for EKAV (Centre of Medical Emergencies).
- Information systems for services related to blood donation (development of a system for monitoring blood stocks and their optimal distribution throughout Greece), transplants.
- Central IT system for the Ministry

At the same time, the following have been scheduled for implementation:

- The secure high-speed health network ESY-net
- IT systems for the new regional national health system entities (PESY)
- IT systems for primary health care, welfare and mental health.

- Health-related information and communication services to citizens and people with special needs.
- Establishment of a National Register for the Disabled, introduction of the Disability Card and development of a relevant database.

Development of tele-medicine. Tele-medicine can save lives in emergencies or in cases where fast medical response and expert care is needed. It offers a wide range of applications (radiology, neurology, dermatology, etc.) in communities and to individuals in urban or rural areas and islands that are insufficiently covered by regular heath care. It also provides an incentive to doctors and nursing staff to stay in geographically isolated areas, as it provides continued distance training and co-operation with colleagues across the country. Its development should be planned so as to ensure safety, confidentiality, reliability, and privacy of tele-medical services and applications.

The current situation in hospitals

To date, initiatives relating to the introduction of information technology into third level health care institutions focused on the introduction of IT in a limited number of hospitals (25 of the 129 hospitals belonging to the National Health System). In brief, at this stage:

- Hospitals with more than 300 beds: 44 hospitals representing 68% of total hospital beds account for 74% of the workstations and 85% of the administrative / financial applications installed.
- Hospitals with between 100 and 300 beds: 48 Hospitals representing 26% of total hospital beds account for 24% of the workstations and 9% of the administrative / financial applications installed.
- Hospitals with fewer than 100 beds: 37 Hospitals representing 6% of total hospital beds account for 6% of the workstations and 6% of the administrative / financial applications installed.

The policy framework. In order to improve the overall level of medical services, to provide greater access to health care services and to manage resources in the heath care sector in a rational and fair manner, a number of information technology-related actions are being planned and implemented. They are based on the idea that technological challenges in the next years in the area of health care are directly associated with the requirement for access to more and better information.

Many of these actions are for the time being of a pilot nature, while others have not yet yielded the expected results. The government is committed to creating the necessary mechanisms for the planning, implementation and management of such initiatives with complete transparency. The most important aspects of the actions are:

- *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 centre.
- *Development of information systems* to support the strategic planning and management of the health care system on a local, regional, national and international level.
- *Integration of health care information systems* at regional and national levels, aiming to develop a uniform and easily accessible information environment, taking into consideration the different requirements by the various user groups which include both medical staff and patients.
- *Development and implementation of an Electronic Medical File*, on a regional, national or international level. At the same time, medical information will be encoded and protocols will be drawn up for the exchange of medical and primary health care files.
- *Use and application of existing international standards*, where they exist, and development of open and expandable systems which can be adapted easily to new technologies and international standards.
- *Development of telecommunication applications (*tele-consultation, tele-conferencing and tele-training) and development of navigation services aimed at helping users filter the volume of available information.
- *Creation of databases providing administrative information* (services, competent officers, telephone numbers, etc.). This will be particularly helpful to people with disabilities.
- *Development of the infrastructure to support telecommunication applications in health care*. The cost is expected to be considerable but will be covered by telecoms organisations which can expect to benefit considerably once this infrastructure is in place.
- *Development of information and telecommunication equipment* at a reasonable cost for people with disabilities, taking into consideration specific

requirements regarding the design and use of this equipment.

- *Development of pilot systems and tele-medical applications* aimed at mapping out the potential for implementing the various systems and services on a broad scale.
- *Organisation of education and training programs* for medical staff as well as administration and support staff in the operation of information systems.
- Finally, it is of critical importance to take measures for the insurance coverage of tele-medical services as well as for the securing of medical confidentiality.

Medical information services of the National Documentation Centre (EKT)

The National Documentation Centre (EKT) is the main national organisation that provides electronic information related to research and technology. EKT has created and operates more than 50 national, international and European Community databases covering the main fields of science and technology.

Doctors, researchers and pharmacists use extensively the EKT databases in the medical field. They include databases for medical literature; descriptions of biomedical equipment systems; information on dissertations produced in Greek universities; information on completed or progressing research projects; general information in all areas of medicine, biology, nursing, dentistry, biochemistry, biotechnology; and information on the organisation and administration of the health care sector.

New health services and employment. The use of new services in the health care sector creates employment. Many investments by the private sector in tele-medicine services and telecommunication applications have already created new jobs. The continuing development of new health services by the private and public sector is expected to create job opportunities in relation with:

- Investments in multimedia services and tele-medicine applications.
- *Development of telecommunication applications and services* in parallel with the support of research and development programs in tele-medicine and tele-health care.
- *Installation and operation of the information and communication infrastructure* in hospitals and regional health centres and its interconnection with the national communication infrastructure for the provision of broadband services.
- *Education and training* of health and administrative personnel.
- Globalisation of tele-medicine services and therefore market opening.

6.3. Sustainable development in the Information Society

Sustainable development can be defined as development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Sustainable development is a requirement imposed by deteriorating environmental conditions.

One of the main goals of the government's environmental and energy-related policy is the development of knowledge, methods and technologies contributing to sustainable development. Information technologies in conjunction with the development of the telecommunication infrastructure contribute to sustainable development as they decrease negative environmental impacts of economic activity. This is achieved either through 'de-materialisation' of many production processes and therefore decrease in the use of energy and raw materials or through a more rational use of natural resources.

The policy framework. The government uses new information and communication technologies for sustainable development through a series of measures and applications:

- *Encouragement of production using less raw materials* ('de-materialisation'). Measures limiting paper and energy consumption through the use of electronic mail and other media for the electronic transmission of information.
- *Telecommuting policies*. Promotion of teleconferencing and telecommuting, reducing transportation needs and therefore also noise, energy consumption, and air pollution.
- *Fire fighting in forests and forest protection* through the installation of electronic detectors and emergency communication systems and the establishment of a forest register.
- *'Tele-measurements' of water and mountain masses* for disaster prevention and better environmental management.

- *Information technology in the environment industry*. The use of information technology in production processes to reduce pollution, to select more energy-efficient technologies and to produce environment-friendly new products is encouraged.
- *Information technology in the energy sector*. Reinforcement of the use of information technology in energy production, transformation and distribution (life-cycle assessment, improving energy efficiency, limiting the negative environmental effects of energy production).

6.4 Transport in the Information Society

Technologies for 'intelligent transport'. The field of transportation has much to gain from the use of the information and communication technologies. Potential benefits include shortening of the time required per journey, reduced pollution and improved safety.

The collection and organisation of information and the use of telecommunication networks for its transmission can considerably increase the efficiency and effectiveness of the transport infrastructure. Without substituting for the establishment of new infrastructure, this approach focuses on the optimal use of existing infrastructure. The use of modern technologies in transportation presupposes the existence of infrastructure and know-how both on a system and user level.

Land transport. Modern technologies are widely used in public and private urban transportation. As part of efforts to increase the use of public transport, initiatives are adopted that aim to increase the quality public transport, while other initiatives aim to improve traffic conditions in general. At the same time, improvement of the railway system is a major policy priority given that this transport mode produces the lowest emissions per person and kilometre.

- *Improved traffic management in public transport*. The addition of 'intelligence' to the signalling system in conjunction with the equipment of public transportation means with transmitters advising vehicles' position, allows for the adjustment of the signalling phases in order to shorten travel time.
- *Management of the vehicle fleet*. The introduction of information systems to manage the vehicle fleet will lead to a more efficient use of vehicles, a reduction in time wasted due to poor routing or unavoidable failures, improvement in connections and more reliability.
- *Preventive maintenance*. Vehicle maintenance currently consists of the periodical replacement of spare parts or the replacement of spare parts when they present a problem. Information systems can be used to permanently monitor the condition of each vehicle and preventive vehicle maintenance will considerably decrease the overall costs of public transportation.
- *Guidance systems*. The provision of guidance, in the form of simple information, may contribute to relieving the traffic problems in urban centres. When private car users are informed about congestion they can decide to change transport mode, to travel at a different moment, or to take an alternative route.
- *Improvement of traffic control systems* for railways. Potential benefits of improved railway traffic control systems include an increased use of the railway system, higher operating speeds (as a result of the shortening of the waiting times in stations and other stops) and increased safety.

Marine transport. Information technology can also be applied in marine passenger and freight transport. When companies and ports use information systems to better organise the transportation of passengers and cargoes, passengers will benefit from generally improved services and companies and ports will increase their competitiveness in world markets.

The implementation of information systems in sea transport is particularly important in Greece, given the size of its merchant fleet, the importance of tourism, and its geography - people living on islands will considerably benefit from improved marine transport.

The following actions in the marine transport sector are being planned and implemented:

- *Electronic booking*. The current system for the electronic booking and the issuance of tickets will be expanded to cover all travel agencies and shipping companies.
- *Vessel traffic information system*. The national vessel traffic management information system (VTMIS) is under study and will soon enter the implementation. It will deal with issues such as search and rescue, police operations and pollution.
- *Management information systems*. The implementation of an integrated information system in the Piraeus Port Authority is underway, and is planned for other ports in Greece as well. This will contribute to the

establishment of truly modern transit trade centres for the Balkans and the Mediterranean

- *Education and training*. Actions adopted for ship personnel training in the new technologies are aimed at the improvement of services in transportation and the upgrading of human resources.

ICTs in the 2004 Olympic Games

In the organisation of the 2004 Olympic Games, a considerable part of the entire infrastructure and cost relates to information systems and applications, telecommunication equipment and services. The goal is the selection (under transparent conditions), installation and management of the best systems possible.

The Olympic Network will be autonomous and connected to the existing network via special connections (with alternative routings for all cases). Basic features of the network will be the reliability, quality, and safety of information. Its main characteristics are:

- Decentralisation of computer networks via the use of individual nodes rather than only terminals.
- A central system for program and transmission archiving.
- The use of PCs rather than video monitors to inform mass media representatives.
- The possibility to use small terminals (PDA) by all members of the Olympic Family.
- The use of Internet to promote the Olympic Games among the young generation.
- Smart cards for the control of access to the facilities.

A number of interconnected networks are actually needed for the smooth performance of the Olympic Games. The main ones will be:

- A network of results (at least 100 computers) supporting the automatic collection and provision of data to a central GIS system.
- A mass media network (requiring about 1500 workstations).
- A network for the members of the Olympic Family (2500 computers and an extensive access control system with smart cards).

7. Cultural policy in the Information Society

7.1 An ambitious policy for culture in the digital age

The digital revolution has made of computers and the new world-wide networks true means for creation and communication. Rapid technological development goes hand-in-hand with the development of content for the new networks and especially of content of a cultural character. Networks such as the Internet facilitate the world-wide diffusion of this content, create new ways of access to artistic creation, and change radically the structure and the content of the "cultural industry".

The Greek cultural heritage shows that technology and civilisation are two concepts that cannot be separated. It is therefore only natural that in our country, which holds a large share of the world cultural heritage, the use of information and communications technologies for the digitisation, documentation, management, promotion and advancement of Greek civilisation and modern artistic work should be an important aspect of overall cultural policy.

The cultural policy for the Information Society in Greece focuses on a number of goals:

- **The promotion of Greek culture and modern artistic work**. This involves the use of networks such as the Internet for the provision of information on Greek civilisation and cultural events, and for the promotion of the Greek cultural content in general.
- **The documentation and management of the cultural heritage**. Information technologies can be used effectively for the scientific and managerial documentation of monuments, collections in museums and galleries, texts and other cultural products.
- **The realisation of the economic value of the cultural content**. Intellectual property needs to be protected in the environment of electronic publications while new technologies can be used in order to realise the economic value of Greek cultural content.
- **The support of artistic work and expression**. This entails supporting artistic work that uses new technologies and new ways of expression in all areas of cultural creation (theatre, music, dance, cinema, visual arts, photography).
- **Support and cultivation of the Greek language**. This involves Initiatives for the support and cultivation of the Greek language with the use of information networks in the new globalisation environment.
- **Contact with Greeks abroad**. New technologies can be put to use with the aim of building closer ties with Greeks abroad (provision of information, Greek language teaching, common initiatives) and for safeguarding the Greek identity in the digital age.
- **Olympic Games of 2004**. Information and communication technologies are extensively used in the context of the organisation of the 2004 Olympic Games and can also be used for the promotion of the Greek cultural content in a parallel cultural Olympic Games.

7.2 The future form of the "cultural industry"

The "cultural industry" in Europe. Culture and the various sectors of the so-called "cultural industry" carry a great economic and social weight in Europe. The relevant activities comprise, in addition to activities associated with cultural heritage and modern artistic work, activities such as music, mass media, the audio-video industry, literature and publishing (some topics relevant to these sectors are discussed in the following chapter). In one phrase "the content industry".

New ways to approach culture. The revolution in information and communications technologies that takes us to the Information Society changes the structure and the content of this "cultural industry", providing new potential for artistic work and communication with new media. The increasing use of information technologies through the use of multimedia increasingly affects the way people approach, perceive and understand cultural content.

Modern technological achievements are expected to redefine the traditional role of museums and of entities that manage and are knowledgeable about cultural heritage as concerns its documentation, presentation and promotion to the general public.

New cultural products and markets. The production of cultural content in multimedia form will create new products and new markets both in Europe and the rest of the world and therefore will have an impact on the job market in areas where the promotion of culture is a link in the production chain (such as tourism, education, or exhibitions).

In a recent European Union survey, 20% of Europeans show particular interest in accessing cultural heritage via a network. The market created within the European Union alone and for mere access to cultural heritage object collection, in a five-year horizon, is estimated to amount to 2 billion ECUs per year.

The new information and communication technologies permit better management and promotion of the Greek cultural heritage, give a new tool for realising its economic value and at the same time constitute new means for modern creation and expression.

The challenge for Greece. Certain estimations suggest that Greece and Italy together account for 30% of the world cultural heritage intellectual property rights. It can be easily understood that the fast-growing industry of electronic cultural content can bring significant economic and social benefits to our country, while it can considerably contribute to the promotion of Greece abroad.

7.3 The documentation and promotion of Greek cultural heritage and civilisation

Through its EPPOS program, the Ministry of Culture has proceeded with an effort to systematise and rationalise the documentation and protection of Greek cultural heritage, the use of multimedia technologies for cultural education and tourism, the establishment of procedures for controlling and realising the economic value of intellectual property rights and copyright, as well as the promotion of Greek cultural products and modern Greek culture in the world market. Actions in this direction have two goals:

- **A cultural and social goal**. The use of networks and multimedia allows a wide diffusion of cultural information and thereby expands the opportunities for promoting our cultural heritage and modern artistic work.
- **An economic goal**. The realisation of the economic value of Greek cultural products can bring considerable economic benefit for both the state and the private sector (the CD-ROM created by the Louvre Museum in 1996 has already sold about 500,000 copies with profits for the Museum exceeding 5 billion drachmas). A significant increase in jobs in the relevant areas is also expected.

The EPPOS Program in the Ministry of Culture

The Ministry of Culture is implementing activities under the Uniform Cultural Information System (EPPOS) for its active intervention in the Information Society.

In the framework of EPPOS, an infrastructure in both equipment and personnel has been developed together with project management and business development procedures which facilitate the development of information systems and applications for the managerial documentation of museums, scientific documentation and the promotion of Greek culture in general, as well as for the administrative support and economic management of overall cultural policy.

Among the EPPOS actions are the Odysseas cultural site on Internet, the establishment and future expansion of the national cultural data intranet (offering E-mail services, internal electronic document and file transfer and access to Internet), the pilot operation of Polemon project (Information System of the National Monument Archives) etc. As far as the national culture intranet network is concerned, this covers 150 agencies around the country and actually offers its users 800 e-mail accounts.

Actions undertaken so far. A number of initiatives have been implemented or are in progress:

- *Creation of sites of cultural content in Internet*. In addition to the Odysseas website in Athens, the Alexandros website at the Archaeological Museum of Thessaloniki was created in an effort to extend geographically the coverage of the cultural heritage on the occasion of Thessaloniki being Europe's Cultural Capital in 1997,

The Odysseas cultural site on the Web

The first important EPPOS project was creating the site Odysseas on the World Wide Web in December 1995, and developing its since constantly as far as its technology and content are concerned. It is one of the most important and complete cultural sites world-wide (as evidenced by the many prizes it has been awarded in the 3 years of its operation).

The site comprises references to the 1000 most important Museums, Monuments and Archaeological sites of Greece, complete mapping of major cultural events (Exhibition of the Treasures of Mount Athos, Exhibition of Greek Jewellery), special editions (the Parthenon Marbles, Greek Cinema), the schedule for all cultural events taking place in Greece. It receives about 3000 visitors daily, 80% of which are from abroad, and schools in the US use it during classes on Greek civilisation.

- *Web site on Greek literature*. The National Book Centre (EKEBI), from the time of its

establishment (1995), has created a site in Internet and participates in Booknet (a limited Company with the participation of publishers) aiming at providing information on all publications sold in Greece and including an ordering facility,

- *Production of cultural multimedia*. The production of the first CD-ROM of the Ministry of Culture on Acropolis is currently in progress.
- *Systems providing information to the public*. The Archaeological Resources and Expropriations Fund at its points of sale in major Museums and Archaeological sites has installed autonomous information systems (Information Points) providing information on the publications and items for sale,
- *Intellectual Property rights*. Of great importance is the contribution of the Intellectual Property Organisation in matters relevant to intellectual property rights on cultural heritage.

PRAXITELES
"Environment for the Protection and Utilization of Photographic Images of Objects, Monuments and Sites belonging to Greece's Cultural Heritage"

This Programme was co-financed by the Ministry of Culture and the General Secretariat for Research and Technology, which is also the body managing the project. "Praxiteles" is a unified environment for the management, protection and utilization of the digital material relating to Greece's Cultural Heritage. It concentrates on digital copies and high quality photographs of exhibits, monuments and archaeological sites. The basic goals of the programme are:

- Prevention of and dealing with computer theft of digital information in on-line networks and applications.
- Addressing the problem of managing intellectual property rights, especially in digital copies of photographs and other images of the country's Cultural Heritage.
- Addressing similar issues in other sectors (music, books,...).
- Creating the infrastructure for the proper exploitation and promotion of sensitive cultural issues.
- Supporting national policy and laws governing the management of intellectual property rights.

Already the system supports unique possibilities for expansion into a model virtual museum (original searches into photographs), while the Internet node is to be linked with "ODYSSEY", the official node of the Ministry of Culture, and with "ALEXANDROS", the corresponding official node of the Archaeological Museum of Thessaloniki. At the same time, the design study for the modification of the system to expand it into a prototype electronic system for the sale of digital images has been completed, the process of implementation has begun and the problems raised by the technological limitations of this expansion are being addressed.

Actions to be implemented. The second implementation phase for projects relevant to the documentation and protection of cultural heritage, and the promotion of modern Greek culture, presupposes the establishment of the necessary infrastructure. The projects and actions to be implemented have a number of dimensions:

- *Scientific documentation of the cultural heritage for the production of virtual exhibitions*. Emphasis will be placed on electronic documentation centres in museums and galleries. Multimedia and network technology allows the creation of virtual exhibitions that are often impossible to make in actual conditions, combining multimedia elements relevant to cultural heritage items. The products can be either in CD-ROM form or offered via Internet. All these files will constitute the digital art library on Greek Civilisation.
- *Culture, multimedia technologies and education*. Cultural education is one of the most important educational activities. In several museums there are a number of educational programs where important educational material is produced. With the help of IT such educational programs can have a world-wide diffusion.
- *Culture, multimedia technologies and tourism*. The future relation of tourism with culture is defined to a large degree by the development of multimedia applications with a cultural content. Multimedia can enhance knowledge, perception and ultimately the appreciation of the users for Greek culture. They may also stir the interest of virtual visitors for a real visit. Actions to be implemented in this direction comprise:
  - -- The creation of multilingual applications with virtual cultural journeys in Greece
  - -- The creation of applications that operate in Info-kiosks and are installed at tourist access points (with on-line information for

current cultural events, reservation facilities, etc.)

-- The creation of a network for the sale of electronic editions in CD-ROM form in Museums and archaeological sites of the country.

- *Mechanisms and procedures for realising the economic value of intellectual property rights* and of copyright and the promotion of the products in the market. An important parameter in this respect is the intellectual property rights that are owned by the Ministry of Culture. Actions are in two directions:

  -- Systematisation of the sale of photographs and assignment of rights for conventional and digital publications via the implementation of an information system and a database with photo illustrations of cultural heritage items so that this service can be provided via network

  -- Creation of a site through which, via electronic commerce, all products of the Archaeological Resources and Expropriations Fund can be sold to the Internet public.

The Society for the Promotion of Greece's Cultural Heritage

(SPGCH)

In response to global contemporary cultural challenges, which are characterized by intense competition and rapid response rates, and following standard international practice, the Ministry of Culture has created a flexible mechanism – the Society for the Protection of Greece's Cultural Heritage (SPGCH) – for the purpose of improving the conditions for more widespread promotion and exploitation of Greece's cultural heritage and cultural resources. The S.A's first priority is the pursuit of this objective within the Information Society, and this is reflected in its organization and strategic planning. Through its Digital Applications Directorate the SPGCH is expected to implement most of the projects and actions relating to the systematic promotion, enhancement and exploitation of Greek culture in the Information Society. This is expected to create the necessary economies of scale in the resources used and lead to the convergence of the elements of digital cultural communication in a unified standard of operational specifications and desired cultural benefit.

7.4 Protecting the language, staying in touch with Greeks abroad

The vast majority of information in Internet is in English and originates from the United States. As a result, information and communication technologies and the growth of Internet are often seen as a threat to the Greek cultural identity, on the grounds that they bring with them the dominance of a particular culture and the prevalence of the English language.

In practice, the fast development of new techniques, the decentralisation of information centres, and the creation of infinite possibilities in information networks open new possibilities for the diffusion of cultural products and services favouring cultural wealth and diversification.

Government policy aims at using the new communication networks for the strengthening of the Greek identity and presence abroad, the protection of the Greek language and the contact with Greeks abroad.

The strategy of the government in this area is based on the conviction that the entry in the Information Society offers new opportunities for strengthening the Greek identity and presence abroad. A number of activities are being undertaken to this direction aiming at the protection of the Greek language in the network environment and the contact with Greeks abroad.

Strengthening and cultivating the Greek language. The domination of the English language in Internet precludes to a degree access to information for many Greek citizens. The government's goal is an Information Society accessible by all, and to this end activities are being implemented or planned for supporting Greek content in Internet:

- *Greek content on Internet*. In order to enrich Greek content on Internet, in addition to initiatives relevant to the encouragement of research in linguistic technology (chapter 3), actions are planned for the digitisation and electronic distribution of cultural and other content,
- *Access to information on Greece*. The Internet is still in its initial phase of development and the collection of information on specific subjects is still difficult. In the last two years there has been a spectacular increase of sites that concern Greece and for their part various public bodies have started the electronic distribution of information in Greek and in foreign languages.
- *Presentation of Greek positions and contact*

with Greeks abroad. Greeks abroad are an element of wealth and strength for our country. It is necessary that Greeks working and studying abroad as well as second generation Greeks become "active citizens" and be afforded access, information and participation in developments in Greece. At the same time, since this is a two-way relation, Greek citizens should be afforded the ability for communication, information and experience exchange with Greeks abroad. Many Internet sites of mass media organisations are already assisting in this direction. Government initiatives are focused on the following goals:

- *Information and communication*. Through the Internet, the General Secretariat for Greeks Abroad, Ministry of Foreign Affairs, has developed a number of actions for information and regular communication with Greeks abroad.
- *Distance learning*. Greek schools abroad often suffer from a lack of teachers and suitable material. Our goal is to develop and distribute, with the help of the new communication technologies, suitable education material for teaching the Greek language and civilisation abroad.

'Greece Now' (www.greece.gr)

The "Greece Now" website was created to project Greek achievements and the modern face of Greece to an international audience, and in this way to reinforce this country's international image. Currently available in English, the material will also be published in French and German. "Greece Now" is supported by the Ministry of Foreign Affairs and was created by a consortium of technical experts and journalists

8. Mass media in the Information Society

8.1. A new environment for mass media

Mass media for information and entertainment. While information and communication technologies touch a constantly growing number of aspects of everyday life, the most tangible mark of the Information Society will be provided by electronic mass media.

Opportunities for the citizens. Digital technologies offer new possibilities for the provision of radio, television and other services. The manner and the concept itself of information and entertainment are changing as a consequence of the development of digital cable television, the multiplication of the number of channels and the ability for two-way communication, the Internet, electronic newspapers and the exchange of information over the network.

New responsibilities for the state. For the citizen, information and entertainment in the digital environment means multiplication of the opportunities for satisfying his/her special preferences. For the state however, it implies the need to balance some frequently conflicting targets:

- Defending pluralism and free expression in mass media,
- Safeguarding the rights of citizens and the cohesion of a democratic society.
- Encouraging and protecting entrepreneurship in the new media.

Traditional mass media and state control. Information and entertainment through radio and TV broadcasting has a mass impact. It influences behaviour and shapes mass consumer, political and other practices. So it has always been treated by the state with scepticism and suspicion, and often in the past the tight control of broadcasting was abused and used in an undemocratic manner.

Ensuring pluralism. The state has a clear role in safeguarding cohesion and pluralism in a democratic society, as well as protecting its members. For this reason, legislation – in many cases the Constitution itself-- regulates in a strict and detailed manner the operation of electronic information media and puts them under more or less direct state control or regulation.

Restrictions imposed by technology. Until recently, there were technological restrictions in the development of radio and TV activities, such as the scarcity of frequencies and the small efficiency of analogue technology, which imposed a strict supervision of the radio and TV area by the state, and accentuated the need for preventing concentration of economic power.

In the Information Society the manner and the concept itself of information and entertainment are changing rapidly as a consequence of the multiplication of the number of channels, the ability for two-way communication, and the growth of Internet.

Technology and modification of business structures. The business structures of the existing radio and TV market will be completely upset by the technological innovations such as the use of digital technology in the processing and transmission of radio-television signal in conjunction with technical applications for its encoding. The conditions therefore now exist for the provision to the public of a vast variety of programming targeting not the average viewer but particular viewers with special preferences.

In terms of funding, the provision of radio and TV services is now shifting from its traditional sources (such as advertising) to the direct commercial exploitation of smaller or bigger pay TV program “bouquets” or on a pay per view basis. The importance of these changes lies in the new business opportunities that are being created and in the newly found possibility for the viewer to prepare his/her personal information and entertainment program by actively expressing his/her preferences and adjusting the cost.

The institutional framework for conventional broadcasting in Greece

As of 1995, Greece has a complete institutional framework, harmonised with European Community legislation (Directive: Television without borders, 89/552 and 97/36) for the operation of private radio-television stations (Law 2328/1995).

This institutional framework is founded on the need for legality and transparency in broadcasting, the need for respecting the dignity of the viewer/listener, protecting minors and safeguarding political and cultural pluralism as well as on the need for supervision of compliance with the above. Such supervision has been

assigned to the National Radio-Television Council (ESR).

Access and content in the provision of digital radio and TV services. The concept itself of the ownership of a radio-TV station is now increasingly becoming limited to the management of a continuous flow of radio and TV content among many other broadcasting programs or new interactive communication services (multimedia, Internet, etc.) offered to the public in the framework of a digital "package".

Technological developments in practice mean that the involvement in the broadcasting services market does not depend any more on the acquisition of the right to use (e.g. granting of a state license) one of the very few frequencies of the available spectrum. Today it depends on the co-operation of the content provider with access providers, i.e. with entities possessing or managing the necessary technological infrastructure (network, digitisation, compression, multiplexing and transmission of signal services) as well as technical and other applications (conditional access systems, production and distribution of access devices, subscriber network management, development of electronic program guides or program applications interconnection).

8.2 Liberalisation and restructuring of supervisory mechanisms

The consequences of the liberalisation of digital television services. They are many who believe that the "release" of the market for radio-TV services from its technological constraints due to the introduction of new technologies should be accompanied by a corresponding complete "release" from its old institutional constraints. It is, however, doubtful whether the institutional "release" of radio-TV services would automatically ensure, thanks to the mechanisms of the market, that the preferences of viewers are satisfied, given the difficulty that exists in reconciling an unimpeded business activity with the protection of human dignity, cultural diversity and democratic pluralism.

Concentration and market domination. The problem of the structure of the new markets of digital television services is an important one. Even though the penetration of new technologies gives small firms the opportunity to become profitably involved in access provision or specialised content provision, both the access provision and the content provision markets present on an international scale particularly marked tendencies towards horizontal and vertical concentration.

Concentration trends in access and content provision. As concerns content provision, business giants acquire intellectual property rights on large, highly profitable entertainment packages (e.g. US productions) or the rights to transmit major sport events, thus ensuring control of individual television stations. At the same time, strong business groups involved in the cable TV field expand their network, on a European and international level, through subsidiaries.

As regards access provision, the large-scale investments that are required for the development of the technological infrastructures inevitably make this market inaccessible to small "players" while large telecommunication or broadcasting groups absorb the other access services.

Finally, technological convergence gives access providers the predominant role of gatekeepers; gates through which content providers are required to pass in order to distribute their service to the public. They are thus in a position to impose the relevant access terms and to influence the associated content markets both via the exclusion of certain operators (particularly when access providers are content providers as well) and via the political or cultural manipulation of audiences.

The need to restructure market supervision mechanisms. National legislation in Greece already since 1995 contains provisions for dealing with tendencies towards concentration. The recent constitutional reform reaffirmed the orientation of the institutional guarantees of mass communication towards the protection of both pluralism and competition. This system of guarantees is based on the one hand on transparency of ownership and funding, and on the other hand on instituting a series of controls and rules of exclusion aimed at avoiding concentration of ownership or management in mass media markets.

Nevertheless, the rapid transformation of broadcasting markets in the context of the Information Society underlines the need for the completion or partial replacement of existing institutional guarantees with flexible mechanisms that are less geared towards creating ex ante obstacles to entrepreneurial initiatives based on potential dangers and more focused on directly, precisely and effectively locating and removing any unlawful influence that is actually exercised in the market and in the forming of political or consumer preferences.

The existing institutional guarantees will be supplemented by a flexible system ensuring the ability to identify unlawful influences exercised in

the market and in the formation of consumers' preferences.

The institutional framework for subscriber-based services. This thinking led the government already since 1998 to attempt to regulate the market for subscriber-based broadcasting services, thus putting Greece at the forefront amongst European countries as far as the legal approach to the issues connected with the introduction of new technologies in mass media is concerned.

Under the new provisions, a transparent and objective system is established for licensing subscription-based services. At the same time, the existing institutional guarantees of legality in the operation of the market are being reorganised and supplemented so that they may respond in a more versatile and effective way to the issues raised by the rapid developments in the broadcasting market. The new provisions

- acknowledge the variety of business and technical activities and the variety of corporate forms or associations under which ventures can be undertaken
- take into account the differentiation between access and content provision and shift the restrictions and incompatibilities foreseen in the legislative framework of traditional broadcasting to the relations between business actors who actually inhibit free competition and pluralism. The weight of regulatory mechanisms shifts from attempting to attain complete transparency through conversions of company shares into registered shares to preventing the actual domination of a business group in the relevant markets. At the same time, the criteria that permit effective identification of such abuses in the broadcasting market are defined and specified.

Despite its thoroughness as regards the regulation of the market for subscription-based broadcasting services, the new legislative framework does not make any attempt at regulating interactive services (such as banking transactions, electronic commerce, gaming, etc.) that will develop with the convergence of the telecommunication and mass media technologies. The government remains committed to supplementing the legislative framework in this respect in the near future.

8.3 Protecting fundamental rights and safeguarding pluralism

Pluralism and democratic values. The consequences of actions that inhibit competition in broadcasting touch on fundamental rights of citizens and the on democracy itself. The defence of such values is associated in the Information Society with the protection of free competition, economic initiatives, political views and cultural specificities.

A system for safeguarding rights. The system for safeguarding such rights is constituted not only of the rules relevant to "external pluralism" but also rules relevant to "internal pluralism" (program content, etc.): every type of provision of broadcasting services to the public should satisfy, as far as its content is concerned, certain minimum conditions associated with the major social goods that are democracy and cultural diversity.

For this reason the recent legislative approach to the introduction of new technologies in broadcasting extends to the new forms of mass information and entertainment all guarantees that the legislative framework of traditional broadcasting provides for the protection of the personality, dignity and privacy of viewers/listeners, the protection of minors and the handicapped, consumer protection, etc. The recent constitutional entrenchment of the general right to information and to participation in the Information Society promotes and sets the seal on the extension of the guarantees and protection of the constitutional rights of citizens to all forms of mass communication and entertainment in the Information Society, such as for example radio and television broadcasts via the Internet. These rights and the related guarantees will be defined in a special law for which provision is made in the relevant articles of the Constitution and which is expected to be voted on in the near future.

The role of the National Radio-Television Council

The National Radio-Television Council (ESR) has a number of responsibilities associated with the supervision of the broadcasting market, particularly in view of developments in new technologies.

ESR, in consultation with the interested parties, can elaborate individual codes of ethics summarising the rules of the game for each individual market with the aim of protecting the fundamental rights involved.

Furthermore, it strengthens its "arsenal" with a number of interventions in the operation of the companies providing all types of broadcasting services, such as addressing special recommendations, general guidelines and cautions, effective sanctions, etc.

At the same time, it has the option to collaborate with other public authorities that are competent for dealing with individual problems such as competition issues or the technological adequacy of broadcasting companies. The ESR however retains the dominant role as far as issues raised in the broadcasting market are concerned in the context of such co-operation, with the authority to make final decisions.

The complexity of the new forms of communication and issues of ethics concerning content impose the necessity for supervision of the broadcasting market in the Information Society.

The regulatory authority. The complex nature of technological innovations and of the new entrepreneurial activities, as well as that of ethics as far content is concerned (e.g. protection of privacy and children) imposes the necessity for supervision of the broadcasting market. The state decided that this role could be played by the National Radio & Television Council, which it therefore, by Law 2863/2000 and its recent revision, made wholly independent of the remaining administration and granted exclusive authority to control the operation of radio and television stations of whatever form, regardless of the means of transmission they use, and exclusive authority to impose severe sanctions on those who violate existing legislation.

Control and Civic Society. With a series of legislative initiatives, the government encouraged new and society-wide diffused institutions and forms of control over the content of broadcast radio and television programmes. The first of these checks is the self-policing that the media and their associations are called upon to exercise through the Ethics Committees they can now create, on their own initiative and on the basis of voluntary compliance agreements. At the same time, an attempt has been made to strengthen and facilitate parental supervision of their minor children through the system of designating, by category, the suitability of broadcast programmes. The extension and specification of the means of control and protection of citizens' rights and the enhancing of the awareness of civic society in the field of new forms of electronic means of mass communication and entertainment are among the main priorities of the initiatives underway for the legal regulation of participation in the Information Society.

Convergence of regulatory authorities: The convergence of communications technology, mass media and information technology is continually creating new services, which are extremely difficult, if not impossible, to classify in any existing category. This phenomenon, which is strengthened and amplified as the Information Society penetrates our daily lives, results in a decided lack of clarity about which is the competent regulatory and supervisory authority in any given case. This is why, in the context of the concern that is developing about the content of the legislative initiative for the Information Society, a highly visible position is occupied by the debate on the advisability of the convergence or merger of the currently parallel competent independent authorities.

8.4 The role of public broadcasting

Despite the measures taken for protecting competition and safeguarding political and cultural pluralism, for the protection of citizens and minors, for objective information and quality of entertainment, the market of subscription-based broadcasting presents characteristics that undermining the perspective of providing access to all citizens in the Information Society.

Access for all? The commercial profitability of subscription-based TV makes major information and entertainment producers move to subscription-based services. Thus, large population groups who cannot meet the cost of more or even one subscription are denied not only access to the most important content available but also the cultural content that is necessary for full participation in the Information Society.

Public broadcasting in the Information Society. Securing access for everyone to a minimum of objective information and quality entertainment, as well as strengthening of political ties and of solidarity has always been and will continue in the future to be a principal public function. This is the main role that public broadcasting will play in the Information Society: a role comprising both the production of culturally diverse and high-quality information and entertainment and their broadcasting in freely accessible channels.

The role of public broadcasting is not limited to ensuring universal service but extends – under the conditions of rational use of public funds -- to exploiting the possibilities offered by the new technologies for developing subscription-based TV programs on terms affordable for the general public. Such programs aim at the preservation of cultural specificities or forms of art with limited commercial impact (e.g. opera, folk music, etc.) and promoting pioneering artistic movements with specialised audiences (modern classical music, theatre, dance, etc.).

In this context, the government gives public broadcasting the opportunity to enter in the Information Society by securing for it funds originating from fees paid by licensees of subscription-based broadcasting services. At the same time the public broadcasting operator is given the opportunity to actively participate in the subscription-based broadcasting market via the establishment of a subsidiary, and with the participation of other public or private entities that possess the know-how or offer program packages attractive to the public.

The exploitation of the new technological possibilities that are appearing in the Information Society and the convergence of technologies are not limited to the level of the production of audiovisual material but extend to the guiding role and the organization of exemplary business collaborations with other private access or content providers that belong to public radio and television. The creation of a subsidiary company to Greece's national television for the purpose of developing collaborations for the provision of digital radio and television services is a move in this direction.

Finally, the need to secure universal access to programs that are essential for full participation in social life is not only a source of responsibilities for the state but also of limitations for private entities active in the field of the subscription-based broadcasting.

The most characteristic case of such limitations is perhaps the prohibition imposed under EU Directive 97/36 which stipulates that broadcasting stations cannot exercise exclusive rights for the broadcasting of major sport or cultural events in such a manner as to deprive the general public from generalised free access.

Greek public television's particular investment in the organization of the 2004 Olympic Games, in conjunction with its participation in the circle of holders of broadcast rights to the Games, is expected to constitute tangible proof of the value of preserving the central role of public radio and television in the new environment of the Information Society.

9. Regional development in the Information Society

9.1. Equal participation of the regions in the global village

Regional Policy in the Information Society. Regional policy will be greatly affected by the emerging Information Society. It is here that the release from geographical limitations, promised by new technologies, is most significant. In the digital world, people who live in remote locations have the opportunity to participate in the Information Society as the cost of digitally "travelling" to and from areas that are hard to access decreases. Those limited by the lack of local opportunities get access to both national but global resources. Ultimately, the small can compete with the big.

A/A	REGION	%
1	Eastern Macedonia & Thrace	75
2	Central Macedonia	14%
3	Western Macedonia	55
4	Epirus	5%
5	Thessaly	7%
6	Ionian Islands	2%
7	Western Greece	7%
8	Mainland Greece	6%
9	Attica	31%
10	Peloponnese	6%
11	North Aegean	2%
12	South Aegean	3%
13	Crete	5%
	Total	100%

From regional development to equal participation of the regions. Telecommunication networks and their related services have already emerged in a role equivalent to the usual transportation infrastructures, such as highways, railway networks and port facilities. The very nature of the new technology, which releases from local and geographical limitations, is the driver for drastic transformations in the socio-economic fabric. In this sense, "regional development" in its classical meaning is no longer at stake; what is now of great importance is the equal participation of everyone in the global village, where new structures, new services and new entities are being shaped.

In the Information Society, "regional development" in its classical meaning is no longer at stake; what is now at stake is the equal participation of everyone in the global space, where new structures, new services and new entities are being shaped.

In the emerging Information Society, Greece has the opportunity to deal with the problems caused by its geographical location and distance from international decision-making centres. The main goal of regional policy in the Information Society is to reduce isolation and ensure that regions are fully integrated into the global village. To this end, each regional authority will prepare its own specific plan for the Information Society aimed at:

- Promoting and exploiting local characteristics and comparative advantages;
- Supporting investments towards the Information Society under three separate headings, namely the enhancement of the infrastructure, the production and use of specific products, and the development of applications and services appropriate for the regional and local environment;
- Improving the quality of life at the local and regional level;
- Increasing public awareness and active participation in public matters, and
- Supporting the wider, national development policy goals.

Regional Operational Plans within the Information Society

Each region in Greece is preparing or has concluded an Action Plan for the Information Society within the framework of the Operational Programme for the Information Society. The basic principles on which these action plans are drafted include:

- Utilization of the experience and best practices of the corresponding foreign enterprises to avoid similar problems and to codify the manner and methodology used in addressing them
- Deep time planning and the concept of collaboration both with Public Administration bodies and with private individuals

- Design and development of pilot applications
- Demonstration and documentation of how recipients (citizens, SMEs, workers, etc.) are satisfied
- Realistic timeframe and budget
- Design of integrated interventions taking into account the institutional framework, support structures, implementation mechanisms and human resources required
- Documentation and quantification of targets and anticipated results
- Analysis of the impact of interventions on the local regional society and creation of mechanisms for the exploitation of the experience acquired through realization of the interventions.

Opportunities for the regions in the Information Society

Information Society applications offer a vast array of opportunities for the regions:

- Doctors serving in rural areas will be able to consult with colleagues at the city hospital, have access to the history of a patient, as well as to medical information banks all over the world.
- Any professional can be employed by a suitable enterprise, in any part of the world, without leaving his/her home. For example, a translator will have the opportunity to move from the city to the village of his/her parents, without having, in essence, to change the manner of his/her work.
- Teachers will be able to choose the educational content to use in teaching from the world's largest library.
- Companies will be able to seek suppliers and customers in the entire world, securing a vast market at the best possible prices. They will have the opportunity to exchange electronically invoices and other documents with business associates and various public services.
- Farmers will be able to retrieve information from the databases of the Ministry of Agriculture, communicate with the agronomist at the capital of the province or the prefecture, and be timely informed about weather changes and necessary actions for protecting their crops.
- Hotels and other tourism enterprises will be able to promote over the whole world not only their own services but also the advantages of the wider area in which they operate.

The regional dimension of Information Society applications. All the actions described in the previous chapters obviously apply to both the regional and the local level. In this sense, improved public services, enhanced education and training, the provision of better health and welfare services, the emergence of new business opportunities and the creation of new jobs, the promotion of our country's vast cultural wealth, the management of our natural resources and the increased opportunity for information and participation in public matters, are challenges to be faced not only on the national but, also, on the regional and local levels.

9.2 The institutional framework for undertaking initiatives

The economic and social development of the regions using the opportunities afforded in the Information Society is a primary objective of government policy. The geographical, demographic, administrative and economic particularities of our country are clearly illustrated at the regional level and present a challenge in view of the possibilities offered by the new information technologies.

Regional characteristics. Greek regions differ significantly, not only in terms of their economic development but, also, with regard to their particular characteristics and their potential. Similar differences can often also be observed within the same region: some areas are richer and others are poorer, problems encountered in the islands are different than those encountered in the mountainous areas, some regions have mainly an agricultural character, while others an industrial or tourism-based character.

Greece as the only European Union Member in the wider Balkan area. As a member of the European Union Greece is actively participating in the processes associated with European integration. At the same time, its has a close geographical proximity to the other countries of the Balkans and the Eastern Mediterranean, with which it traditionally holds good relationships. These characteristics are conducive in defining its role as a potential centre for the development of the wider geographical and economic area, co-ordinating the relevant EU initiatives.

In the national, as well as in the wider European, division of functions and activities, regions are called to demonstrate their comparative advantages, to acquire specialisation and identity, and to successfully exploit the new opportunities arising in the Information Society.

In this context the role of the regions of Northern Greece is worth noting, as the 'gateways' of our country and of the EU to the other countries of the Balkans and the Black Sea. Hence, large and ambitious telecommunication projects, as well as applications towards the Information Society, should take into account this role and provide for "ports" to the other Balkan and Black Sea countries. Similar provisions must be taken with regard to the other eastern Mediterranean countries when planning and implementing Information Society actions in the regions of Crete and the Aegean islands.

Will new technologies accentuate or ease regional inequalities? Increased possibilities to reduce isolation, for international or inter-border co-operation, for new employment and entrepreneurial opportunities, as well as for ensuring democratic participation emerge in the Information Society. However, the results of this process depend heavily on the potential of the local actors and on the ability of the region's firms to operate competitively in a wider, national or international, market.

In regions lagging behind in terms of economic development, or that have no minimum "critical mass" of local businesses and infrastructures, as well as in those which cannot provide for the necessary human resources, interventions are required in order to accelerate growth rates and reduce potential dangers of marginalisation.

The institutional framework of interventions. Regional policy interventions are defined in the context of the continuous transfer of power from central to regional, prefectural and local government authorities. This transfer is shaped by the recent enforcement of the new Regional Authorities Law (2503/97) and the "Ioannis Capodistrias" Program (Law 2539/97) for the merging of primary local authorities and the establishment of fewer and more powerful municipalities all over Greece.

Through these reforms, the burden of executive responsibilities has been transferred to the regional authorities, which are now called to act as the link between local requirements and major national priorities. The new municipalities are established as powerful political entities and integrated administrative centres endowed with the necessary 'mass' and resources to effectively face various issues at the local level. They are also asked to improve their organisation and services, as well as to follow an integrated approach for their local development planning, with more direct democratic participation.

New information and communication technologies allow greater freedom to individuals and enterprises in selecting the location of their establishment, thus reducing isolation and increasing growth opportunities, especially for remote and hard-to-access areas that have not been favoured so far by infrastructure networks.

Investing for development. Policy interventions are mainly expressed in both the programs and the measures of the 3rd Community Support Framework (which is currently under preparation), as well as in the recently amended Development Law (2601/98) concerning private investments in various areas of the country. The institutional, political and investment interventions create a new environment for the development of Greek regions. In such an environment, which favours decentralisation of authority and promotion of local initiatives, the importance of applications towards the Information Society is multiplied by ensuring the following three prerequisites:

- A *technological prerequisite,* i.e. state-of-the-art telecommunication and radio-television infrastructure, covering almost the entire country at affordable prices.
- *A social and democratic prerequisite*, i.e. thorough information of the local population on the importance of modernisation and, also so as to enhance the ability to absorb new technologies.
- *An organisational and functional prerequisite*, i.e. securing the local presence of trained "operators" (e.g. doctors, teachers, etc.) wherever Information Society applications are being developed (see Chapters 3 and 6).

9.3. Actions and principles for implementation

On this basis, the implementation of the actions towards the Information Society at the regional level is founded on three cornerstones:

- *Elaboration of a strategic plan and an action plan for the Information Society in each region.* These should focus on the local identity, i.e. demographic and geographical characteristics, structure and performance of production systems, comparative advantages and specific requirements, needs of specific areas within a region, etc.

- *Elaboration and implementation of an awareness and mobilisation program*, in order to ensure the widest possible participation of local social partners in the elaboration and implementation of the plans.
- *Establishment of a monitoring and co-ordination mechanism* at the regional and local level for Information Society related programs and actions. This mechanism, to be set up within the context of restructuring of regional and local government authorities, will also ensure the necessary co-operation between the private and public sector of each region in the implementation of this strategy. It will constitute a part of the larger system for following up the Information Society actions (see Chapter 12).

Formulating a realistic strategy. These plans should aim at the formulation of a realistic strategy targeted to specific applications and ensuring wide participation of local actors. Particular attention should be given to the positioning of each Region, and to any internal (economic, geographical and social) diversity between different areas of the same Region (e.g. in the Aegean Islands, or Evritania, Evia and the "internal" zones of Fokida in the case of the Sterea Hellas Region).

Analysis of the current situation. The strategy should be founded on the analysis of the current situation (social, economic, technological, etc.) and of the resulting needs and requirements, as well as on a full identification and mapping of relevant actions and projects carried out in each region. It should also include the formulation of realistic scenarios for incorporating Information Society services and applications in the socio-economic fabric of the particular region.

TEXT

Identification of a limited number of applications. Each regional Information Society strategy should identify a limited (single-digit) number of applications and/or projects, resulting from the scenarios described and according to respective feasibility studies. Each of these studies should examine thoroughly, among other issues, the environment of the application/project under assessment, user characteristics, the anticipated needs, the magnitude of the effort required for implementation, etc. In this sense, the feasibility studies will provide the basis for the elaboration of the respective implementation plan.

The Information Society regional plans should present a specific policy to support the development and diffusion of new technologies, telecommunication infrastructure and applications, as well as to increase the demand for new services.

Awareness and information. Prejudice and ignorance, resulting from the lack of knowledge and information often cause resistance to the introduction of new technologies. This, in turn, leads to limited penetration and exploitation of the technology while, in addition, it obstructs participation in decision-making procedures and in the selection of options that will eventually shape the face of the new society. Without underestimating the significance of other issues, the path towards the Information Society can no longer be treated as something distant or as a luxury pursuit. The difficulties and problems are usually expressed more intensely at the local level where, nonetheless, they can be faced more effectively with the deployment of focused and specific actions.

For these purposes and along with the elaboration of the regional Information Society plans, information and education/training actions will be implemented in every region. These activities will also secure the co-operation of the region's private and public sector in the implementation of the strategy. In this context, the following actions should, among others, be promoted:

- Publications of general, popular and specialised (per activity, sector or population group) content;
- Workshops, seminars and conferences (on issues of general, specialised and local interest);
- Discussion fora for relevant issues, on a local and broader level;
- Designation of local "correspondents" to facilitate diffusion and dissemination;
- Provision of information to local government authorities and support of their participation in international meetings, fora, committees, etc.

Monitoring and co-ordination. The broad nature and diversity of Information Society issues, the need to elaborate and implement specific programs, as well as the requirement to activate the largest possible part of the local community, make it necessary to establish in every region a monitoring and co-ordination mechanism.

This mechanism is to be developed within the context of the restructuring of the regional, prefectural and local government authorities, also involving the other actors of the region's society. It will, thereby secure that local characteristics are taken into account and the widest possible

participation of the local population. In this framework, the following are foreseen:

- Appointment of a contact person or office dealing with Information Society issues in every region and prefecture. This will generate, in turn, a "network" of local representatives to be incorporated in the respective national mechanism (see Ch. 12).
- Completion and operation of the Ministry of National Economy Management Information System to support the monitoring of all projects implemented at the regional and local level.
- Mobilisation of local development agencies (e.g. Municipal Enterprises, Chambers of Commerce, Local Federations, non-profit organisations, etc.), businesses (active in telecoms, information technology, training, etc.) and academic, technological and research institutions.
- Co-operation of the above in all possible combinations, but selection and appointment of only one (e.g. Municipal or Development Enterprise, Public Organisation, Local Chamber) as the "co-ordinator" in every region (a *local champion*). This selection can be held on a competitive basis, following pre-specified criteria such as the technical and managerial capability, acceptance at the local level, official status and the availability of relevant infrastructure.

The Management Information System of the Ministry of National Economy

The Management Information System (MIS) of the Ministry of National Economy will contain and provide data for every project implemented within the various programs of the Community Support Framework (CSF) and the Community Initiatives. These projects are co-funded by the Structural Funds and the Cohesion Fund of the European Union, the (National) Public Investment Program, as well as by private investments subsidised by the Ministry of National Economy. The applications of the system cover the entire life-cycle of the projects, including selection and funding procedures, financial monitoring and reporting, physical progress monitoring, etc.

The MIS is intended to be one of the basic auxiliary tools for Operational Programmes, starting from the point of drafting of Ops to the completion of financing, a unified system that can also be used for projects outside the Operational Programme but complementary to projects included in the Programme.

The primary functions of the new information system are as follows:

- Design and drafting of CSF-CP and OPs.
- Programme integration (Creation of list of projects proposed for inclusion, Project Technical Records - PTR, modifications to PTR, submissions to Monitoring Committee for approval, contracts)
- Monitoring of projects and subprojects (Project Development Administrative Procedures, Financial & Physical Object, Physical Planning), with monthly and quarterly reports and historical archives.
- Cash flows (inflows from Structural Funds, financing of bodies, automatic transactions with the European Commission and the Bank of Greece, automatic creation of Financing Schedules).
- Back-up / monitoring of audits.
- Back-up / monitoring for programme evaluation.
- Back-up for Monitoring Committees

Implementation methodology. Every Regional Information Society action plan will be implemented under the supervision and direction of the central mechanism that monitors the implementation of the national policy towards the Information Society (see Ch. 12). The most important principles of this framework are the following:

- *Harmonisation of actions* implemented on the local, regional and national level, in order to avoid overlapping. This can be secured by pre-selecting projects to be implemented on the national and interregional level and defining actions that will be applied on the local level so that projects concerning the same subject are implemented in only a limited number of different regions.
- *Competitive procedures* for selecting the agents that will implement specific actions at the local level, as well as for identifying the best practices and applications that will then be adopted at the national or interregional level.
- *Focusing* on subjects of high interest and usefulness to the local community, through the development of applications based on (by priority but not exclusively) existing and *proven technology*.

- *Exploitation of the results* of projects co-financed by various European programs and initiatives.
- *Promotion*, on a preferential but not exclusive basis, of telework and telecommuting applications in urban areas and of tele-education, tele-medicine and tele-information applications in rural, island and hard-to-access areas.

9.4. Indicative Information Society projects in the regions

Information Society actions and projects have already been implemented in various programmes of the 2nd Community Support Framework. In addition, all regional authorities have submitted to the Ministry of National Economy their proposals in the 3rd CSF. Based on these, there follows an indicative list of the most important Information Society projects that could be implemented at the regional and local level.

Actions with a national or interregional dimension. Examples are:

- The extension and completion of reorganisation and computerisation projects in the Regional, Prefectural and Local Government Authorities (all Regions);
- The "Egnatia" Information Highway (Epirus, Western, Central, Eastern Macedonia and Thrace);
- The urban centres information network (Western Greece, Attica, Sterea and Central Macedonia);
- The organisation of citizens' information services centres, following the '1502' model (all Regions);
- Regional investment centres, providing information as well as technical and administrative support to interested investors (all Regions);
- A "Green Information Network" for Greek biological farmers. This network could be developed in co-operation with the local farming associations and co-operatives, the competent department of the Ministry of Agriculture, as well as the respective certification bodies (Thessaly and Peloponnese),
- Financial and other incentives to selected groups of local professionals and firms for acquiring or upgrading information systems, for personnel training, and connecting to the information systems of various government agencies, depending on the interests of the former and the capacity of the latter - e.g. tax and accounting consultants with TAXIS, transport companies and customs brokers with the customs information system, engineering and consultancy firms with the MIS of the Ministry of National Economy, etc. (all Regions);

Actions and projects in specific Regions. Examples include:

- Making the island of Crete a (digital) "Centre of Information Society Applications in the Eastern Mediterranean" (Crete).
- Establishing a centre for telecommunications and electronic commerce in Thessaloniki, within the wider framework of preparing the city as the "Metropolitan Centre of the Balkans" (Central Macedonia);
- Promoting archaeological and cultural wealth, sites and works (Peloponnese, Central Macedonia, Southern Aegean);
- Promoting environmental and ecological wealth (Thessaly, Peloponnese, Western Macedonia, Eastern Macedonia and Thrace);
- Tele-education, training and libraries applications (Ionian Islands, Northern Aegean, Southern Aegean, Sterea Hellas, Epirus);
- Promoting tourism and of the natural and cultural wealth, creating Tourist Information Centres, incentives to local enterprises to develop relevant applications (Northern Aegean, Southern Aegean, Ionian Islands);
- Telematic applications (e.g. remote sensing systems) for pollution control and environmental protection (Northern Aegean, Attica, Western Macedonia);
- Tele-medicine applications (Epirus, Sterea, Northern and Southern Aegean);
- Telematic applications for agriculture and the primary sector (Epirus, Peloponnese, Thessaly, Western Macedonia);
- Network for small and medium-sized firms (Western Greece, Thessaly, Eastern Macedonia and Thrace);
- Support to local firms for the development of innovative products and Information Society applications (Attica, Central Macedonia and Western Greece, as well as Northern Aegean and Eastern Macedonia and Thrace in Tourism and Language Engineering, respectively);
- Network for public and local authorities for administrative (internal) and citizens' information (external) purposes (Ionian

Islands, Attica, Epirus and Central Macedonia).

10. Communications infrastructure and networks

10.1. Communications infrastructure and networks: the backbone of the Information Society

The national communications infrastructure. The national information and communication infrastructure is the backbone of the Information Society. In its broadest sense it comprises wired, wireless, satellite telecommunications, computer networks, transmission and switching systems, digital television, a wide range of terminal equipment as well as software services and applications, databases, electronic files and digital libraries. This infrastructure enables fast, friendly and low-cost storage, retrieval, handling and processing of digitised information in the form of voice, data, and video.

The constituent parts of a national communications infrastructure should aim at a comprehensive service platform contributing to the development of economy and society. For firms, the communication networks and new technologies are tools for modernisation and competitiveness. For the citizen, they are a medium for better access to all kinds of information and improvement of the quality of life. For society, they offer new methods of communication and social dialogue, enhancement of democracy and reduction of social and geographical discriminations. For our country as a whole, they offer the ability to promote and further national views and interests, safeguard our cultural heritage and identity, and keep close contact with Greeks living abroad.

Communications policy. The development of the basic telecommunications infrastructure in Greece was in the past undertaken through public funds in the framework of the investment plans of the public telecom operator OTE. The evolution of technology and the liberalisation of telecommunications imply that the future development of the telecommunications infrastructure (basic telephony infrastructure, added value services, mobile telephony, Internet access) will be achieved with both public and private sector investments. This will be achieved with the help of a regulatory framework that favours free competition and thus operates as an incentive for the delivery of better services at lower cost.

The objective is to create the conditions that are necessary for the widespread provision of advanced telecommunication services at a reasonable cost. To obtain this goal, the government pursues a telecommunications policy with multiple goals, the most important being:

- *Completion of the liberalisation process in the telecommunications sector* and harmonisation of the institutional framework with that of the other European Union countries,
- *Provision of universal service* and support of the development of new integrated services,
- *Further development of telecommunication infrastructures* with an emphasis on infrastructures enabling the provision of broadband services, particularly in remote areas and islands of the country,
- *Development of national networks* and interconnections with the relevant international ones.

Telecommunications infrastructure in Greece today

In the framework of the operation of the country's trunk network (which has been entirely digital since the end of 1999), there have in recent years been substantial investments in the installation of fibre-optic cabling which, depending on the type and technology of the network components, can be used in telephony, data transfer, multimedia services, etc. According to figures from the Hellenic Telecommunications Organization (OTE), which at the moment owns and manages the bulk of telecommunications infrastructures, more than 16,000 km of fibre-optic cable have been installed in the trunk network (13,100 km on land and 2,900 km underwater). The company has also completed the installation of a public ATM trunk network, which is the basis for the broadband network and covers the whole country, and is completing the installation of a countrywide IP network.

It should be noted that considerable activity is anticipated in the development of the country's trunk network infrastructures over the next few years, because of the abolition of OTE's monopoly in the installation and exploitation of telecommunications infrastructures. Already, ten (10) companies have been licensed for this type of activity and have installed (or are preparing to install) the necessary infrastructures.

With regard to OTE's subscriber network, by the end of 2000 the percentage of digitization was about 10% (including various digital access technologies, such as ISDN, PCM, etc.). The

company is planning to increase this percentage during the course of 2002 with the introduction of technologies including:

- Fibre-in-the-Loop network access systems (FITL)
- Radio-in-the-Loop network access systems (RITL)
- Digital subscriber lines (HDSL, ADSL) allowing high-speed digital transmission via copper cable.

Mobile telephony

Developments in the mobile telephony sector are considered impressive, in relation to the European and international situation. It is estimated that by the end of 2001, mobile telephony had penetrated 71% of the market (compared to an average of 74% for the EU), with the number of mobile telephone subscribers in Greece nearing 7.9 million. Further, recognizing the contemporary needs of subscribers who travel, all mobile telephone companies offer a roaming service on all five continents, continually increasing the number of collaborating countries and networks.

3rd generation Mobile Telephony

In the middle of 2001 three (3) licences for 3rd generation mobile communications systems (UMTS) were granted. The licence-holders are at the network design and development stage, while the first services are expected be delivered by the end of 2003. The introduction of 3rd generation mobile communications systems in Greece is marching in step with the introduction of the corresponding systems in the rest of the European Union. This places Greece at the heart of developments in the field of mobile communications and Greece's citizens will receive 3rd generation mobile communications services at the same time as the rest of Europe's systems.

Regulatory framework. The rate of further infrastructure development will depend on the investment programmes of the telecommunications companies, both those that are already in the market and new ones. The strategic option of the Greek legislator to "decentralise" the regulatory function of telecommunications led to the rapid development and application of a secondary regulatory framework, which offers a clear operating framework to telecommunications companies and which can change according to market conditions in order to provide better services to the final consumer. This facilitates and attracts new foreign investment to Greece.

The qualitative and quantitative assessment of infrastructure requirements presupposes information and actions from both the public and the private sector and therefore requires co-operation between public entities, organisations, private companies, and professional and local authorities. Government policy attempts to ensure that actions complement one another, with optimal use of resources, in a competition–friendly environment.

As a large user and provider of information services, the state (public administration, public services, and local government) will continue to play an important role in the development of the infrastructure. By selecting modern ways of communication and transaction with citizens and firms, it demonstrates the necessity of adopting new approaches and diffuses new communication methods, such as electronic mail, electronic payments, and electronic commerce.

The geopolitical role of Greece in the development of telecommunications. The development of a safe, reliable, and flexible telecommunication infrastructure with an adequate capacity will connect national networks to the international information highways and give Greece the ability to play its role as the only European Union member-state in south-eastern Europe. The coverage of neighbouring areas by Greek satellite transmitters can lead to closer co-operation with the Balkan states. Government support of telecommunications and information technology co-operation in the broader geographical area encourages new initiatives and at the same time promotes peace and co-operation.

Trends in infrastructure development

- Full and complete dominance of digital technologies.
- Development of intelligent systems with the appropriate software.
- Dominant position of European standards in world mobile telecommunications.
- Considerable development of terminal satellite systems (mobile satellite communications and satellite TV)
- Dynamic growth of Internet as a predominant way for the transmission of

information and as a common communication network in our society.

- Recognition of cryptography technologies as the essential tool for security and trust on the Internet. TEXT
- Increased requirements for broadband applications and network development.
- Significant developments in television and in content distribution and management technologies.
- Significant changes and developments in the provision of market services with new roles for service providers.
- Production of packages combining entertainment, mobile and stationary telephony by different suppliers.

10.2. Rapid developments in telecommunication services

An environment of technological convergence. Telecommunication services in the future will be different from what we know now. Digital technology allows today the provision by the same network of conventional and new services of higher capacity as well as the use of terminals combining uses such as telephone, television and personal computer.

The combination of market liberalisation with the convergence of technologies will give users the ability to select both their preferred complete package and the service provider, irrespective of the technology used and contrary to the current situation which is defined by networks of a specific technology.

New business entities. As the range of possibilities and applications increases, it will no longer be possible for traditional telecommunication operators or for other basic information providers to offer the entire range of services to users. International developments show that in order to increase the range of facilities and services provided to the user, strategic alliances will be established between different entities in the information industry. Such alliances and relations will define the new business entities in the Information Society.

New services, a new regulatory environment. In the new, liberalised telecommunications environment the role and function of public telecommunication operators and regulatory authorities are changing. On an international scale, many telecommunication operators are starting to specialise in specific categories of services and applications through arrangements with other suppliers such as information providers. At the same time, in the context of the changing relation between content transmission services and content provision services, governments are reviewing the regulatory framework and the principles governing licensing, access and use of infrastructures and offered services.

Legislative Framework

The years 2000 and 2001 were turning points in the telecommunications sector in Greece, marked by the entry into effect of the new regulatory framework. This framework is basically defined by Law 2867/2000 (Government Gazette A 273, 19/12/2000), which replaced the much-amended Law 2246/94 with regard to provisions on telecommunications. Another law passed in the year 2000 was Law 2801/2000 on the regulation of matters pertaining to the competence of the Ministry of Transport & Communications and other provisions relating to licensing for the manufacture of antennas. It should be noted that the institutional and regulatory framework is further supplemented by the various Ministerial Decisions and Presidential Decrees as well as by the decisions now issued by the EETT (National Telecommunications and Post Commission).

Law 2867 is a framework law, which traces the basic guidelines that will underlie the adoption of the regulatory acts necessary for its implementation, in order to take account of the need for adjustment to continuously changing market requirements. The new law radically changes the role of the state, from that of entrepreneur and business owner to that of market organizer and regulator. The central concept of this law is the free exercise of all telecommunications activities, that is, those activities relating to telecommunications networks, telecommunications services and telecommunications equipment. On the basis of the new institutional framework, the basic principles governing the organization and operation of the telecommunications sector are as follows:

- the protection of the consumer,
- the protection of competition,
- the protection of personal data,
- the provision of Universal Service, and

- the development of telecommunications infrastructures and services

10.3. Basic principles in developing a national telecommunications infrastructure

Access to networks and information. Users and those wishing to provide services should have access to networks and to information. For achieving this goal, specific regulatory and technological guidelines (e.g. establishment of standards) need to be promoted nationally and internationally.

Promoting competition. Promoting and protecting competition is of decisive importance for infrastructure development, especially in an environment of technological convergence. For this it is necessary to elaborate specific rules for terminal equipment, software operating systems and transmission networks. Given that the structure and the characteristics of the market are dynamic and rapidly changing, such measures must be constantly monitored and adjusted. For this reason Law 2867/2000 (applying EU law) gave to the National Telecommunications and Post Commission (EETT) the possibility not only to monitor the application of Law 703/77 regarding competition but also to introduce ex ante measures that can contribute to the creation of competitive conditions and avoid the abuse of dominant positions. In this context a number of initiatives promoting competition are undertaken with respect to interconnection, numbering, spectrum management, licensing, interoperability.

- *Interconnection*. Interconnection is important in a competitive market because it secures communication from any point of a network to any other point of another network and safeguards the right of all newcomers to be connected to the existing networks. Networks should be interconnected with transparent and non-discriminatory access to scarce resources. In the European Union, free access is defined by the concept of open network provision, which seeks to ensure open access to public telecommunication networks and services, in accordance with harmonised conditions. Harmonisation regards network interfaces, conditions of use and the principles of cost-oriented billing, and is based on the principles of objectivity and non-discrimination. OTE's Reference Interconnection Offer (RIO) has already been approved by the National Telecommunications and Post Commission, while problems of application have been resolved with its involvement.
- *Unbundled Access to Local Loop.* The unbundling of the local loop enables legally entitled organizations (telecommunications providers) to use the OTE access network to provide telecommunications services to consumers. Almost all the former national European telecommunications organizations, including OTE, developed most of their wire access network, which requires heavy investment, under the protection of a monopoly status. The possibility of other organizations to provide telecommunications services via the access networks of Europe's former national telecommunications organizations utilizes to the full all the possibilities of wire network infrastructure. Thus the unbundling of the local loop enables competition to develop more rapidly and accelerates the application of new technologies (e.g. xDSL) to the access networks, permitting the provision of new services (e.g. rapid Internet access), with the immediate result that consumers will enjoy higher quality services at accessible and competitive prices. At the same time, OTE's bids for Unbundled Access to the Local Loop (full and shared) have been approved, thus laying the foundation for the full application and realization of unbundled access to the local loop.

The legislative framework for Local Loop Unbundling

Law 2867/2000 has incorporated all the provisions with regard to Local Loop Unbundling (LLU) appointed by European Parliament Regulation 2887/2000 on unbundled access to the local loop. Under the current legislative framework, OTE's monopoly on wireline telephony was repealed on 31/12/2000, and potential access to the organization's local loop, that is, the access network that links the user's terminal equipment with the corresponding subscriber center, was opened to other telecommunications companies. With decisions 217/29/18-5-2001 and 238/95/14-12-2001, the EETT (National Telecommunications and Post Commission) has approved OTE's bids for Unbundled Access to the Local Loop (full and shared), thus laying the foundation for the full application and realization of unbundled access to the local loop.

- *Numbering* and *addressing*. The development of the communications infrastructure has led to the preparation and implementation of a National Numbering Plan (NNP) and the implementation of a number management framework. The introduction of the new National Numbering Plan began on 8 July 2001 with the inauguration of a transitional 10-digit numbering system, alongside the old numbering system. On 20

January 2002 the period of parallel operation came to an end, and the old system was definitively phased out and replaced by the transitional 10-digit numbering system. The final stage in the introduction of the new NNP will be completed on 3 November 2002 for wireline telephones and on 19 January 2003 for mobile phones. By 1/1/2003 the institutional framework and the implementation of carrier preselection and number portability will also have been completed. Carrier preselection will allow the customer to preselect the provider via which he will effect a certain type of call without having to key in the corresponding carrier selection code. The development of communication infrastructure involves implementation of a scheme for the number management and their portability. The portability of a number allows the customer to retain his/her number when changing network providers and encourages competition. The process of convergence introduces also the similar issue of addressing. In the context of electronic commerce, this issue is associated with the assignment and management of domain names, and leads to authentication and encoding issues. Numbering requires co-operation on a European scale, while addressing has an international dimension due to the universal character of Internet.

- *Spectrum management*. Spectrum and radio frequencies are a scarce national resource and are of special importance for the communication infrastructure especially in wireless (earth and satellite) communications. In many countries spectrum use capability is granted for a fixed or periodic fee. For ensuring pan-European operation, common frequency bands have been defined for all member states for mobile and satellite communication systems.

  In Greece, there is a phenomenon of extensive illegal use of the frequency spectrum, creating problems to users, risks to safety, while depriving the state of revenue from the exploitation of a scarce national resource. The government is committed to taking measures for a more efficient and safe spectrum management.

- *Licensing*. Licensing specifies the technical conditions (essential requirements) and public interest conditions that an entity requesting a licence for service provision should meet. As infrastructures grow and the environment matures, entry conditions should be simplified. The National Telecommunications Committee is working towards this end and has actively intervened in this area, monitoring the activity of telecommunications firms.

Licensing

The existing situation with regard to licensed carriers may be summarized as follows:

- 3 licences have been granted for 2nd generation mobile telecommunications services, and a fourth was granted together with the 3rd generation licences
- 3 licences have been granted, via a tender process, for 3rd generation mobile telecommunications services (UMTS system)
- 6 companies have been licensed (by a tender process, in December 2000) for fixed wireless access services (2 with licences for the spectral region of 25GHz and 3.5GHz, 3 with licences for the spectral region of 25GHz and 1 with a licence for the spectral region of 3.5GHz)
- 9 licences have been granted for the installation and exploitation of wireline telecommunications networks.
- a total of 8 companies have been licensed for satellite services to a fixed network (operation, installation and provision of network and/or communications services, and/or the space section)
- there are more than 200 companies / organizations providing telecommunications activities requiring a general licence.

- *Interoperability*. The interoperability of services and the adoption of standards by providers, both on a national and on an international level, maximise networking possibilities. Consensus should be encouraged in the definition of the appropriate standards, and Greece participates in discussions in the framework of European and international initiatives in this direction. At the same time, private sector activities as well as intellectual property rights on proprietary standards need to be protected in order to encourage innovation and development.

The basic principles governing the development of the national communications infrastructure are free access to networks and information and the promotion and protection of competition.

10.4. The liberalisation of telecommunications

Positive consequences. The result of the liberalisation of telecommunications on an international scale is the provision of better telecommunication services at lower prices for firms and consumers. At the same time, given the large share of the telecommunications sector in national economies, liberalisation has also led to higher investments, productivity and employment in many other sectors. With respect to employment in particular, international comparisons show that more jobs have been created in countries with liberalised telecoms environments than in those with monopolistic environments.

Consequences of freeing the telecommunications market

Expert analysis and international and European experience concur in predicting that the impact of the full freeing of telecommunications services in Greece will result in:

- a broadening of the package of services offered to corporate and private users, particularly with regard to integrated broadband services
- higher quality telecommunications services at lower cost, because of competition
- the operation of the telecommunications market as the engine of development in many other sectors of the economy and of society in general, driving up investment, productivity and employment
- increased employment in the telecommunications and IT sectors
- increased user choice with regard to the content and characteristics of the services offered, as well as to the provider of the services or service package
- entry into the market of new telecommunications carriers and in general new providers of value added services, accompanied by an increase in investments and in inflows of foreign capital
- higher rates of absorption of new informatics and telecommunications technologies
- changes in the structure of the telecommunications market and in general of the information services market because of the new business model that will emerge from a variety of national and/or supranational alliances between telecommunications companies and companies or groups in other sectors and from the probable elimination of the distinction between corporate producers of telecommunications material and organizations that provide services.

Completing the institutional framework. Completing the institutional framework by incorporating relevant EU Directives into Greek Law and introducing the necessary additional legislative and regulatory acts is a government priority. The completed institutional framework will encourage the development of telecommunications as well as new investment activities in alternative networks, other infrastructures and the provision of new or conventional services. A clear formulation and supervision of competition rules and implementation measures is necessary. This creates a climate of confidence in the market as regards the intentions of the law-maker, and the rights and obligations of the organisations and companies involved in the new telecoms environment.

The course towards full liberalisation requires the presence and operation of an independent and strong regulatory authority that supervises the policy mapped by the Ministry of Transport and Communications and the enforcement of its effective application. In this context, the government will further support the independence of the National Telecommunications Commission so as to promote its effective operation.

The role of the National Telecommunications and Post Commission

Because of the increased need for the State to constitute a reliable partner for enterprises active in the telecommunications sector, the National Telecommunications and Post Commission (EETT), as the Regulatory Authority, has been assigned important decision-making responsibilities in the areas of licensing and verification of compliance with the law, as well as advisory responsibilities in a whole series of cases. The National Telecommunications and Post Commission also intervenes to resolve disputes, whether the parties involved are enterprises, users or the State, and serves as an arbitration tribunal on the basis of the relevant arbitration clause.

The role of the EETT was substantially strengthened by Law 2867/2000, and now includes both regulatory and monitorial responsibilities, the chief of which are:

- regulating all matters relating to general and special licences (granting, renewing, modifying, revoking, suspending, transferring and sharing) and fixing the terms of competitions (where required) organized for the awarding of special licences,
- issuing billing regulations and establishing costing principles for access to and use of the local loop, leased lines and connections,
- assigning numbers and domain names,
- granting licenses for the manufacture of antennas, and assigning isolated radio frequencies or bands,
- drafting the National Numbering Plan and the National Radio Communications Regulations, as well as the conditions for Open Network Provision and any probable limitations to network access caused by substantive requirements,
- drawing up the list of organizations with substantial market force, and of those that are obliged to provide leased telephone lines,
- implementation of Universal Service, including matters relating to financing,
- the possibility of issuing regulatory or individual acts, which are published in the Government Gazette; the Commission is also required to advise the legislature on proposed legislative measures,
- checking contracts for connections, provision of voice telephony and mobile communications services, and use and application of the National Regulation for the Allocation of Frequency Bands,
- arbitrating differences between telecommunications organizations or between telecommunications organizations and the state, users and private individuals,
- representing the country on European and/or international organizations and committees in areas relating to its sphere of responsibility.

Market liberalisation and competition require also the correction of historic telecommunication tariff imbalances as well as transparency in billing. Tariff re-balancing involves reductions in for international and long-distance rates and an increase of local rates. The tariff policy should be cost-oriented. With the assistance of cost accounting systems, OTE will be in a position to provide information and justify the costing base of its tariff policy.

Policy priorities. For the completion of the institutional framework, policy priorities are:

- *Supervision of network access* based on the open network provision framework adapted to the status of gradually liberalised telecommunications, in order to ensure that there is no abuse of OTE's monopoly position
- *Supervision of equitable treatment* of all telecommunication service providers by the public administration and publicly owned firms.
- *Provisions on interconnection* based on transparency, objectivity, non- discrimination and creation of multiple nodes all over Greece. Interconnection billing should be cost-oriented, taking international practice into consideration.
- *Implementation of the new National Numbering Plan,* as well as of a new framework regarding the management of domain names.
- *Clarification of the terms for the installation of public services* for data (Internet) and installation of public terminals, etc. in public spaces.

Alternative networks. Finally, in the framework of telecom liberalisation, the medium-term operation of alternative networks is of particular importance. Alternative networks are all telecommunication infrastructures except the network of the public telecom operator with monopoly rights (OTE).

The development of alternative networks will promote the adaptation to the international competitive environment, while enabling certain public utilities to diversify their strategy and target new business activities with benefits for the consumer as a result of the strengthening of competition.

The new telecommunications Law and the liberalization of the market allow the development of such alternative networks without the use of excessive public funding, on the basis of appropriate business plans and private sector profitability criteria.

In the context of telecoms liberalisation, the government gives priority to the completion of the institutional and regulatory framework and to the promotion and supervision of a competitive market environment.

10.5. Provision of universal service

For Greece, universal service is an integral part of the policy for regional development and the participation of all citizens in the Information Society where access to information is a right.

Universal Service

By decision of the EETT the Hellenic Telecommunications Organization (OTE) is required to provide Universal Service until 31-12-2002. Specifically for OTE and for the period ending 31-12-2002, Universal Service is defined as a set of services that include: access to the fixed wireline public telephone network (Voice Telephony for domestic and international calls, group III telefax communications, voice-zone data transmission via modem), answering services, subscriber information services, telephone books in printed and/or electronic form, public telephones, free access to emergency services "112"

The evolving content of universal service. Universal service has a dual role: social (as a means for avoiding exclusion) and developmental (assisting the development process). It is defined as a set of services of specified quality, available to all users irrespective of geographical location or other restrictive factors (e.g. individuals with special needs) and, in the light of the special national circumstances as applicable, economically affordable.

The content of universal service is dynamically defined as infrastructures continuously evolve. In this light, both the EU and international organisations such as the OECD accord particular importance to the content and the dynamic meaning of universal service and maintain that it is the first step towards the development of the Information Society.

Universal service is offered today by OTE and its content is focused mainly on voice telephony through a fixed connection, allowing also low speed fax and data transmission. Operator and emergency services, directory assistance, public phones are included; such services are to be available for people with special needs as well.

With the evolution of technology and the market and with the change in user requirements, universal service may be modified in order to comprise:

- subsidising telecom services for economically weaker social groups,
- the possibility of connecting schools, libraries, health centres and Hospitals to the Internet at special prices.

In many countries particular emphasis is given on the costing and financing of universal service in a liberalised market, since its development is expected to influence significantly basic activities such as education and/or vocational training. As a basic principle, it is necessary to provide information relevant to cost, prices, and quality.

The costing of universal service necessitates the accurate and objective determination of the cost of services that are not economically viable, given that the manner of its financing will be determined on the basis of such calculations. The cost is calculated on the basis of net cost, i.e. as the difference between the operating cost of an organisation with universal service obligations and the relevant operation without this obligation. The calculation should be made separately for each service, geographical area, special groups and individuals with special needs, and be based on procedures ensuring objectivity, transparency, non-discrimination and proportionality.

Those liable to contribute to the cost of universal service are the entities providing public telecommunication networks and/or publicly available voice telephony. Under the EU directive on open network provision, two ways of financing universal service are proposed: the establishment of an independent universal service fund on a national level and the payment of an additional fee by those connected to the network.

In both cases, a prerequisite is the certification of cost by the National Telecommunications Commission. In the case of the establishment of an independent fund, this is managed by an independent entity responsible for collecting the contributions by the liable parties and making the relevant payments.

Broadband services in the Information Society

The development of broadband is a determinant factor for the development of the Information Society, according to the guidelines and strategic texts published by the EU and the OECD.

The entire Operational Programme for the Information Society is characterized by a variety of actions for the development of broadband in areas like education, public administration, health and business, with an emphasis on the regions and remote areas.

Recognizing the importance of broadband services in the development of the Information Society in Greece, the government will within the year 2002 be co-ordinating the various related actions in collaboration with the private sector, through the various action lines of the Operational Programme for the Information Society.

11. Regulation in the Information Society

11.1 The lawmaker faced with novel issues

The emergence of the Information Society, together with the process of market liberalisation and globalisation, raise new issues for the state and the lawmaker. In the digital age, legal and regulatory provisions are called upon to achieve a balance between two equally important goals:

- The protection of a number of fundamental rights, such the right of access to information, the right to privacy, rights relating to work conditions, intellectual property rights consumers rights in the Information Society,
- The development of a legal and regulatory framework that encourages the production of new products and services and economic development in general in the Information Society.

New goods, new services. A first difficulty is encountered in the definition of the nature of goods and services that are produced, exchanged, and circulate in the Information Society. The rules, the concept and structure itself of legislative content, the law-making process, have all been developed and are adapted to the environment of industrial society. The regulatory mechanisms and basic principles, such as the introduction of licensing systems that were elaborated and proven useful in the sectors of telecommunications and broadcasting, are not always suitable for the regulation and resolution of Information Society issues.

A new legal system for the Information Society? Does the emergence of the Information Society necessitate a complete overthrow of the existing legal and regulatory system? The starting point of our approach should be to strive for an "economical" in terms of the means used. The development of new provisions be itself accentuates complexity and opacity. The introduction of new rules is necessary and useful only when existing ones fail to provide solutions.

Shortcomings of the existing framework. The current regulatory framework presents two shortcomings that hinder and lessen its capacity to regulate in the Information Society: first, it is oriented towards regulating "static" situations that develop and change relatively slow; secondly, it is primarily concerned with the "material", the "tangible" world, while more and more activities involve "intangible" goods and services.

A need for new equilibria. This new reality necessitates the review of information access conditions and of the conditions for the acquisition and use of information. The need for new rules for the protection of data, the protection of privacy, the commercialisation of material protected under intellectual property rights, etc. is obvious. Conflicts undoubtedly result since frequently the pursuit of the exploitation of information is at odds with an interest to protect information or with other rights associated with such information. Solutions are being sought for the best way to balance different interests.

A single regulatory framework for new technologies? Technological development often concerns sectors regulated by special rules. However, the convergence of telecommunications, broadcasting and information technologies is not without consequences for the establishment of rules that regard and regulate the individual sectors, rules that refer and address provisions and principles that are different in each sector.

Convergence is mainly a technological phenomenon with economic repercussions. However, it does not remove differences between the various social goods and values. Technological convergence does not necessarily involve a "convergence of legislation" and the reduction of all rules to a single regulatory approach, irrespective of whether it is about content or it regards its transmission, whether it is about the right to information or the specifications for product quality.

Furthermore, the special characteristics of the markets of each sector should not be ignored either. A radio-television program for instance is not a type of software so that it can be assimilated to it. Even if Information Society is the common basis for individual legislative action in all these areas, convergence should be taken into consideration but also the differences and mainly the constitutional/legislative base and the purpose of individual provisions.

For these reasons, the government is committed to constantly reviewing the regulatory and legislative framework as well as strengthening the role of regulatory authorities on the basis of the constant (and often unpredictable) developments in technology and the international experience.

Legislative intervention or self-regulation? A key role in the development of Information

Society is played by the private sector. So the question is posed whether and to what extent the lawmaker's intervention is necessary or whether the forces and the requirements of the markets should be left to operate unhindered in order to regulate the interests and relations in Information Society.

The demand for deregulation but also the promotion of self-regulation as an alternative to the "traditional rule of law" is understandable, provided that the release from bureaucratic and slow processes leads to greater technological but mainly economic performance of Information Society applications.

The lawmaker's intervention remains however necessary in order to ensure a balance of interests, to secure that the Information Society is regulated by the principles of equality and freedom and to safeguard its democratic structure and orientation.

The changes brought about by the new technologies should not lead to a reversal of the basic principles that govern a democratic state: respect of rights, transparency and rule of law. The rules of competition cannot on their own offer such securities. The protection of free and genuine competition is a necessary condition for the development of the Information Society but it is sufficient in itself for safeguarding political, social and cultural pluralism.

The government is committed to ensuring equal opportunities of access to infrastructure and information, guaranteeing at the same time the conditions for the emergence of a variety of activities and services in the market. It will guarantee the potential entry and participation of all "players" in the industry chain of the Information Society (users, service providers, network operators, etc.). The participation of all actors in the planning, implementation and development of Information Society is of great importance.

In the context of such participation, the usefulness of the elaboration of binding rules by participants themselves is, in conjunction with the relevant existing legislation and implementation mechanisms, a suitable tool for defining, balancing and protecting the various interests. And, often, the elaboration of such rules brings the rule of law closer to the requirements and the expectations of those who participate in the processes of Information Society and increases trust.

The regulatory model that befits the Information Society is not therefore one-dimensional. It is made up of the general legislative framework defined by Parliament, it is supplemented by the individual rules set by the Administration or independent authorities to whom the supervision, regulation and control of activities relevant to the Information Society has been assigned (National Radio-Television Council, Competition Committee, National Committee on Telecommunications, Personal Data Protection Authority) and it is completed with rules set by private sector entities through self-regulatory commitments.

11.2 Access to information and privacy protection

Freedom of information and privacy protection. Freedom of information and privacy protection are inherent characteristics of the democratic structure and organisation of society. These aims are treated -and often are- as conflicting. They are however incorporated in a regulatory system with communication as its point of reference. They form part of a comprehensive attempt to regulate the use of information and the organisation of information channels and flow in society. At the same time, they are part of a process for balancing power, public and private, political, economic and social.

According to the new constitution (Article 5^{A}/par.1): "Every person has the right to information, as the law ordains. Limitations to this right may be imposed by law only insofar as these are absolutely necessary and justified for reasons of national security, fighting crime or protecting the rights or interests of third parties"

Access for all to communication and information services. Citizens' ability to participate in matters of public interest presupposes that they have access to information sources. The availability of information, the access to information sources is the foundation of a pluralistic democracy since only an informed citizen can be an active citizen. Information Society constitutes, in this context, a part of "open society". The trend towards the Information Society should not lead to inequalities and "illiteracy", to discrimination and distinctions between information haves and have-nots.

An overall regulatory framework for access to communication networks. The right of access to public sector information, secured under law 1599/86, has been reaffirmed and specified with the provisions of Law 2690/99. The lawmaker, starting from the constitutional right of the citizen to be informed, will further secure, via institutional, regulatory and administrative measures, equal access to information, to the

transmission and reception of information and in particular will create a complete regulatory framework for access citizens to communication networks and to the new communication and information services.

The state is called upon to safeguard and also to organise everyone's right to a minimum of access to the network. A first step would be the enhancement of training and familiarisation of citizens with the comprehension and use of the new communication and information services.

Special emphasis is put to safeguarding freedom of expression. In the framework of communication and information services, there will be a re-evaluation of the content, guarantees and conditions (institutional, actual and organisational) for exercising this right, and especially the exercise of press freedoms in electronic mass media.

Privacy and citizens rights in the Information Society. A constituent element of the Information Society is the collection and exploitation of information, including information relevant to individuals, the so-called personal information or personal data. The rapid development of technological advances, the use of personal information by the state and private entities, involves many risks for private life, rights and personal freedoms.

The revised Constitution now expressly enshrines the constitutional right to protection of personal data. According to the new article 9A, "Every person has the right to protection against the collection, processing and use, particularly by electronic means, of his personal data, as the law ordains. Protection of personal data is assured by an independent authority that is set up and operates as the law ordains"

The protection of information that the lawmaker is asked to secure is a prerequisite for a democratic state based on freedom of action and participation of its citizens and on the exercise of their fundamental personal freedoms without their actions, behaviours and habits becoming the object of recording, entry and exploitation by third parties.

Privacy in Internet. The Internet has started to change the manner we live and communicate, the manner we think and operate as citizens, professionals workers, and consumers. The Internet is evolving into a medium of mass communication and transaction while at the same time it changes from a "closed" forum for the exchange of views and information to a world wide "bazaar". Users are however frequently unaware of the risks to privacy that are involved, since each "visit" and "surfing" on the network leaves "digital traces".

Cyberspace is not an area outside the law. The policy for Internet is being shaped based on clearly defined principles and values. In this context, and without prejudice to the protection of interests such as the elimination of unlawful conduct, the possibility of using services provided via Internet anonymously and/or under a pseudonym is being considered as well as is the provision of information and the safeguard of other rights of users.

Legislation on the protection of data of a personal nature

In 1997 the Greek Parliament passed Law 2472/97 "on the protection of the individual against the processing of data of a personal nature". The foundation of the legislative intervention is the right of people to have knowledge on who, what and for what purpose processes information relevant to them and to (co)-decide themselves on what personal information should become known to their environment.

The protection system introduced by Parliament under Law 2472/97 is based on the following principles:

- The processing of personal information is permitted only in the cases defined in a legislative and binding manner by the Parliament
- Processing is allowed only for legitimate, lawful and specialised purposes that are known to the citizen
- New citizen rights are recognised and consolidated so that citizens may defend themselves against violations of their private life and personality (right to prior information, correction, indemnification).
- A Personal Data Protection Authority was established having as scope the supervision of compliance with the relevant legislation, with broad powers. This independent Authority supports the citizen in the protection of his rights and interests against the processing of information relevant to him.
- This Authority is now in its fourth years of operation, and the initial results of its work for the protection of personal information are already visible (e.g. rules for the codification

of TEIRESIAS S.A. data, protection of employee information)

- The provisions of Law 2472/97 were supplemented by Law 2774/99 on the "Protection of personal data in the telecommunications sector". This law entrenched important rights enjoyed by telecommunications services subscribers and users, such as the right to refuse unwanted calls or to be left off electronic lists if desired.

Government policy is based on the conviction that citizens' rights and interests that are protected in the off-line world should be equally protected on-line.

The existence of adequate guarantees for the protection of private life and private freedoms of citizens does not concern solely the democratic character of the post-industrial age. Such guarantees are crucial for the participation in the flow of information and transactions and are therefore of vital importance to the establishment of confidence and broad trust in the use of world-wide networks.

11.3 Protecting consumers rights

Loss of consumers' anonymity. The rapid development of electronic commerce involves major changes in consumer habits and behaviour. Networks are transformed from means of information flows to markets. Products and services are offered, marketed and distributed via the new media. Marketing methods change radically: approaching the consumer via virtual reality is more direct and easier than approaching an anonymous customer in a shop. The anonymity of the traditional consumer shrinks further as a result of tele purchasing and tele-payment possibilities and the broad use of credit and smart cards.

Aggressive advertising through the new technical media, the "quality" of the new products ordered and/or supplied in a digital manner, the internationalisation of transactions and the lack of information about the new facilities and their consequences increase the insecurity of consumers. Consumers' protection is one of the most serious issues raised in connection with electronic transactions or the use of the new technologies for sales promotion.

Legislation of consumer protection

Law 2251/94 on the "protection of consumers" established individual protective provisions and rights for consumers:

- It is stipulated that the use of communication technologies for the conclusion of contracts at a distance should be undertaken so as not to infringe upon consumer privacy.
- It is prohibited to use, without consumers' consent, communication techniques such as the phone, automatic dialling, fax, electronic mail or other electronic communication media for soliciting contracts.

At the same time, Directive 2000/31/EC is in the process of being adopted into domestic law. This directive entrenches, among other things, extensive consumer information rights with regard to e-business services in order to guarantee network security and consumer confidence.

One very important initiative is the "Decalogue of the Consumer (2001)" (http://www.ebusinessforum.gr/dekalogos/), a non-binding text drawn up in the framework of the eBusiness Forum and designed to inform and protect the consumer in the digital economy.

The government's position, as expressed in Law 2251/94 on "consumer protection" has been innovative and has created the basis for the protection of consumer rights in the Information Society.

The governing principle behind the actions of the state is that the new technologies, the convergence and the possibilities offered should not reduce the rights of consumers and prejudices their interests. Protection under the law cannot vary depending on whether and what media or "platforms" are used.

Consumer protection irrespective of the consumption "platform" concerns both the position of the consumer as a contracting party as well as other fundamental consumer interests such as the protection of privacy, the liability of the service provider, billing transparency, access to courts or other bodies of jurisdiction in the case of litigation with foreign service providers as well as the defence against unlawful and restrictive transaction conditions.

The Directive on Transparency adopted recently by the European Commission and soon to be transferred in domestic law, secures consumer protection by introducing a mechanism under which it is specified that the complaints for damages suffered as a result of false or misleading information or services will be reviewed by the authorities and the courts of the

country having jurisdiction over the service provider.

11.4. Protecting intellectual property

The protection of intellectual property is one of the areas in which technical and legal solutions associated with the conditions of use of information are of major importance. The traditional role of copyright, to support the creation of original work and protect the author, is sorely tried by technical developments, the appearance of many "authors", the digital exploitation and propagation of works, since the easiness and accuracy of "duplicating" eliminates the distinction between original and copy.

Copyright and relative rights play an important role for the encouragement of the availability of a critical mass of content in world-wide information networks, given that the new products and services will be based on or will transfer protected material. The digitisation and convergence of the communication and computer technologies affect significantly the manner in which works and other protected materials are created, published, propagated and duplicated. Such developments impose a review of the framework for intellectual property protection.

The assignment and registration of the so-called "domain names" is also a matter that needs to be dealt with. Mainly for the sake of protecting competition -and in the light of international developments- the "first come, first served" principle should be abandoned for a procedure that would resolves competition conflicts and falsifications. Negotiations on domain-name assignment are being held on an international level and Greece is participating along with its European partners.

The legislative framework for the protection of intellectual property rights

The existing legislative framework (mainly constituted by law 2131/93) is driven by international trends but its regulatory ability is constantly reviewed in view of the developments in digital technology and with reference to the new products and services that require protection (both in the case of on-line services and of physical content carriers such as CD-ROM, etc.)

The Convention of the World Organisation on Intellectual Property Rights for copyright, and the Convention on audio recordings and performance updates to a significant degree the framework for the international protection of intellectual property. It contains provisions that constitute the basis for a fair environment concerning transactions as regards intellectual property in the digital age and in this respect they are a point of reference for the revision of both EU and national legislation.

The new regulatory framework has been supplemented with Law 2819/99 regarding database protection provisions. This law harmonises national legislation with European Parliament Directive 96/9/EEC, describing the right of the creator and buttressing the intellectual property rights of the citizen.

It should be noted that Directive 2001/29/EC is being processed and will be imminently incorporated into Greek law. This directive will harmonize various aspects of the issue of intellectual property between the member states and will introduce a framework of rules for the digital age.

11.5. Electronic transactions

The use of global networks for business and commercial purposes is constantly growing. An increasing number of transactions and payments are made via computers and the Internet. This development has brought about obvious benefits for firms and for transacting parties in general, but more importantly it has brought about significant changes in the structure itself of economy and employment. The decision on how much and what type of electronic transactions to use is without doubt a decision to be made by firms and their customers.

The duty of the state is to establish a regulatory and legislative framework for electronic transactions, one that is be versatile, responding to the rapid evolution of technology and transactions and allows the free formulation of the contractual relation.

Regulatory matter. The conditions under which electronic contracts are valid and binding upon the parties as well as the considerations on system security necessary for its acceptance and operation, are issues for which provisions should be made. A step towards creating a climate of trust in the system is the establishment of minimum rules and standards for digital signatures that comprise the establishment of Certification Authorities. Digital signatures will be fully recognised as regards formal requirements and acknowledgement.

The legislative framework for electronic signatures. The legislative framework for electronic signatures is already being examined at the level of the European Union, while the relevant issues are at the same time examined

nationally. The new provisions will concern the definition of the main requirements regarding personal reliability, the use of reliable systems and the registration of private keys/digital signatures. Issues of liability are also regulated via the establishment of minimum liability conditions for service providers in connection with the service content.

Cryptography. Cryptography is a prerequisite for establishing trust for users and parties transacting through networks and therefore for the development of electronic transactions. It necessitates however the formulation of a framework that meets market needs and dynamics and ensures trust in the management of public keys through the institution of Trusted Third Parties whose job is the distribution and registration of keys.

Certification. The provision of certification services, connected to electronic signatures, is free and does not require any prior license or permit.

The legislative framework for electronic signatures

Presidential Decree 150/2001 (Government Gazette 125 A) transferred European Parliament / Council Directive 99/93/EC "On the community framework for electronic signatures" into Greek law.

The provisions of the PD deal with the legal consequences of electronic signatures, market access, principles of the domestic market, international aspects, liability of suppliers of certification, obligation to protect personal information, terms in effect for recognized certificates and suppliers, certification services that issue recognized certificates, assurance of the reliability of the creation of a signature and recommendations for the verification of the signature. The EETT in the framework of its responsibilities deriving from the provisions of PD150/2001 is currently in the process of publishing Regulations dealing with matters including:

- provision of Voluntary Accreditation
- ascertainment of conformity of secure provisions for signature creation
- supervision and control of suppliers of certification services established in Greece, and of appointed agencies

In view of the publication of the Regulations and in order to respond as effectively as possible to the requirements being created in Greece by the development of a certification services market, the EETT initiated public consultation on certain matters where it thinks that the views and experience of the market are particularly constructive.

For this Public Consultation the EETT formulated proposals / approaches and asked the interested parties for their opinion on such matters as:

- The terms, obligations and conditions of Voluntary Accreditation.
- The function of the EETT as the top-ranking voluntary accreditor.
- The form of implementation of Voluntary Accreditation.
- The form of implementation of control and supervision.
- The Technical Standards for reliable systems and products.

Seventeen interested parties responded to the EETT's invitation to submit their opinions. The results of this Public Consultation are published on the EETT's website

Taxation and customs issues. Finally, of critical importance is dealing with tax and customs issues associated with electronic transactions. Electronic transactions should not be more or less favoured than conventional transactions. It is, however, necessary (also for reasons of equality in taxation) to establish effective auditing and taxation procedures for such transactions. Dealing effectively with such a problem necessitates international co-operation in order to avoid complications such as e.g. the multiple taxation of companies.

11.6. Labour law in the Information Society

The consequences of Information Society on work and employment are radical. The new technologies do not bring the "end of work", but they do change the structure of companies, the form, conditions and content of industrial relations and the structure of work itself. A the dawn of the telework age, the concepts of work place and time, even the concept of the worker, acquire new meaning.

Such changes should inevitably be reflected in legislative provisions for the smooth operation of industrial relations. The social and legal framework should be adapted in order to respond to the new circumstances. There are two key

considerations for employment law in Information Society: a) the removal of obstacles for the development of new forms of work is necessary, b) the new forms of work should not lead to a deficit of rights and protection for the workers.

In this light it will be necessary to "revise" and supplement both personal and collective labour law as well as matters associated with insurance legislation: legal definition of teleworking and of the teleworker, compensation and social protection, exercising managerial rights in the context of telework, adaptation of the rights of workers concerning representation and participation in collective bargaining, readjustment of the regulations relevant to safety and health, and protection against discriminations in employment.

11.7. A new penal law for cyberspace?

Offensive and criminal behaviour is not unknown in cyberspace. On "information highways" the known forms of crime (fraud, slander, money laundering, infringement of intellectual property rights) find new media, while new forms of unlawful conduct become widespread (hacking, violation of privacy, promotion of unlawful content). Crime concerns a wide range of fields: national security, protection of minors (child pornography), economic crimes (fraud, credit card piracy, money laundering), protection of personality and reputation ("electronic harassment", slander), intellectual property (unauthorised distribution of works protected under the provisions on intellectual property).

Penal law is in principle oriented to criminal conduct and actions committed in the "real world". However, what is illegal outside the network is still illegal in the network. The provision of protection to citizens presupposes constant reviewing of the provisions of law. The main issues to be dealt with are the definition of crimes committed in cyberspace and the definition of penal liability and jurisdiction as it is not always obvious and clear what the applicable law is and which prosecuting and judicial authorities have jurisdiction over the relevant cases.

Problems that require immediate attention is the definition of liability and (effective) sanctions as the communication chain is made up of many links often established in different countries. Due to the decentralised and supranational character of the Internet, these matters must be dealt with and resolved on a supranational level. Greece actively participates in all international fora where cyber crime is discussed.

A Convention on Cybercrime

On 23 November 2001, a Convention on Cybercrime was signed by 26 members of the Council of Europe and 4 non-member states

(http://www.coe.int/T/E/Communication_and_Research/Press/Themes_Files/Cybercrime).

This Convention is an important tool for international collaboration in this domain. The Convention introduces common definitions of cyber crimes (and in fact penalizes certain behaviors, such as for example possession of child pornography material) and incorporates new rules for international communication and collaboration for clearing up these crimes.

Greece has signed the Convention and will be ratifying it. The Greek government for its part is determined to fight cyber crimes and crimes facilitated by the new technologies, at the same time guaranteeing the rights of the citizen in the new digital era.

11.8. Basic principles for the evolution of the law in the Information Society

Technology leads to the transformation of society, the state and the economy. Such a transformation puts to the test not only the regulatory adequacy of law but also the classical models of legal thought and requires their re-orientation from the institutions of the industrial society to those of the Information Society.

In the Information Society every legislative rule is by definition provisional and short-lived. The first difficulty for legislative intervention concerns the uncertainty facing the lawmaker who is asked to establish rules for an object that is unknown and changing at rates and in directions that are not always foreseeable. The rate at which the law is developed obviously falls short of the rate at which technology progresses and often legislative regulations concern previous stages in technological development. The nature itself of new technologies not only precludes "final" responses but also forces constant revisions of regulations and regulatory tools.

Legislative responses transcend national borders. Legislative responses are by necessity provisional given that, among other reasons, network technologies globalise communication and the markets. The Information Society is not confined within national borders. It is therefore doubtful whether national legislation is in a position to regulate effectively many of the matters raised. Inconsistencies and deviations in

the legislation of states may render difficult the application of law even on a national level. Global solutions are being sought even though these are the result of extremely slow and complex processes and, as the product of compromise, often correspond to the lowest common denominator. In all cases, however, international co-operation is necessary, which, even at slow rates, is manifest in areas such as intellectual property or electronic commerce.

Technologically neutral solutions. The need to deal with such problems necessitates finding technologically neutral regulatory and legislative solutions and trying to use new technological applications as tools for the promotion of the implementation of law. In many cases technology may respond to the requirement for protection (of privacy, rights, and intellectual property) and produce new ways of regulating content distribution. Only the combination of legislative and diverse and rights-friendly technological solutions can guarantee the protection of citizens' rights.

Avoiding a fragmentary approach and using flexible, open procedures. In a transition phase, even if extremely fast, there will inevitably co-exist parallel systems of law. However, a "fragmentary approach" should be avoided. In areas where it is ascertained that the existing institutional framework cannot effectively and convincingly solve the problems raised, an innovative approach should be developed that modernises the provisions on existing services and establishes new rules reflecting the technological and economic environment. More important, however, than the content of the rules is to seek a new procedure for their establishment. While always observing democratic principles, fast flexible and open procedures should be sought for law production and application.

Citizens participation. No regulatory framework can substitute for the need to inform citizens on developments, their rights and obligations. Citizens should be active subjects in the process of transition to the Information Society and not passive objects or observers of the process, nor simply consumers of its applications and products.

The universal right to participate in the Information Society is triumphantly proclaimed in the new Article 5A/par. 2 of the revised Constitution, which provides that: every person has the right to participate in the Information Society. And it ordains that the state has an obligation to facilitate access to electronically handled information as well as the production, exchange and dissemination of such information.

12. From goals to results: implementing the strategy

12.1. An action plan with specific implementation mechanisms

The Information Society strategy is accompanied by interventions and mechanisms for its implementation, so that initiatives can be translated into practical benefits for citizens, firms and the society in general in the shortest time possible. Consistency and co-ordination in implementation are of vital importance as is the participation of all parties involved.

Information Society S. A.

Information Society S.A. is a corporation that operates, under the supervision of the Ministry of the Interior, Public Administration and Decentralization, in the public interest and according to private sector economic criteria, without an industrial or commercial character. Its goal is to provide back-up support to the final beneficiaries of the Operational Programme for the Information Society. Specifically, the corporation supports the realization of actions financed by the Programme in a variety of ways. It also aims at:

- the orderly and effective management of human and financial resources
- the timely and efficient completion of IT projects
- the assurance of high quality levels in a cost-benefit framework
- the development of a healthy competition environment in the market

Interventions on many levels. The interventions foreseen relate to institutional and organisational reforms, regulatory initiatives, measures for the contribution of each government department in the overall effort, for achieving overall co-ordination, securing a balanced development of the Information Society over the entire country, participating in international developments, and finally ensuring the participation of the citizens through a process of public dialogue.

As can be seen from the subjects treated in the individual chapters of the report, Information Society issues are horizontal. Each Ministry or supervised entity, as well as each region, has initiatives or actions for the development of information and communication technology and applications. This often results in a lack of co-ordination and in overlapping actions.

Basic principles. As concerns the creation or supervision of mechanisms for the implementation of the strategy for the Information Society, it is useful to formulate certain principles:

- The responsibility for planning, implementing, supervising and evaluating of the results of specific government plans and actions lies with individual Ministries and entities, in accordance with the policy domains entrusted to them. The framework for the liberalisation of telecommunications for example falls within the jurisdiction of the Ministry of Transport and Communications, the supervision of the introduction of IT systems in public administration is within the jurisdiction of the Ministry for the Interior, Public Administration and Decentralisation, the support of firms through the new ICTs is within the jurisdiction of the Ministry of Development, applications in health are within the jurisdiction of the Ministry of Health, etc.
- *The frequently existing shared responsibilities require common action* by all entities having jurisdiction as regards the design, supervision and implementation, either through direct consultations or in the framework of larger co-ordination schemes. For example, matters relevant to electronic commerce are dealt with by the National Committee for Electronic Commerce, the institutional framework allowing electronic transactions with the public administration is designed jointly by the Ministry for the Interior, Public Administration and Decentralisation and the Ministry of Justice, etc.
- *The role of existing supervisory mechanisms that and support decision-making* (Audit Department, regulatory authorities for mass media and telecommunications, etc. are strengthened.
- *Co-operation with the private sector is actively promoted* in a spirit of transparency and well-defined roles, through mechanisms such as the Informatics Council established in the Ministry for Public Administration, the e-business forum and the National Committee on Electronic Commerce under the supervision of the Ministry of Development.
- *Particular effort is being put into the information and education of citizens* in

matters relevant to the Information Society, as well as to their participation in the decision-making process via electronic media, organising meetings on specific issues, etc.

The interventions undertaken or planned for the implementation of the Information Society strategy relate to institutional and organisational reforms, regulatory initiatives, measures for the full contribution of each government department to the overall effort, for co-ordination, for ensuring a balanced development of the Information Society in the country, for participation in international developments and for the participation of citizens through public dialogue.

Partenariat in OPIS

The preparation of the OPIS is the outcome of a two-year process with a broad-based participation, bringing together public and private sector bodies and non-governmental organizations (as provided in article 8 of the Regulations 1260/1999). The main steps were as follows:

- In 1998 the White Paper "Greece in the Information Society: Strategy and Actions" was drafted, presented by the Prime Minister to the Cabinet and published on the Internet (www.primeminister.gr) with observations and proposals from Ministries and private sector bodies.
- In 1999 a series of broad-based working meetings were organized, on the central and regional levels, on the theme "The Information Society in the Regional Development Plan 2000-2006"
- Based on the results of these working meetings, a text on the Information Society sector in the Regional Development Plan 2000-2006 was produced and published on the new Information Society node (www.infosociety.gr)
- Finally, the Operational Programme for the Information Society (OPIS) was prepared and published in draft form on the Internet (www.infosociety.gr) in December 1999 for comments from all potentially involved bodies.

12.2. Institutional and organisational reforms

Re-organising IT departments in the public sector. The IT departments in the public sector need to be re-organised and strengthened so that they can be in a position to support the new applications. In this respect, the role of IT units in each Ministry is strengthened, IT Committees are established, specialised personnel is hired, and the procedures and prerequisites for the employment of public servants in the new environment are being reviewed.

Improving the legislative framework for public sector IT projects. Improved rules and procedures will be put in place so as to accelerate public sector IT projects under conditions of greater transparency, on the basis of specified technical, functional, organisational and administrative standards. The project "Kanon" aims at formulating a framework of common procedures for the planning and monitoring of IT projects. The procedures for implementing such projects will be simplified, outsourcing gradually introduced, together with the elaboration of service-level agreements. The establishment of standardised procedures for the tendering of standardised IT products through prior agreements is also under consideration.

12.3. Regulatory initiatives

Strengthening the role and operating conditions of regulatory bodies. The role of independent regulatory authorities (National Committee on Telecommunications, National Radio-Television Council, Committee on Competition, Data Protection Authority) is being reinforced from an institutional point of view, and their operation is strengthened with better staffing, greater autonomy and sufficiency of funds.

Revising the role of regulatory bodies as technology develops. Technological development leads to the convergence of telecommunication and broadcasting technologies. The government will review the future development of the existing regulatory framework, which is currently characterised by separate supervisory authorities for telecommunication and broadcasting on the basis of developments in technology and the market and international experience.

Reviewing incentives and support mechanisms. A number of existing incentives and mechanisms for the support of pubic entities and private sector enterprises are obsolete and unsuitable for their intended purpose. The government will review such mechanisms in order to achieve more efficiency and effectiveness in the use of public funds, based on the principles of decentralisation of decision-making and of offering to the users themselves, whenever feasible, the option to select

technological solutions.

Improving evaluation procedures. The public sector does not have adequate and reliable procedures for the assessment of the economic and social impact of its actions and initiatives. The result is a lack of information that would otherwise help in setting goals and improving actions and implementation mechanisms.

The government is committed to adopting such procedures within the next three-year period, so that for the financing of each government action on the Information Society the information to be formulated by the proposing entity includes detailed and well-defined goals, alternative implementation means, implementation time-schedule, supervision mechanisms, and assessment procedures.

Establishing an Observatory for the Information Society. There is today a lack of statistical and other information providing a clear picture of the state of affairs as concerns the use and diffusion of ICTs in the economy and society, the problems encountered, and which can assist in defining quantitative targets and in formulating a policy for the future.

The establishment of an Observatory for the Information Society, having as a scope the monitoring, inventorying and reporting of trends in Greece and internationally, is essential in order to improve the knowledge-base on which governmental strategy and actions are formulated. The government will promote the establishment of such an Observatory either as a new independent organisation or as part of an existing research establishment or university specialising in such matters.

12.4. Financing Information Society actions

The economic situation today is characterized by a squeeze on total public expenditures and the need to prioritize and evaluate initiatives on the basis of their effectiveness. In comparison to other state expenditures, the direct utility of Information Society programmes is often not apparent, because the benefits tend to be medium-term and dispersed throughout the economy and society.

This difficulty has in the past frequently led to the marginalisation of initiatives concerning intangible investments for the Information Society, in contrast to other infrastructure or direct support projects, even in cases where the return on other investments was smaller.

The State, recognizing the importance for the future of the country of successfully absorbing the new information and communications technologies, committed itself to financing the Information Society programme.

The principal means for the realization of the programme is the financing made available under the 3rd Community Support Framework, and specifically from the Operational Programme for the Information Society (OPIS), with a total budget of 2.8 billion euros for the period 2000-2006. Actions relating to the Information Society constitute a special unit in the 3rd CSF and are principally advanced in the Regional Development Plan, which is the overall planning basis for the 3rd CSF.

Operational Plans for the Information Society in the Ministries

Operational Programme for the Information Society (OPIS), one important factor is the drafting of Operational Plans for the bodies that will be participating in the Programme. To this end the Managing Authority for OPIS has approved financing for the drafting of Operational Plans in 18 bodies (that is, Ministries and Independent Authorities):

Ministry of Economy and Finance
Ministry of Foreign Affairs
Ministry of National Defence
Ministry of the Interior, Public Administration and Decentralization
Ministry of Development
Ministry of Agriculture
Ministry of Justice
Ministry of National Education & Religious Affairs
Ministry of Labour & National Insurance
Ministry for the Environment, Planning & Public Works
Ministry of Culture
Ministry of Mercantile Marine
Ministry of Transport & Communications

Secretariat-General for Communications
Secretariat-General of National Statistical Office of Greece

ΑΣΕΠ
ΑΠΔΠΧ
ΣΥΝΗΓΟΡΟΣ

12.4. Active participation in international developments

Participation in international discussions. Discussions are currently being held in the international community for the formulation of policy in issues that will greatly influence the future character of the Information Society.

They regard, inter alia, the conditions for the development of electronic commerce, the protection of personal data and the supervision of the market for telecommunication and broadcasting services. Greece cannot be absent from such discussions held in international conferences and organisations. The goals are:

- To actively participate in every official and unofficial discussion and negotiation on the Information Society;
- To ensure that the information on developments in international meetings is communicated in a timely manner to all parties concerned;
- To strengthen the co-ordination and preparation of the departments involved;
- To strengthen Greek participation in European Information Society actions.

The Information Society portal (www.infosociety.gr)

Active citizen participation in the shaping of the Information Society is one of the basic aims of government policy. This site was created to facilitate citizen participation, publishing information about policies, statistics, events and programmes and providing citizens and social partners with a forum for dialogue and the expressing of opinions. This site receives about 9000 visits a month. Analytically, the objectives of the portal are:

- To be a hub for public information on matters relating to the homonymous Operational Programme and about the Information Society in general.
- To be a dynamic and evolving tool for two-way communication with bodies interested in its fields of activity and with the public.
- To provide social groups, private sector companies active in the information and communications technologies field and ordinary citizens with a public forum in which they can express their views and concerns about various important issues relating to the Information Society.
- To constitute a base for the creation (at a later stage) of an Integrated Information System that will use “web-based” applications and will meet the needs of outside two-way communication between the Managing Authority and all the bodies involved in the Operational Programme.
- To provide opportunities for access to all, thus guarding against new forms of social exclusion (e-Inclusion).