Government of the Republic of Slovenia

DEVELOPMENT STRATEGY FOR THE INFORMATION SOCIETY IN THE REPUBLIC OF SLOVENIA

si2010

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Preface

The Development strategy for the information society in the Republic of Slovenia (si2010) is the Slovenian Government's overall political perspective in this department until 2010. The structure of the strategy is made in accordance with the European initiative i2010, which features the European Union's key strategic guidelines. In addition to the EU guidelines, the Development strategy for the information society in the Republic of Slovenia also takes into consideration all relevant national strategic documents, among which we can point out Slovenia's Development Strategy, the National Development Programme 2007–2013 and the Resolution on National Development Projects 2007–2023, which deal with the development and efficient utilization of information and communications technologies as key means in achieving faster growth and development of the Republic of Slovenia.

The purpose of the Development strategy for the information society in the Republic of Slovenia, with the help of efficient usage of information and communications technologies, is to promote competitiveness and productivity, to ensure balanced social and regional development, and to improve the quality of life for society as a whole, as well as for individuals. In order to achieve the set goals, it will be especially important to efficiently coordinate actions on the interdepartmental level in order to achieve the synergetic effect of individual actions in various areas. At the same time, respect for the general operating principles should be ensured, such as safety and privacy, interoperability and open standards, copyrights on the Internet, and inclusion and accessibility. Through efficient coordination, clearly identified areas suitable for investment, and focused, ambitious yet realistic goals, we can achieve results which will bring visible progress in our society's future development. We are currently at a stage of a general distribution of knowledge, economic efficiency and social inclusion –a stage where ICT is becoming an essential part of all services, processes and decisions. Information & communications technologies therefore affect all aspects of society. Here we should point out the need for active collaboration between the public and private spheres, because it is only through efficient collaboration between companies, research and academic and other non-profit organizations and public administration bodies that we will be able to achieve the set goals.

In developing the information society in the following years, we will also need to take into consideration the broader social situation marked by "megatrends" on the political, social, economic and environmental areas. On the political level, we are faced with the challenges of the enlarged European Union with numerous new members; on the economic and cultural level, we are facing the issues of globalization; on the social level we are facing the challenges brought by the ageing population; and on the environmental level we are facing the challenges brought by the lack of available energy sources creating a need for significant increase in energy efficiency in energy consumption, a need for increasing the ratio of renewable energy sources vs. fossil fuels, and a need for coping with climate change. These "megatrends" will be the key factors in determining the goals of the information society in the near future. Together with the other EU Member States, we therefore will have to ensure sustained development not only on the level of the enlarged EU, but also on the global level. This is our responsibility as one of the most developed Member States. We must become a

successful player and participant in the global economy; we must find a way to successfully cope with the problems brought on by the demographic shifts caused by the ageing population trends, where we must dedicate special attention to raising the quality of life and creating an environment which will invite increasing investments, particularly in R&D.

Table of contents

LIST OF ACRONYMS USED IN THE DOCUMENT

Acronym	Short description of the acronym
3G	Third-generation mobile communications
FP7	Seventh Framework Programme
ADSL	Asymmetric Digital Subscriber Line
ADSL2	Asymmetric Digital Subscriber Line 2
AN-SEPLS	Action Plan of Electronic Operation of Local Self-Governance
ARNES	Academic and Research Network of Slovenia
B2B	Business-to-business
B2C	Business-to-consumer
GDP	Gross domestic product
CC	Creative Commons
CIO	Chief information officer
CIP	Competitiveness and Innovation Framework Programme
TRP	Targeted research programme
DID	Information Society Directorate
dLIB.si	Digital Library of Slovenia
NDP	National development programme
DRM	Digital Rights Management
EIF	European interoperability framework
ERA	European Research Area
EU	European Union
CHIP	Central healthcare information portal
G2B	Government-to-business
G2C	Government-to-consumer
GEANT	European multi-gigabit computer network
GPRS	General packet radio service
HSDPA	High-speed downlink packet access
HW	Hardware
i2010	Initiative of the European information society for growth and employment 2010
IDABC	Interoperable Delivery of European eGovernment Services to Public Administrations, Businesses and Citizens
ICT	Information & communications technology
IPv6	Internet Protocol version 6
IST	Information society technology
PI	Public information
IT	Information technology
PPP	Public-private partnership
LAN	Local area network
MDDSZ	Ministry of Labour, Family and Social Affairs
MG	Ministry of the Economy
MID	Ministry of the Information Society
MPA	Ministry of Public Administration
MC	Ministry of Culture
MoESP	Ministry of the Environment and Spatial Planning

MJ	Ministry of Justice
SME	Small and medium-size enterprises
MES	Ministry of Education and Sport
MHEST	Ministry of Higher Education, Science and Technology
MH	Ministry of Health
MT	Ministry of Transport
NRDP	National Research and Development Programme
NSDF	National strategic development framework
OSI	Open Source Initiative
PC	Personal computer
PLC	Power line communication
RFID	Radio frequency identification
ROI	Return on investment
R&D	Research and development
ESLS	Strategy of Electronic Operation of Local Self-Governance
EDSS	Economic Development Strategy of Slovenia
SHDSL	Symmetric high-speed digital subscriber line
si2010	Development strategy for the information society in the Republic of Slovenia 2010
SI-CERT	Slovenian Computer Emergency Response Team
SRA	Strategic Research Agenda
SRP	Strategic research plan
SDS	Slovenia's Development Strategy for 2006–2013
SORS	Statistical Office of the Republic of Slovenia
SW	Software
SWOT	Strengths, weaknesses, opportunities and threats
TP	Technological platforms
TV	Television receiver
VDSL2	Very high bit-rate Digital Subscriber Line 2
UMTS	Universal Mobile Telecommunications System
UWB	Ultra-wideband
EI	Educational institutes
NIS	Network and information security
W3C WAI	Web Accessibility Initiative
xDSL	X Digital Subscriber Line

1 INTRODUCTION

1.1 Purpose and goals of the strategy si2010

When the partnership for growth and employment was published, paving the way for the Lisbon Strategy, the Spring 2005 European Council highlighted knowledge and innovation as the engine for sustainable growth, pointing out the key significance of developing the information society in all areas, including in public administration, in SMEs, and in households/among individuals. The new i2010 initiative, which defines the future framework for developing the information society in the EU until 2010, thus created a need to amend the framework strategy for developing the information society in Slovenia. This is the goal of the Development strategy for the information society in the Republic of Slovenia until the year 2010 (si2010).

In order to develop the information society in Slovenia further, proactive policies are needed to allow us to respond to the fundamental changes in technologies and to enable their integration into products and services, especially from the aspect of digital convergence. On the one hand, the key challenge is to provide interoperable and integrated services on the internal EU market, and on the other hand we face the challenge of how to provide access to these services for all (breaching the digital divide), where we must also take into account the cultural and linguistic aspect. Digital convergence therefore requires political cooperation and readiness to adapt legal frameworks. For this reason the European Commission suggested a new strategic framework, the i2010 initiative – European information society 2010. This initiative promotes an open and competitive digital economy and puts ICT in the foreground as the engine for improving social inclusion, quality of life, economic growth and competitiveness. The key element of the new Lisbon partnership for growth and employment, i2010 is an integrated approach to developing the information society and establishing audio-visual media policies within the EU.

The purpose of the strategy is to define a national framework for promoting the development of the information society in Slovenia by 2010 and thereby to set development guidelines which take into consideration the technological, social and legal frameworks. Based on the i2010 goals, the strategy defines appropriate operating principles and concrete areas of activity, and leaves detailed treatment of individual areas (concrete objectives, indicators and actions) to individual sectoral strategies and action plans prepared by the relevant ministries on the government level. This ensures the necessary standardization and focused operation of all factors, a condition for balanced and sustainable future development.

The main goal of the strategy is to promote further development of the information society, which will significantly increase innovation and the competitiveness of the Slovenian economy and society, the number of high value added jobs and the quality of life, as well as allowing for balanced regional development. In this context it should be pointed out that innovation and development of the information society means innovation in the sense of R&D, as well as innovation in the organizational and business sense.

1.2 EU policies

Support for sustained development and implementation of the information society received wider recognition in the resolutions of the 2000 Council of the European Union in Lisbon. Based on the adopted goals, the action plans eEurope 2002 and eEurope 2005 were developed, laying down the actions required in order to achieve the goal of faster development of the information society as a key factor enabling the EU to become a more competitive and dynamic economy by the year 2010, which would in turn enable sustainable development and social inclusion of all its inhabitants. The eEurope 2002 action plan spanned three basic priority areas: 1. cheaper, faster and more secure Internet; 2. investments in people and knowledge; and 3. promoting use of the Internet. Despite the ambitious goals, the eEurope 2002 action plan was realized almost entirely. The eEurope 2005 action plan was adopted in June 2002, and its key guidelines were: 1. setting up a secure broadband infrastructure; 2. promoting e-business; and 3. promoting public e-services (e-health, e-education and e-administration). Although the action plan was implemented relatively well, there was a small change in 2004, which had no significant effect on the structure of the action plan. The change was intended mainly to encourage political support for implementing the set objectives from the action plan and to encourage development of e-services to meet the needs of users.

At the spring meeting of the EU Council in March 2005, the Member States again expressed the need for establishing an inclusive information society based on ubiquitous use of ICT in public services, SMEs and households. For this reason a new initiative was adopted in the interest of establishing a single information area. It aims to promote research and development in ICT in future years, as well as to develop e-content, and to provide network and information security, as along with convergence and interoperability.

The need for a new initiative was based on three main reasons:

- **New challenges of developing the information society**, which is moving from the "pilot stage" into a ubiquitous implementation stage in accordance with the level of ICT development, which is becoming increasingly mature and global. In recent years, information & communications technologies changed not only from the technological aspect (3G, IPv6, convergence, nanotechnologies, new generations of computers, ambient intelligence, etc.), but also from the economic and business aspects. We bear witness to a better-regulated internal market and to the establishment of various forms of public-private partnerships for construction of networks and provision of services.
- **Completion of the eEurope 2005 Action Plan**.
- **Changes to the Lisbon Strategy**, where ICT plays a key role in the transition to a knowledge-based society. Integrated guidelines adopted at the time of the change encourage Member States to adopt new priority tasks for the information society in their national reform programmes.

On the basis of extensive analysis and after consulting interested parties about preliminary initiatives and instruments, the European Commission proposed three tasks for the European information society and media policies, combined in the common **i2010 initiative**:

- final establishment of a **single European information area** which promotes an open and competitive internal market for the information society and media;
- increase of **innovation and investments** in research in ICT in order to encourage growth and increased numbers and quality of jobs;

- establishment of an inclusive **European information society** which promotes growth and employment in a manner consistent with the principles of social inclusion and sustainable development, and which favours higher-quality public services and the quality of life.

The European Commission prepared the following actions in order to implement the i2010 initiative:

- **Single European Information Space**:
  - review of the regulatory framework for electronic communications, including the definition of an effective strategy of spectrum management
  - establishment of a single internal market for the information society and media services
  - constant support for the establishment of European e-content
  - specification and implementation of the strategy for a secure European information society
  - specification and support of focused actions related to interoperability, especially digital rights management
- **encouraging innovation and investments in ICT:**
  - 80% increase in the support of the Community for research and development in ICT by the year 2010; the same should apply in Member States
  - focus on strategic research in the field of ICT within FP7
  - research and expansion initiatives to eliminate bottlenecks, which require organizational and technological solutions
  - implementation of supplemental measures to encourage private investment in research and innovation in ICT
  - inclusion of the information society in all of the Community's strategic guidelines on cohesion 2007–2013
  - definition of a new e-commerce policy to eliminate technological, organizational and regulatory barriers which prevent SMEs in particular from taking advantage of ICT to a greater extent
  - support for development of new work methods which strengthen innovation in companies
- **ubiquitous information society:**
  - European initiative on e-inclusion
  - action plan on e-government and strategic guidelines for ICT-based public services
  - pilot projects on the operative level to test technological, regulatory and organizational solutions for online access to public services
  - establishment of three leading initiatives for the quality of life

Efficient implementation of ICT policies on the national level and EU level is crucial for accelerating the growth of the economy and increasing productivity, thereby promoting the pursuit of the Lisbon goals. The responsibility for implementation of the strategy is shared, and it requires that appropriate and immediate action be taken in all Member States, EU bodies and their economies. In order to achieve development of ICT in Europe and to better use the opportunities provided by ICT, political will is needed on the highest level. The Communication of the European Commission on i2010 lists guidelines for preparing national programmes, while leaving the Member States a great deal of flexibility in preparing the

programmes and determining the national priority tasks. The European Commission will monitor the implementation of i2010 and publish progress reports on an annual basis. Particular attention will be devoted to reviewing the national reform programmes to pursue the Lisbon goals and adequate inclusion of priority tasks in the field of ICT.

1.3 Slovenia's policies

The area of developing the information society in the 2001–2006 period was defined as a horizontal priority task stemming from the Economic Development Strategy of Slovenia (EDSS, IMAD 2001). In the EDSS, the transition into a knowledge-based society was defined as "a fundamental mechanism to pursue the goals of increasing complex competitiveness, which requires support from the development policies of human resources, the labour market and employment, information society development and R&D policies". On this basis, the Slovenian Government prepared the National Development Programme for 2001–2006 and the Single Programming Document for 2004–2006, and established the Ministry of the Information Society (MIS), which was initially entrusted with the mission to implement the horizontal/transversal principle of considering information society development in making departmental policies within the Slovenian Government. MIS combined two areas: the area of infrastructure (post, e-communications, broadcasting) and services (information society applications). In the spring of 2003 the Slovenian Government established a Slovenian National Strategy on the Information Society for 2003–2006, which followed the action plans of eEurope 2002 and eEurope 2003+. On that basis the Government prepared a number of actions funded from the national budget: public access points, e-business, e-government, e-content and targeted research programmes. It also supported the incentives for the ICT sector extended by EU programmes – eContent, IDA, eTEN, Secure Internet, MODINIS – and those funded through Phare pre-accession aid for economic-social cohesion – lifelong learning and computer literacy of the unemployed.

In 2004, a reorganization of the European Commission and its directorates took place on the EU level. Thus the media sector was appended to the DG Information Society, which was reformed as the DG Information Society & Media. As part of the reorganization of the Slovenian Government in 2004, MIS was dismantled as an independent ministry, where the area of the information infrastructure passed under the jurisdiction of the Electronic Communications Directorate (DEK) at the Ministry of the Economy; development of e-government services, along with the tasks of the Government Centre for Informatics, passed under the newly established Ministry of Public Administration; the area of public information passed under the Ministry of Public Administration (legislation) and the Information Commissioner's Office (supervision of implementation of legislation); development of the information society in other areas (development of e-services and e-content, provision of e-inclusion, support for R&D in ICT, etc.) and its coordination passed under the Information Society Directorate (DID) at the Ministry of Higher Education, Science and Technology.

For the 2006–2013 period, further development of the information society is dictated by the Slovenian National Strategy for 2006–2013 (SRS), adopted in 2005, which specifies an "increase in global competitiveness through promoting innovation and entrepreneurship, spreading the use of information & communications technologies, and through efficient modernization and investments in training, education, learning and R&D" as one of the national development goals for this period. At the same time, the topic of the information

society implicitly relates to all key priority development tasks and reform actions based thereupon, as defined in the Framework of Economic and Social Reforms for Increasing the Welfare in Slovenia.

Based on these policies, individual bodies have already prepared plans for the future development of individual sectors, which also include individual fields of the information society. These are:

- e-Health 2010 – Strategy of computerizing the Slovenian healthcare system 2005–2010 (Ministry of Health);
- Strategy of transition to digital broadcasting (Ministry of the Economy);
- Strategy of the Republic of Slovenia for introducing fixed wireless systems on the territory of the Republic of Slovenia (Ministry of the Economy);
- Strategy of developing broadband data networks in the Republic of Slovenia (Ministry of the Economy);
- Strategy of e-government for the period 2006–2010 (SEP-2010) (Ministry of Public Administration);
- National strategy of e-learning 2006–2010 (Ministry of Higher Education, Science and Technology).

At the same time on the national level, the points of origin of the National Development Programme for 2007–2013 and the National Strategic Reference Framework for 2007–2013 were being prepared in order to take advantage of funding through structural funds. Here areas relating to the information society represent priority development tasks in operative programmes for obtaining funding from the European Regional Development Fund and the European Social Fund.

This strategy will connect and harmonize the priority tasks and activities on the national level, allowing pursuit of the adopted goals of the European and national development strategies.

2 SITUATION OF THE INFORMATION SOCIETY IN SLOVENIA

2.1 Assessment of the situation

The situation of the information society in the Republic of Slovenia ranks Slovenia at the EU average. A comparison of indicators reveals that we are exceeding the EU average in certain areas, and in numerous other areas we fall below the EU average.

In broadband access, cable access has represented a share of as much as 40%, well above the EU average, where this share is 20%. This is the consequence of cable network development and the low popularity of xDSL lines in Slovenia. However, in recent years this has increased due to the entry of new providers on the market. In broadband access, the number of ADSL lines, cable networks and other technologies has increased (9.85 lines per 100 inhabitants). The number of ADSL lines greatly increased in 2005 and has continued to increase, and the share of competitive providers on the market remains around 8%. According to Eurostat's 2006 indicators, we made great progress in broadband access to households in recent years, as in 2004 only 10% of all households had broadband access, while today the number of households with broadband access has risen to 34% (the EU average is 32%). Despite the decreasing trend, narrowband Internet access is still relatively popular in Slovenia (20% of all households) and there are 12 operators active on the market, none of which holds a majority share. The level of mobile telephony usage is traditionally high, as mobile communications control the majority part of the market with a 44% share of the income and 90 lines per 100 inhabitants. This level of development ranks Slovenia among the top EU Member States (the EU average is 87). The number of subscribers is rising steadily, and the ratio between subscribers and prepayers is improving. The two largest carriers provide GPRS services, which already comprise 5% of all services on the market. The leading carrier, Mobitel d.d., also began to market UMTS services in December 2003. Two carriers are active in the area of mobile public radio services (GSM, DCS, UMTS).

From the aspect of access provision, there is competition in all segments of the electronic communications market, although the level of competition is still relatively low in certain places (landline telephony, xDSL, internal calls). There is significant competition created by providers of VoIP services and carriers of international mobile networks operating international call mediation services. In July 2004 international telephony carriers began to offer their services on the basis of carrier selection and preselection options.

The government equity share in Telekom Slovenije, d.d. (the subsidiary companies are Mobitel d.d. and Siol d.o.o.), the strongest carrier on the electronic communications market, represents an almost two-thirds share. Privatization of the predominant carrier has not yet been carried out due to the unfavourable market situation in recent years, which has made sale of the equity share at a suitable price impossible. In 2005 a special government privatization taskforce prepared a proposal for further privatization of Telekom Slovenije d.d. In 2006 the shares of Telekom were listed on the Ljubljana Stock Exchange.

Official data from a survey carried out by SORS (2006) provide an insight into the situation regarding the use of ICT and the Internet. According to these data, 61% of all households have a computer, and 54% of all households had Internet access as of the beginning of 2006. In the first trimester of 2005, 56% of the population belonging to the 10–74 age group used the Internet on a regular basis. A particularly large share of users can be found among the young, as a Eurobarometer survey showed that 58% of all parents report that their child is using the Internet, and in a survey carried out by SORS, the share of Internet usage in the 10–15 age group was as high as 99%. On the other hand, we see the issue of exclusion in Internet usage, particularly in the older population group (11% in the 55–74 age group) and uneducated (25% of people with lower education levels). While there is a good general coverage of access and usage, more attention will be needed in the area of reducing the digital divide, which is quite large in terms of the regional, educational, economic and social aspects. This indicates that the Slovenian population is divided into two groups, one of which is cut off from transitioning into the information society.

The situation of ICT and Internet usage is also important for business. In Slovenia online business (B2C, B2B) is still in the initial stages of development. According to a SORS survey (2006), individuals show low Internet usage for e-shopping – only 12% of the population (aged 16–74) has already partaken of e-shopping. In addition to their lack of interest in this type of shopping, Internet users have voiced concerns about security (24%), privacy (21%) and reservations regarding the delivery and return of goods (17%). At the same time, 73% of regular Internet users have used the Internet to seek out information about goods and services (seeking pre-purchase information), which indicates a relatively high potential for e-shopping. A similar picture can be seen with companies, where as much as 96% of companies with more than 10 employees have access to the Internet (SORS, 2006). Companies use the Internet mainly for e-financial services (89%) and to monitor the situation of the market (73%). Only 62% of all companies with 10 or more employees had a company website in 2006, of which the majority (90%) used these websites to present their products and services; half of them provided access to catalogues and prices of products/services, and 29% offered post-purchase services (e.g. providing answers to frequently-asked questions, customer services, etc.). Only 9% of companies employing 10 or more persons operated online shopping services in 2006, while 21% of companies (with Internet access) stated that they have made use of Internet shopping in 2006.

There is room for improvement in the area of e-commerce in Slovenia, although this does not depend only on Internet access itself. One of the key conditions is an adequate support information infrastructure, which comprises both hardware and software, and at the same time requires appropriate organization and business processes, as well as the management and constant maintenance thereof. The SORS survey (2006) shows that in the first trimester of 2006 most companies (97% of all companies employing 10 or more) have used computers in their work, and 78% of all companies have a wired or wireless local area network (LAN), while intranet was only used in 27% of all companies and extranet was used in 13% of all companies. Ninety-four percent of companies employing 10 or more which had Internet access in the first trimester of 2006 protected their systems using antivirus software, and 71% used firewalls. From the aspect of the infrastructure for Internet access, the general situation in companies is not as bad as suggested by the Situation of Business Informatics in Slovenia Survey (2006). This survey confirms that the coverage of technology needed for Internet access is excellent in over 70% of companies; however, the situation in the segment of IT required for connectivity of operations is much worse (excellent coverage in the area of

document management systems, SCM, CRM, BI, ERP lower than 10%). Studies have shown that e-business in companies is mainly based on electronic data interchange, and it does not include internal and interorganizational business processes. Companies generally maintain the functional form of organization and are only gradually transitioning into the process form. The focus is mainly on infrastructure and support to business operations, and less on the opportunities for competitive advantages offered by IT. This shows that the CIO was a member of the top executive management or member of the board of directors in a company only in 14% of the cases in Slovenia (39% abroad), and investments in computer technologies, on average, were only 1.46% of net profits (Gartner 2002: EU 5.5%, USA 7%).

From the aspect of ICT adoption and ICT use, the European e-Business Readiness Index (2005) ranks the status of e-business in Slovenia on par with the EU average. This allows for a relatively successful and mature ICT sector, which in turn allows for the entire spectrum of services and products (hardware, software, technological and business counselling, etc.) required to set up the necessary ICT infrastructure in companies. At the same time, the ICT sector is also highly development-oriented, as it comprises all of the world's top IT providers, as well as local companies developing software, hardware and telecommunications equipment; this provides adequate knowledge needed for successful future development. According to the IDC survey, the ICT sector reached a total market value of EUR 1.556 billion in 2006, where IT services represented 12.8%, telecommunications services 42.6%, package software 6.5%, hardware 17.5% and telecommunications equipment 20.5%. IT comprises 90.8% of companies out of the entire ICT sector (1,143 companies, Slovenian Chamber of Commerce); it employs 60.8% of the workforce and generates 46.3% of the revenues of the total ICT sector. It is important to point out that in 2004 the added value per employee in the ICT sector was almost three times higher than in the total economy, where expressed as a percentage of revenues the highest value was noted in software development (50.2%) and IT (42.3%), followed by telecommunications services (46.4%; IDC, 2006).

The array of services offered in the ICT sector is therefore modern, diverse and of high quality. However, there is a deficiency in the area of e-content provision. Especially notable is the lack of quality e-content in the areas of e-health, e-learning, cultural heritage, e-business (for SMEs), e-environment and e-content for providing information and support for consumers. At the same time, not enough emphasis has been placed on the establishment of a development environment for e-business and e-services, especially from the aspect of interoperability and open standards, which would enable the integration of now separate and unconnected systems, as well as development of new, diverse and innovative products which would encourage the creation of suitable competition on the market, ultimately giving the end-user the freedom of choice. In the area of cultural heritage, we are facing an increasing need for digitization of Slovenian cultural, scientific and educational texts, and creation of original digital works. In the segment of the environment, the problems noted mainly involve insufficient computerized integration and coordination of individual records and adopted regulations to increase efficiency in preparing spatial planning acts to improve management of the environment; another issue was insufficient access to spatial planning data and information relating to the adopted spatial planning acts via ICT service systems.

The level of development of e-government services in Slovenia is best seen by looking at EU measurements in the segment of e-government, where Slovenia went from 15th place in 2004 to 7th place in 2006. This achievement is mainly due to the focused strategic development of e-government on the basis of the Strategy for electronic transactions in the public

administration of the Republic of Slovenia for the period 2001–2004 (SEP-2004), the Strategy of e-government of the Republic of Slovenia for the period 2006–2010 (SEP-2010) and the Strategy for the electronic operation of local self-governance (SEPLS). The state administration will reduce the deficiency in the development of local e-government by taking a more active role in implementing the Action plan for the strategy of electronic transactions in local communities (AN-SEPLS).

According to the network readiness index (the degree of preparation of a nation or community to participate in and benefit from ICT developments) published by the World Economic Forum, Slovenia was ranked 35th in 2005 and 2006 among 115 included countries, dropping 3 places from its standing in 2004 and 2005. The most recent study, which was published in 2007, shows that it has again climbed up five places to 30th. The most critical ICT usage areas are public administration, the political environment, legislation, market environment and business use.

2.2 SWOT Analysis

In order to pursue further development of the information society in Slovenia, in line with European guidelines and national priority tasks, it is essential to understand the characteristics of the environment and society which affect this development. In Slovenia, we face certain challenges in the information society department:

- low level of competition in certain electronic communications markets, e.g. leased lines, broadband networks and internal calls in landline telephony networks;
- poor broadband network coverage of rural areas;
- urgency of transition to digital broadcasting;
- low use of ICT in the learning process and low knowledge and skills in this regard;
- insufficient availability of Slovene language e-content and e-services in certain areas (e.g. science, education, culture, e-business, customer support, etc.);
- provision of adequate digital data archival systems in order to ensure long-term preservation of digital heritage;
- inadequate implementation of e-business technologies in companies, particularly SMEs;
- insufficient systematic implementation of interoperability and open standards in order to ensure interconnectivity of systems and user software;
- insufficient knowledge and trust of the population in e-commerce;
- low usage of e-government services by individuals.

Further development will depend on the strengths, weaknesses, opportunities and threats which lay down the current national capacities for successful further development.

SWOT Analysis

STRENGTHS	WEAKNESSES
• comparatively high level of ICT penetration (Internet users, mobile telephony) compared to EU countries • relatively fast development of electronic communications • digitized network-to-network switches (100%)	• low level of competition on some ICT markets • relatively slow development of electronic communications services in relation to the demands of the economy • offer of electronic communications services is focused

• gradual liberalization of the electronic communications market • Slovenia's geographic location • relative efficiency of the national telecommunications carrier • high levels of investment in telecommunications infrastructure in recent years • public utility company, which provided basic electronic communications services in the past on the level of the entire state • capable ICT on all levels (HW, SW, TK) with the full spectrum of knowledge needed for development and implementation of e-services and e-commerce • relatively high level of knowledge and skills regarding the introduction of IT and e-commerce in companies	on economically stronger regions (poor broadband coverage of remote areas) • narrow scope of universal services (as allowed by EU regulations) • uncertainty in the area of financing universal services • low ICT use in the learning process • deficient availability of e-content and the consequent low number of available online public sector services for companies • insufficient diversity of available Slovene language e-content and e-services in certain areas (e.g. science, education, culture, e-commerce, customer support, etc.) • insufficient support for introducing e-commerce into companies and public institutions (healthcare, judicial system, etc.) • lack of connection of individual IT systems due to insufficient interconnectivity
OPPORTUNITIES	**THREATS**
• Slovenia as a crossroads for electronic communication routes for neighbouring states • broad-scale introduction of e-commerce in the B2B and B2C segment (particularly SMEs) in order to achieve a significant increase in productivity, decrease in expenses and improvement of competitiveness • research and development of innovative niche IT products and services based on good proprietary knowledge of Slovenian ICT in the framework of national ICT technological platforms • development and establishment of pilot interdisciplinary e-services and products from the aspect of testing the use and integration of various IT technologies and from the aspect of introducing innovative services for various users • connecting the Slovenian cultural environment and increasing and facilitating access to knowledge by establishing a central Slovenian language website allowing access to Slovenian scientific, educational and cultural e-content	• placement of main electronic communication lines around Slovenia • danger of social stratification as a result of the digital divide • concentration of the population in cities • disinterest in Slovenia by multinational corporations • loss of competitiveness of our economy as a result of the failure to introduce ICT and e-commerce in companies • loss of security, privacy and trust in the Internet and the consequent loss of its commercial potential • loss of ICT R&D capacities due to the globalization of R&D activity and global competition • loss of the digital cultural heritage due to the improper system for archiving digital objects

Table 1: Strengths, weaknesses, opportunities, threats

3 DRAFT STRATEGY AND STRATEGIC GOALS

The structure of the si2010 strategy complies with the i2010 guidelines, enabling a clear connection between EU and national priority tasks. This allows a better overview of the field of activity and consequently provides for more efficient measurement of the effects of these activities. The overview of the structure is shown in the figure below. The strategy comprises three basic areas of implementing measures (verticals) which relate to the basic i2010 priority tasks, and six operating principles – each from the aspect of an individual challenge – (horizontals). The anticipated measures will take these into consideration.

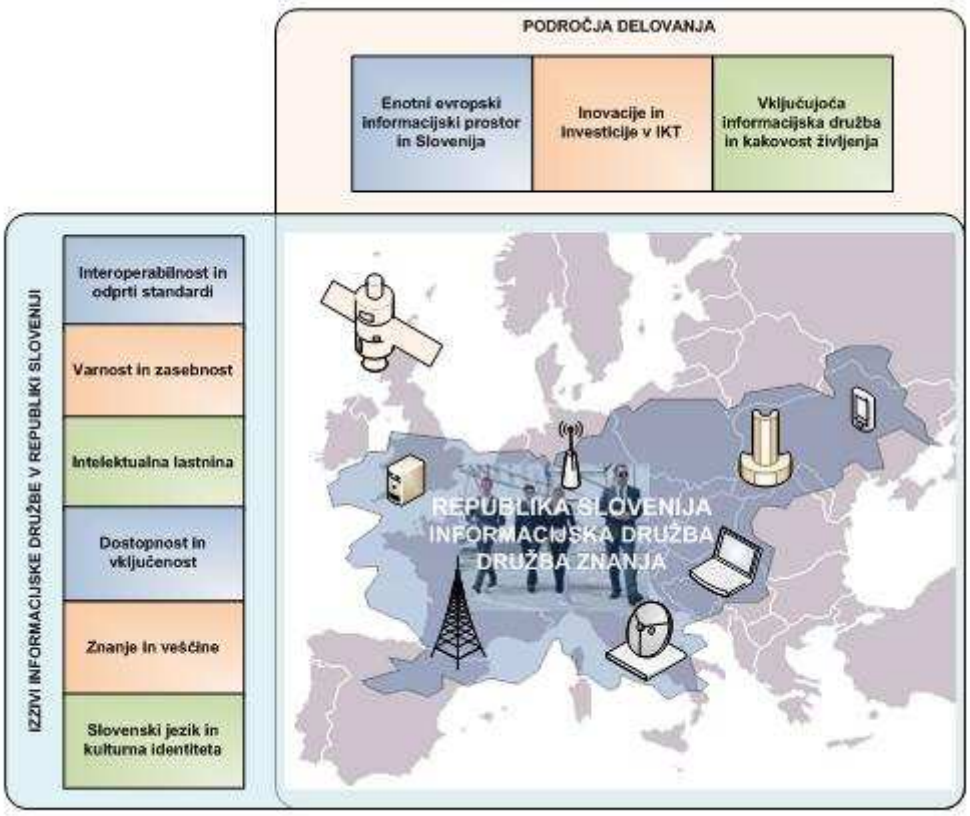

Figure 1: The structure of the si2010 strategy, which examines the information society and knowledge-based society in three areas of activity and from the aspect of multiple horizontal operating principles.

With regard to the strategy, the common strategic goals of the si2010 strategy have been determined, as shown in the table below.

SINGLE EUROPEAN INFORMATION SPACE AND SLOVENIA		
1.1	broadband accessibility	to allow the population access to the broadband electronic communications network
1.2	transition from analogue to digital broadcasting	carry out the transition from analogue to digital broadcasting
1.3	e-business	provide the infrastructure to allow the introduction and use of e-business in all companies and institutions in Slovenia
INNOVATIONS AND INVESTMENTS IN ICT		
2.1	scientific research infrastructure	establish the research and educational infrastructure for high-capacity connections
2.2	technological platforms	establish an efficient research environment which fosters collaboration between research institutions, the economy

		and users of ICT
2.3	R&D and implementation projects	support for R&D activities in ICT aimed at developing globally competitive innovative products and services
2.4	supporting the development of solutions based on open code	provide adequate development and introduction of solutions based on the open source principle, in all spheres of public interest
2.5	European programmes	support successful collaboration of Slovenian partners in European programmes
AN INCLUSIVE INFORMATION SOCIETY AND THE QUALITY OF LIFE		
3.1	e-content	increase the development and use of Slovene language e-content
3.2	e-education	establish an efficient and computer-supported national education system
3.3	e-culture	increase access to Slovenian cultural heritage in digital format
3.4	e-health	establish an efficient, adaptable and modern healthcare computerization
3.5	e-government	provide citizens and companies with user-friendly electronic government services to support all life situations
3.6	e-justice	to ensure complete computerization of judicial procedures and the appropriate infrastructure for efficient administration of justice
3.7	e-transport	increase the use of ICT to support rail, road, air and maritime transport
3.8	e-environment	provide access to all up-to-date spatial data via one website
3.9	public access points	provide the entire population with access to the Internet and e-content
3.10	e-inclusion and e-accessibility	provide all population groups equal opportunities for inclusion in the information society

Table 2: Strategic goals of the si2010 strategy

4 CHALLENGES OF THE DEVELOPMENT STRATEGY FOR THE INFORMATION SOCIETY IN THE REPUBLIC OF SLOVENIA

4.1 Introduction

The convergence of the media, technologies and devices, as well as universal Internet access, usher in a number of challenges regarding the legal consideration of individual areas, use of technologies and services, and the manner and type of interaction in cyberspace. Some of these challenges are global and refer to further development of the information society as a whole, and some are local and relate mainly to national characteristics and priority tasks. Development will take the course we choose and shape ourselves. This chapter presents some of these challenges and operating principles, which Slovenia will support in its pursuit of the objectives of si2010.

4.2 Interoperability and open standards

Interoperability based on open standards for services and products in the area of ICT is one of the most important conditions for successful development of the information society. The ICT market is constantly developing and is marked by its global character, competitiveness, liberalization of telecommunications services, convergence of ICT and increasingly also of media technologies and services. ICT is ubiquitous and is used in all industries. The user and developer group of ICT products and services is therefore one of the most dynamic and changing groups. Under these circumstances, interoperability based on open standards brings significant positive effects for the users of ICT products and services, as it provides them with:

- greater freedom of choice;
- more suitable and higher-quality products and services with high added value, which must meet the special demands of the user regardless of technology;
- prevention of limitation to individual solutions and technologies, bringing better control over investment;
- connecting diverse user software, systems and processes to satisfy special needs, which allows efficient development, maintenance and upgrading of solutions throughout their lifecycle;
- providing better security and thereby increasing trust in products and services;
- increased possibilities for plurality in an environment with increasing convergence of electronic and media services, ensuring freedom of expression and the freedom to be informed.

At the same time, it also brings significant impacts on the providers (the ICT industry) – especially for SMEs, which are prevalent in the EU. Interoperability based on open standards, for SMEs as providers:

- allows better access to markets and improves expansion potential;

- prevents double development (distribution of knowledge, information), allowing for better distribution of investments in development, enabling faster return on investment in accordance with the principles of economics;
- reduces the time needed for penetration of the market, not only due to technological compliance with the standards but also due to greater user trust;
- reduces business risk in the development of innovative competitive products and services.

Ensuring interoperability in the EU is defined in the European Interoperability Framework (EIF), which was developed as part of the European programme IDABC. It points out the urgent need for interoperability on three basic levels:

1. organizational (organizational structure and business processes);
2. semantic (meaning of interchanged data); and
3. technical (technical connectivity of applications and IT systems).

One of the most important ways for ensuring interoperability is the use of open standards. The definition of open standards in the EU is based on the EIF. It defines open standards as standards which:

1. are adopted and will be maintained by a not-for-profit organization, whose ongoing development occurs on the basis of an open decision-making procedure available to all interested parties;
2. have been published and the standard specification document is available either freely or at a nominal charge. It must be permissible to all to copy, distribute and use for no fee or at a nominal fee;
3. make available the intellectual property – i.e. patents possibly present – of (parts of) the standard on a royalty-free basis;
4. are free of constraints on the reuse of the standard.

Interoperability based on open standards therefore allows faster development and establishment of innovations (technological, organizational, process-related), encouraging faster dissemination of knowledge, inclusion, innovation and competitiveness of the society as a whole.

Operating principle:

SLOVENIA WILL ACTIVELY SUPPORT THE ESTABLISHMENT OF INTEROPERABILITY IN THE DEVELOPMENT OF PRODUCTS AND SERVICES FOR THE INFORMATION SOCIETY IN ACCORDANCE WITH THE EIF, INCLUDING THE DEVELOPMENT AND USE OF OPEN STANDARDS.

4.3 Security and privacy

Network and data security are important considerations for establishing a single Slovenian and European information space. Availability, reliability and security of networks and information systems are becoming more and more important factors for our economy and society as a whole. In order to achieve this, we must develop a dynamic and global strategy, which must be based on a culture of security. Addressing the security challenges posed by the information society demands a three-part approach: special measures to ensure network and data security, adequate legislation on electronic communications (which must also properly

address the issues of privacy and data protection), and the fight against cybercrime. Although these three aspects could be developed separately, there are numerous interdependencies and connections which speak in favour of establishing a coordinated strategy and single implementation framework, as well as improving the coordinated approach to network and information security (NIS). While ensuring NIS and protection of privacy are undoubtedly very significant, we should also maintain the existing level of freedom of expression, i.e. it should not be affected. The legal framework which governs electronic communications should be supplemented with provisions related to security in the points where the existing legislation shows deficiencies. In this respect we can draw upon the Directive concerning the processing of personal data and the protection of privacy (Directive 2002/58/EC), which requires providers of publicly accessible communications services to ensure the security of services they provide. The directive lays down anti-spam and anti-spyware measures.

In the area of R&D, greater emphasis should be placed on NIS. Research in the sphere of security is expected to increase further in FP7 through the establishment of the European programme for security research. The European Safer Internet plus programme supports projects for establishing networks and exchanging best practices to fight harmful content circulating around information networks. Because the programme is designed in such a way that it achieves synergetic effects on the European and global levels by providing a relatively standard platform at the national level, it is reasonable and necessary to provide active support, including the co-funding of domestic candidates responding to the calls for applications in the framework of the Safer Internet plus programme. Constant improvement of the national SI-CERT (Slovenian Computer Emergency Response Team) must be ensured.

Attacks on information systems are increasingly motivated by profit rather than the wish to cause disturbance for its own sake, as was the case in the past. Another pressing issue is illegal data mining, which usually takes place without the user's knowledge. There is also increasing concern about the threat to security and privacy caused by illegal data interception and abuse of such data. It is worrisome that the number of versions (and sophistication level) of malware is increasing rapidly. Spam is a good example of this trend, as it is becoming the medium for transferring viruses and committing fraudulent and criminal activities such as spreading spyware, "phishing" (a form of Internet fraud aiming to steal valuable information such as credit cards, bank accounts, user IDs and passwords) and other forms of malware. Spyware includes theft and criminal misuse of private information such as computer passwords, credit card numbers, health records, business records, etc. Identity theft is also becoming an increasing cause for concern. Technology enables passive monitoring of a user's spending and lifestyle habits and allows analysis through the use of data-mining technologies. Data is also collected actively through spyware, worms, etc., usually without the knowledge or approval of the user. The rising development of mobile devices (including 3G mobile phones, mobile gaming software, etc.) and mobile network services will bring new challenges, as IP-based services are developing fast. We must realize that all new forms of communications tools and information systems represent, or create the potential for, new niches for attack.

Another important event is the emergence of an intelligent environment where intelligent devices supported by computer and network technologies will become ubiquitous and universal (e.g. through RFID [radio frequency identification], IPv6 and sensor networks). A fully integrated and networked life promises a great deal of opportunity. However, it will also surely create additional security and privacy risks. Because the principle of ensuring the

privacy of users is one of the fundamental requirements of a democratic society, it is imperative that efficient protection of privacy is ensured, especially and particularly with the development and penetration of the so-called personalized e-services, where the boundaries between the real and virtual personality are fading. Development of NIS must therefore include the principles of providing safety and protecting security on all levels, regardless of the technological characteristics.

It is a well-known fact that single environments and applications have a positive effect on the interoperability and establishment of ICT; however, they can also greatly increase risk. For example, the more widespread the use of standard or popular software, the greater the potential for malicious abuse of the system's weaknesses or for error. The existence and emergence of certain "monocultures" in computer environments and applications can greatly accelerate the growth and dissemination of security threats such as malware and viruses. From this aspect, diversity, openness and interoperability are the key components of security, and should therefore be encouraged.

Violations of NIS can have consequences which greatly exceed purely economic boundaries. In light of the fact that the availability, reliability and security are considered fundamental conditions, there is a risk that security problems will intimidate users, which would cause a decrease in the use of ICT and bring all resulting negative consequences. NIS should be presented mainly as an opportunity and advantage wherever possible, and never as a liability or expense. NIS should therefore be presented and considered as an important acquisition in building general trust. In order to achieve this, an integrated approach must be prepared, which must adequately identify the roles of various interest groups. It should be ensured that public policies and regulations affecting NIS either directly or indirectly are harmonized. In so doing, we must keep in mind that the process of liberalization and deregulation has created numerous participants and interest groups, making this task no easier. A secure information society must be based on increased NIS and a widespread culture of security. This can only be achieved by taking a dynamic and comprehensive approach which includes all interest groups and which is based on dialogue and partnership. Considering the fact that the public and private sector complement each other in establishing the culture of security, the relevant political initiatives must be based on an open and inclusive dialogue between all interest groups.

NIS must become part of education and the learning process, at all levels. On the elementary and secondary school level, children and young people should learn about NIS in a manner which could be similar to familiarizing them with traffic safety. Developing network and information security programmes should be encouraged as part of the curriculum of higher education. Training programmes in the business sector should also be encouraged, especially for SMEs, so that employees can get the knowledge and skills required for efficient execution of security practices. The goal is to make NIS-related knowledge and skills become part of each individual member of society's day-to-day life. Special attention should therefore be devoted to special-needs users and users who do not yet sufficiently realize the importance of NIS.

In NIS, an important role is also played by ISPs, data interchange network administrators and the ICT industry. These must, more so now than in the past, focus on improving security and privacy. Collaboration between law enforcement agencies should also be improved when

dealing with known and new forms of criminal activities which make use of the Internet and undermine the operation of key infrastructures.

Operating principle:

SLOVENIA WILL ENCOURAGE PROVISION OF SECURITY AND PRIVACY IN GLOBAL NETWORKS AND SUPPORT THE ACTIVITY OF ENCOURAGING, EDUCATING AND INCREASING SOCIAL AWARENESS ABOUT THE THREATS POSED BY UNWANTED PHENOMENA AND ABOUT THE POSSIBILITIES AND GOOD PRACTICES OF PROTECTING ONESELF FROM SUCH THREATS.

4.4 Copyrights on the Internet

Sound regulation of intellectual property in the field of the information society is crucial to ensure the development of innovation and creativity, and thereby society as a whole. From the information society's point of view, this issue relates to the rights of authors to control the use and implementation of their inventions, works and creations, particularly as regards commercial use. A model must be ensured which will allow authors to gain proper credit, support and material remuneration for their innovative and creative work on the one hand, an essential condition for their further support of this idea; while on the other hand it should still allow and support wide-scale access, use and reuse of new creations, an essential condition for the further and successful development of society.

In the area of digital content, regulation of copyrights is essential for broader development and use of digital content on the Internet, which is one of the EU's major guidelines for reaching the Lisbon goals. Historically, the Internet is the medium which allows the most widespread possibility of accessing, copying and using digital content so far, which is also one of the fundamental reasons why the Internet and society as a whole could develop so widely and rapidly. However, this openness creates a greater challenge in terms of regulating copyrights for individual content, which has a different effect on the access, use and reuse of their creations in such an environment – particularly in the commercial sense. Illegal mass copying and reuse have emerged, which, in this world of electronics, is a simple, fast task which requires no substantial additional work or energy. This allows for mass replication of copyrighted digital works, and thereby their illicit use and reuse without remuneration. This effectively afflicts the author commercially, and at the same time hinders the development and establishment of appropriate legal services and appropriate business models for distribution and use of copyrighted materials. On the other hand, the Internet's technological features give authors new opportunities. Given the Internet's exceptional ability to reach the end-user, this creates an extraordinary opportunity for broad recognition of their work both in the non-commercial and commercial senses, from which authors can gain much. Access to digital content enables authors almost limitless opportunities to create new works which integrate existing objects. Integrating digital images, music and content in a new, creative manner by adding innovative content allows for the creation of completely new works. This greatly increases the possibilities for creative work for the society as a whole, which would otherwise be impossible.

The legislation and the solutions based thereupon bring additional challenges, which increase exponentially with the increasing convergence of technologies and devices and the media allowing access to content. Development in recent years is moving in two directions. The first

is the development of DRM technologies, which are aimed at allowing the author full control over the use of his or her works, particularly by making it impossible to violate the terms of use of a particular digital object. Because of its need to have total control over the use of the digital object, the technology requires control over communications (distributions) and computer hardware (copying) of the individual user. This creates new challenges, particularly with regard to ensuring privacy, as is pointed out in no uncertain terms by the European Commission in its communication about the challenges of convergence. In addition, this creates significant dilemmas regarding the possible negative effect of such copyright protection on research and development in certain technological fields and in the field of creative e-content development. From the aspect of Internet access, additional dilemmas arise regarding the provision of public access (libraries) and various forms of archiving.

The other direction is a system developed in the framework of the Creative Commons (CC) organization, which defines a system of licensing individual e-content. According to the authors, their approach is opposite to the traditional DRM approach, which is based on the idea of limiting certain rights to a greater or lesser extent, and thereby achieving consistent control over access and use of protected materials. According to the CC approach, the main idea of their license is allowing certain rights to a greater or lesser extent, which authors declare for individual e-content as it is created. The license allows two rights: share and remix. It allows limitation of these rights to a certain extent: use or reuse for purely non-commercial purposes, and the condition that any new creation which the author develops using an existing work is shared under the same rights and conditions as the existing work (share alike). The concept is legally compliant and is based on copyright law, yet is restricted by individual national legislations. The choice of combinations of rights and restrictions in a given license is easy to understand and use, technologically supported and available on the Internet. The authors can create their license on the Internet themselves, depending on the purpose of their creative work, or according to specific circumstances under which they wish to enable the use and reuse of their work. Preliminary setting of rights and restrictions allows users and authors to use these works without prior explicit approval, which is time-consuming and often impossible for online digital works. Considering the widespread usage and nature of the Internet, authors cannot always be determined or contacted, which makes it almost impossible to use or reuse certain works legally. On the other hand, segmentation and choice of rights allows authors to further use the Internet as a medium for dissemination and establishment of their work, where they may still reserve the express right to choose their work being used for commercial purposes. The system therefore allows authors better opportunities to choose the manner of using their work, while it gives the community and society at large easier access and possibilities for reuse which comply with the law.

Operating principle:

SLOVENIA WILL STRIVE TO ENSURE ADEQUATE PROTECTION OF COPYRIGHTS ON ONLINE DIGITAL CONTENT, AND WILL SUPPORT THE CREATIVE COMMONS LICENSING SYSTEM IN PROMOTING THE SUCCESSFUL DEVELOPMENT AND USE OF E-SERVICES AND E-CONTENT.

4.5 Accessibility and inclusion

ICT helps to improve the quality of everyday living and social inclusion of the population of the EU; it also facilitates access to information, media, content and services, provides better

and more flexible employment opportunities, and helps to fight discrimination. It is especially important that ICT accessibility is improved for the disabled and the elderly.

Many people still have few benefits from ICT. For example, in 2005 more than 43% of the EU's population did not use the Internet on a regular basis; compared to 68% of people aged between 16 and 24 using the Internet, only 10% of persons aged over 65 made use of the Internet; only 24% of people with lower education levels used the Internet, compared to 73% of those with higher education; the Internet was used only by 32% of the unemployed, compared as much as 54% of employed persons. Only 3% of public websites met minimal standards and Web access guidelines, which hinders the disabled from accessing Web content and services, making up 15% of the EU population.

E-inclusion means inclusion and the use of ICT to reach the goals of broader inclusion. It focuses on collaboration between individuals and communities across various segments of the information society. The policy of e-inclusion is therefore aimed at reducing the gap in the use of ICT and at promoting the use of ICT, helping to overcome exclusion and improve economic effects, employment opportunities, the quality of life, social collaboration and establishing mutual connections.

The i2010 initiative announces the European initiative for e-inclusion in 2008. At the Inclusive Society Conference of Ministers on ICT, which took place in 2006 in Riga, new strategic guidelines were adopted which represent a great step towards making this initiative become reality. Future endeavours for e-inclusion will be based on national, regional and local initiatives, and will connect existing European policies. All bodies, industries, users and civil society representatives involved are invited to participate. The i2010-compliant e-inclusion policy approaches the issues of inclusion of the older population into the information society, breaching the geographic digital divide, increasing accessibility, promoting digital literacy and skills, and cultural diversity, and building an inclusive e-government.

At the same time, special attention should be devoted to improving the motivation of users for the use of ICT and the trust which should be gained through improved security and protection of privacy. At the same time, the key goal remains a better balance of sexes in the information society. In order to properly implement e-inclusion, the current differences in Internet use between the general EU population and the disabled, women, lower education groups, the unemployed and underdeveloped regions should be halved in the 2005–2010 period.

Operating principle:

SLOVENIA WILL ACTIVELY ENSURE THE POSSIBILITY OF ACCESS TO SERVICES AND ICT PRODUCTS, AS WELL AS PROMOTE INCLUSION OF ALL POPULATIONS IN THE INFORMATION SOCIETY. IT WILL DEVOTE SPECIAL EMPHASIS TO SPECIAL-NEEDS GROUPS AND THE OLDER POPULATION.

4.6 Use of the Slovene language and preservation of cultural identity

The fifth development priority of Slovenia's Development Strategy (integration of measures aimed at achieving sustainable development – development of the national identity and culture) aims "to build a common Slovenian cultural space and to preserve and develop the Slovene language". Care for the Slovene language, its usage and development is defined in

the Act on Enforcing Public Interest in the Field of Culture and the National Culture Programme, and it is more specifically detailed in the Public Use of the Slovene Language Act and the Resolution on a National Programme for Language Policy. The Public Use of the Slovene Language Act stipulates that the Republic of Slovenia "ensures the status of the Slovene language through implementation of an active language policy which includes ensuring the legal bases for its use, constant scientific monitoring of its linguistic development, and expanding the linguistic capacities. It also includes care for the development and culture of the language." The Resolution presents concrete measures to consolidate the status of the Slovene language not only in traditional fields, but also in new fields created through social and technological development. Among other things, this also means new and improved Slovene language software tools (translators, search engines, educational applications, accounting and bookkeeping applications, online shops, telecommunication services, etc.) and Web design (cultural and other practical content).

This is also justified because of the global nature of the Internet, where the English language prevails over all other languages. Ensuring the existence and preservation of cultural features and identity is therefore a special challenge in this area. This is especially true in terms of e-content and e-services, whose development involves a commercial aspect. The economy of scale demands that the reduction of development costs is spread across as many users as possible, which places smaller language groups at a disadvantage. Therefore the state must take adequate measures to support and encourage the development and usage of quality Slovene language e-content, which will also encourage and enable the entire population to make use of the Internet.

In its strategic documents and programmes, the EU supports the use of multiple languages. From the Lisbon Strategy, e-inclusion programmes, e-learning, e-content, Lund principles, Minerva activities and eEurope initiative to the i2010 initiative, all of these place emphasis on inclusion and accessibility for all citizens of Europe as the most important goal of the information society. ICT should encourage and preserve cultural and linguistic diversity, and should play a major role in expanding cultural content and access to the European cultural wealth. However, since one of the basic requirements of the EU identity is cultural and linguistic diversity, ICT must also act as the preserver and promoter of smaller cultures and identities which make up the European mosaic. Language is one of the most recognizable features of identity and culture, which makes it an essential part of pursuing the goals of inclusion and accessibility of cultural content available in the Slovene language and minority languages.

The state must therefore:

- support the development of Slovene linguistic standards, translation mechanisms and collaboration to build a multilingual thesaurus which must include the Slovene language, among others;
- create and enforce the legal bases to consistently ensure the use of the Slovene language in the digital environment;
- promote access to multilingual content for all citizens of Europe in terms of achieving maximum inclusion, accessibility and increasing the quality of life;
- intensively develop new (original or translated/localized) Slovene language software tools (the Slovene language should not appear only as the content of databases, etc., but it should also be the language of computer commands, dialog boxes, menus,

spreadsheet titles, etc.), computer analysis systems and programs for synthesized speech in the Slovene language.

The effects of the policy supporting the Slovene language in the digital environment:

- promoting the national identity and developing a sense of European identity (the awareness that the Slovene language is equal to all other EU languages);
- increasing the recognizability and awareness of Slovenian cultural content in the European and global environment and promoting better and easier dissemination of information to Slovenians about European and global cultural content (in Slovene).

Operating principle:

SLOVENIA WILL CONSIDER LINGUISTIC DIVERSITY AS A HORIZONTAL PRIORITY GUIDELINE AND AS A CORE ELEMENT OF CULTURAL DIVERSITY, WHILE PROMOTING THE USE OF SLOVENE AS AN EQUAL LANGUAGE IN THE FIELD OF E-CONTENT AND E-ACCESSIBILITY.

5 SINGLE EUROPEAN INFORMATION SPACE AND SLOVENIA

5.1 Introduction

In the convergence of technologies which are changing the manner of distribution of content and services in the digital world, a suitable environment must be prepared which will enable efficient operation of the dynamic electronic communications and digital services market across Europe. Today content and services are available via a great variety of devices (PCs, mobile phones, TV, etc.) whose functionality keeps expanding and which are intercommunicating amongst themselves. Information and data is transmitted across networks whose capacities keep increasing, which further accelerates development of new devices, applications and services. Finding solutions to problems which relate to the relationships between content, devices and networks, especially from the aspect of European integration and the common market, require a great deal of political attention, which should be focused on the following:

- development of secure and reliable networks and services;
- development and accessibility of high-quality e-content within a convergence environment;
- strengthening the single internal market to establish broadband networks and Europe-wide services.

5.2 Broadband accessibility

Secure and reliable broadband networks allow for a quality user experience, encouraging users to make further use of technology and increasing demand for new services and content, and effectively promoting further development of the Internet. This opens up new opportunities for the development of interactive multimedia applications, services and content. On the electronic communications market, and therefore on the broadband access market, it is particularly important that a sufficient level of competition be set up, despite the high investments in infrastructure necessary, as only in this way will the users of electronic communications receive modern services at affordable prices in the longer term.

In Slovenia the broadband access market is rather dynamic, and there is already competition based on a variety of different available technologies. (Competition between technologies ...) and data transmission over copper wire (xDSL [ADSL, VDSL, ADSL2+, VDSL2, g.SHDSL], cable broadband access, home optical networks and fixed wireless broadband systems [FWS] such as WiMAX, WLAN, UWB.) In the future, these will be joined by power line communication (PLC) technology, i.e. communication via power lines. At the moment, the level of competition between various technologies is only sufficient in urban centres, where cable systems and xDSL are present. Competition within individual types of access has been improving in recent times. In the countryside, xDSL and especially high-speed xDSL access is reduced due to poor existing telecommunications infrastructure. The majority of these areas have no cable network. Wireless broadband access in particular should increase competition

in rural areas in the near future. In the future, remote areas will gain access via PLC technology.

Vision:

PROVIDE ALL END-USERS IN SLOVENIA WITH ACCESS TO THE BROADBAND ELECTRONIC COMMUNICATIONS NETWORK, ENSURING POSSIBILITIES FOR DEVELOPMENT AND USE OF CONTENT AND SERVICES IN ALL AREAS, AND ESPECIALLY IN AREAS SUCH AS E-GOVERNMENT, E-HEALTH, E-LEARNING, E-ENVIRONMENT AND E-BUSINESS.

Strategic goals:

- providing the option of broadband access for all Slovenian end-users by 2010;
- ensuring a more balanced territorial development of the electronic communications networks and services;
- providing at least 90% of Slovenia's population with 2 Mbit/s connection speed by the end of 2010;
- providing 90% access to "triple-play service" and at least 20 Mbit/s connection speed by 2015;
- providing 90% of the population with an optical cable home connection by 2020.

Scope of activity:

- gradual activation of all available sub-band frequencies to build wireless broadband networks and implement the Slovenian Government's Strategy to Introduce Fixed Wireless Systems in the 3410 MHz to 3600 MHz Frequency Area across the Territory of the Republic of Slovenia, while encouraging other wireless technologies proposed by individual carriers;
- promoting the construction of local open networks in local communities on a public-private partnership basis, where the state will assist in preparing public calls for tenders by providing guidelines;
- recognizing barriers which restrict competition on broadband electronic communications networks, implementing measures aimed at eliminating these barriers, and initiating dialogue between the state and carrier to create a vision for developing electronic communications;
- promoting the building of open transit networks which will connect local open networks with backbone networks;
- promoting the use of available frequency bands for mobile broadband wireless communications (e.g. HSDPA).

5.3 Transition from analogue to digital broadcasting

Because today's society depends on advanced electronic communications, the demand for radio frequencies is ever increasing. The frequency spectrum is a big part of our everyday lives, whether it be mobile telephony, wireless Internet access or radio and television broadcasting. The traditional solution to competitive demand for frequencies is based on determining eligibility for using the spectrum. Today's rapid development of technologies aimed at integrating electronic communications, media content and electronic devices creates a dynamic environment in which the spectrum is becoming an ever more important resource.

Its management has not fallen in line with this progress, gradually increasing the risk that the traditional manner, if it remains unchanged, will prevent our society from enjoying the fruits of this dynamic new environment.

EU Member States have adopted the goal of switching from analogue to digital broadcasting, thereby reducing the burden on the frequency spectrum. The advantages of digital broadcasting for the consumer include improved image and sound quality, better mobile reception, more television and radio channels, and more information services. This also includes part of the strategy for efficient spectrum management, as proposed by the i2010 initiative, which is built around a vision of joint and coordinated elimination of barriers to the use of the spectrum in all Member States in order to promote an open and competitive economy. With faster access to new technologies and more affordable prices of communications, European citizens should benefit directly. According to the transition plans of the Member States published in the eEurope Action Plan and the final document (Communication of the European Commission COM [2005] 204, final version), elimination of analogue terrestrial broadcasting across the entire EU is planned for the beginning of 2012. The Republic of Slovenia accepted this proposal and detailed it further by adopting the Strategy of Transition from Analogue to Digital Broadcasting.

Vision:

ENSURE TRANSITION TO DIGITAL BROADCASTING AND USE OF THE FREED-UP FREQUENCY SPECTRUM OF ANALOGUE RADIO DIFFUSION FOR DEVELOPMENT AND USE OF DIGITAL BROADCASTING AND E-SERVICES UNTIL 2012.

Strategic goals:

- provide for an optimal transition to digital broadcasting and abolition of analogue broadcasting by 2012, allowing transparent, clear, encouraging, competitive, pluralistic, user- and environmentally-friendly transition to and development of digital broadcasting, as well as coordinated transition according to the adopted plan and active and quality informing of the public;
- ensure the possibility of digital broadcasting for new programmes and services;
- market the digital dividend.

Scope of activity:

- activity in the department of adopting a new act on digital broadcasting, a general act on terrestrial digital television, criteria for broadcasting content based on terrestrial digital television, carrying out public tendering procedures, launch of digital broadcasting;
- preparing materials, carrying out awareness campaigns for the general public and relevant actors, encouraging and controlling the dynamic of the transition;
- gradually setting up digital broadcasting networks, a transitional period with dual transmission in analogue and digital techniques, gradual discontinuation of analogue transmitters and freeing up frequencies needed for the following multiplexes;
- freeing up certain frequency bands for new services and use of the digital dividend for increasing the widespread reception of terrestrial digital television.

5.4 e-Business

The introduction of e-business based on global open standards and ensuring interoperability between business partners who transcend national borders in their business brings unimaginable opportunities for establishing a single EU market. ICT and its use in business plays a crucial role in the future development of the information society. The differences in economic efficiency and level of competitiveness between industrial countries can largely be explained through the degree of investment in ICT, level of research and widespread use of ICT in life, work and business.

ICT changes the way of doing business in companies and their interaction with suppliers and buyers. E-business no longer means a competitive advantage for individual companies; it is now a condition for their existence on the increasingly global market. IT is no longer a means to support current business, it is a means of optimization and adaptation of a company's business processes to the rapidly changing market demands. Development of IT systems, from ADP support to strategic resource planning, work process management, value added chain management, supplier and customer relations management systems, and unfathomable opportunities for analysing operation, provide top-level executives of companies a tool to support strategic decision making on key business objectives and activities, which is a crucial condition for competitiveness and further successful adaptation, growth and development. E-business is a key condition, as it enables the connection between the internal environment of a company and its external environment (partners, buyers and the state) and thereby allows for value added chain management. This enables a company to simplify and rationalize its operational costs and increase efficiency of the entire system, and consequently the development of higher-quality and more cost-effective competitive products and services. Use of electronic services increases the possibility of active communication between partners across the entire value added chain, making it possible to develop new products, services and business models which are even better tailored to the needs and demands of the end users. This enables better, more efficient and cost-effective operation of the company, increasing the general quality of living.

The introduction of e-business also brings significant challenges:

- introducing e-business in SMEs, which can be somewhat reluctant to introduce e-business into their companies due to limited resources (time, means, human resources, knowledge). Furthermore, unstructured organization and processes make it harder to achieve effects generally brought by IT and e-business;
- ensuring the required knowledge and experience with projects introducing e-business into a company, which require introduction of technological, operative and organizational changes into a company, where inertia is one of the most visible problems in the successful completion of such projects;
- establishing standards and a framework to ensure interoperability between individual solutions, systems and technologies, giving the user a wide choice of solutions which not only offer operation unrestricted by functionality, but also enable solutions to be adapted to the needs and demands of the user as much as possible;
- establishing a political support framework for activities aimed at the development and introduction of e-business on the national and international levels, including the economy, state and local self-government.

Vision:

ENSURE THE INTRODUCTION AND USE OF E-BUSINESS IN ALL COMPANIES AND INSTITUTIONS IN SLOVENIA.

Strategic goals:

- establishing a national infrastructure for broad-scale application of e-business systems (e-invoicing, e-payments, e-contracting) in SMEs;
- establishing a national interoperability framework to define integration schemes, and establishing principles to ensure interoperability between individual systems. This will create conditions which enable easier development of new application systems and their interoperability. The greatest advantage of the publicized integration schemes and the principles which these schemes were based on is their ease of reapplication. Promoting the reuse of thus established schemes would allow for simplification of business operations, and reduction of operating costs and costs of developing electronic services. It is imperative that a national portal be set up, whose purpose will be to create, publish and maintain the national interoperability framework. The national interoperability network will determine the minimum set of technical guidelines and specifications for managing information flows between the public sector, economic subjects and other segments of society. It will define all three aspects of interconnectivity of information systems: the organizational, semantic and technical aspects;
- establishing an environment to develop national open standards for electronic data interchange;
- establishing a single electronic register which will allow for collecting basic data on e-business.

Scope of activity:

- support for ensuring an efficient environment for encouraging the implementation of e-business in the B2B, B2C and B2G segments;
- encouraging, educating and exchanging best practices from the area of e-business (introduction to e-business, technology, legislation, advantages and threats, etc.);
- support for enterprises, especially SMEs, in their implementation of e-business in everyday operations;
- government incentives and facilities to introduce e-business to companies.

6 INNOVATIONS AND INVESTMENTS IN ICT

6.1 Introduction

At the moment, ICT is the strongest driving force for growth and employment in Europe. It accounts for one quarter of the increase in the EU's GDP and 40% of the increase in production (0.7% to 1.4% GDP in the 1995–2000 period, when the information and communications technology industry accounted for 8% of GDP of EU Member States). Differences in the economic efficiency of industrial countries can generally be explained by the degree of investments in ICT, the level of research and application, and the competitiveness of the information society and the media industry. The level of demand by the commercial environment for products and services of information & communications technology initiates the creation of innovative products, processes and business models, which are then applied in other areas as well, spurring broader development of the innovative environment.

The convergence of media, technologies and devices are becoming part of everyday life. At the same time, the global market demands faster and better development, which greatly tightens global competition. The area is characterized by the concentration and centralization of research and development (R&D) in certain centres or in some multinational corporations which control the global market more and more with their generic and modular products. In recent years we have witnessed new mergers and acquisitions in the industry, which is an ongoing process. The supply is therefore gaining ground in parts of the market more or less controlled by individual companies. The IDC reports that in 2003 one third of the global revenues from software and services was generated by five large corporations – Microsoft, IBM, Oracle, SAP and Computer Associates. This situation is similar in investments in research & development in this area. Eurostat reports five major areas of investment, three of which are ICT-related: IT hardware, electronics and electronic equipment, and software and services. Research & development is very important for all three areas. In the segment of IT hardware, the share of the five largest companies (Nokia, Ericsson, Alcatel, Infineon Technologies and ASML) in the total value of investments in research and development amounts to 86%; in electronics and electronic equipment (Siemens, Philips Electronics, Schneider, Alstom, Thomson) this share amounts to 89%, and in the software and services segment (SAP, Dassault Systems, Misys, Business Objects, Infogrames Entertainment) this share is 53%. This trend presents a great challenge for the industry and society as a whole. For example, Gartner predicted that approximately one half of all software development companies will go out of business by 2008. From this aspect it seems that the greatest trouble will be faced by small innovative enterprises, which are prevalent in Europe. In the EU, approximately 20 million SMEs make up approximately 99.7% of all enterprises, employing approximately 66.2% of the entire workforce and contributing around 65% of GDP. SMEs are also the key creators of new jobs and innovation, especially start-ups. The Aho report on innovation in Europe seems to corroborate this. Among other things, the report stresses the importance of venture capital support in newly formed high-tech companies, as they are almost six times more intense than the 500 largest enterprises in the EU which invest in research & development, from the aspect of research & development per employee. The report particularly highlights the need for establishing dynamic ecosystems for cooperation between large and small innovative enterprises, which would allow the latter further

development and growth. Here an important difference appears compared to the United States, where 75% of large companies developed from an independent small company, while in the EU the majority of enterprises are created through integration of existing companies (80%). The latter is particularly important because large companies often transfer new development initiatives into individual technologically promising locations outside the EU.

The global characteristics and meaning of research and development and the innovation activity in the field of ICT have a great effect on Slovenia as well, where SMEs are even more important because the majority of the more than one thousand enterprises involved in information & communications technologies are classified as SMEs. In accordance with the above, the National Research and Development Programme (NRDP) for the period 2006–2010 points out quality scientific development activity in information & communications technology and information society services among Slovenia's key development priorities, and it ranks information & communications technology among the areas of development with the greatest potential in terms of pursuing international competitiveness. The NRDP points out, "Slovenia is extremely unsuccessful in efficient exploitation of resources, defining priorities and application of the results of R&D in order to achieve faster economic and social development," and foresees the following vision for successful development: "creating and transmitting internationally available knowledge for public benefit and economic use and strengthening the ability to control technological progress as the main source of increasing national competitiveness and social and human progress. Slovenia needs more stimulation for teamwork in science and business and to increase the development incentives for joint projects of science and business entities." Based on the anticipated increase in investments in research & development, a substantial increase in public and private investments in research & development in information & communications technology and information society services is needed in order for us to achieve the Barcelona goal for 2006 of 1.83% of GDP and 3% by 2010, where the share of investments of the private sector would amount to two thirds and the ratio between the programme and project financing would be 2:3.

6.2 Scientific research infrastructure

Successful scientific and research work, among other things, also needs a top-notch infrastructure, which is always kept at least one step ahead of general-purpose infrastructure in terms of its quality, capabilities and special additional features. Special educational and developmental communications networks are a fundamental part of such infrastructures, as they act as an "accelerator of innovation and progress" in the developed countries of today's world, and represent a foundation for scientific and research work. It is a fact that the well-developed computer and communications infrastructures in developed countries accommodate millions of users from practically all parts of modern society, all exchanging vast amounts of information on a level where physical, geographic, political or other boundaries and restrictions lose all meaning. Apart from mention in numerous documents of the European Commission, this can be seen in the joint approach to the pan-European communication network GEANT, and also in its great share of co-funding in FP5 and FP6 as part of the research and technological development activities of the European Union. The European Commission intends to establish a European Research Area (ERA), which would allow every researcher and development engineer in the enlarged European Union equal opportunities to participate in research and development programmes.

The eEurope initiative set in motion a process which will secure the well-being of the information society for the European population in the coming years. The action programmes based on this initiative are focused on priority building of an infrastructure for fast Internet access for scientists and developers. In this context, it is emphasized that these are national and trans-European networks connecting scientific and research institutions, universities, scientific libraries, research centres and educational institutions. Progress in computer and information technology enables researchers to develop advanced work methods which employ high-capacity connections to visualize their achievements, create virtual development teams, access geographically discrete databases, perform experiments remotely and use the processing power of remote instruments and devices.

Global online connections between large networks via the Internet were actually created in response to the demands of scientific and educational environments, and it was the development of coherent network infrastructures for these environments that turned out to be the crucial and critical part of world informatization. The services which stemmed from this system quickly became part of everyday life in all segments of modern-day society. Although we cannot deny the meaning of commercially oriented segments, it is the research and academic community which seeks out and successfully introduces new pathways in computer connectivity. For this purpose, all European governments and their relevant ministries have established special organizations or institutions whose primary concern is the development and maintenance of suitable computer communications networks needed for research and education environments. Slovenia is no exception in this regard, and the Slovenian network ARNES is an equal member of GEANT. Our duty is to ensure that international connectivity is technologically up-to-date, has large-scale capacities and is stable, and at the same time external pathways provide for a capillary network. Thus, Slovenia has a suitably equipped national network for the research environment.

Therefore the Slovenian research programme lists construction of the academic and research network and its modernization by installing optical technology as one of its medium-term priority tasks. The basic purpose of European research and educational networks is building, maintaining and managing the infrastructure connecting universities, institutes, research laboratories, databases and digital libraries. These organizations require high-capacity connections and special features which commercial Internet service providers normally do not provide. All actors in the scientific domain must have indiscriminate access to world information resources via easier and faster Internet communication, both at home and across the world. On the other hand, adequate communications infrastructure will enable the flow of ideas, information and knowledge from Slovenia into the world. Slovenia will use its concrete projects (which are already underway) to provide everyone with an overview of its scientific and development capacities, along with basic and useful research projects and programmes and their scientific results (scientific bibliography).

Vision:

BUILDING, MAINTAINING AND MANAGING THE INFRASTRUCTURE FOR HIGH-CAPACITY CONNECTIONS LINKING UNIVERSITIES, INSTITUTES, RESEARCH LABORATORIES, DATA COLLECTIONS AND DIGITAL LIBRARIES.

Strategic goals:

- to provide the research, academic, cultural and educational environments with the high-quality telecommunications and information services which these environments need and which modern technologies make possible;
- to introduce new Internet protocols and services;
- to expand access to the Internet (ensuring broadband connections for research, educational and cultural organizations);
- to ensure the mobility of students, professors and researchers across the European Research Area (in terms of quality and secure Internet access);
- to take care of development, to provide and take advantage of new Internet applications and services (multimedia, videoconferencing, GRID, semantic networks, etc.).

Scope of activity:

- active support for the development of a national information & communications infrastructure to support the scientific, research, educational and cultural environment and its inclusion in the Internet;
- support for the development of basic infrastructural services for the interchange and flow of ideas, information and knowledge in Slovenia and on the international level.

6.3 Innovative R&D environment

Pursuit of the goal of increased and better investment in research & development in the ICT segment, and particularly an increase in the efficiency of investments in order to provide incentives for the development of new and innovative products and services on the market, requires coordinated efforts between research, educational and business entities in terms of planning and carrying out research. For this purpose, the NRDP foresees a number of measures to establish a suitable R&D environment equipped with infrastructure and support institutions, which includes establishment of technological platforms. Technological platforms (TP) relating to information & communications technology will create the possibility for adequate long-term planning and investment in market-oriented project research and development, which will be in concord with the capacities, advantages and long-term strategies of information & communications technology. This will bring real development of innovative market-oriented products and services, which will increase competitiveness and improve market penetration (including foreign markets) in an increasingly global market environment, as well as improving economic development.

Technological platforms for a particular field of development, which are based on the EU example, bring together companies, research, academic, financial and regulatory institutions in order to promote research & development in particular technological fields where Slovenia has or has the potential to have a competitive advantage in relation to the world. In the framework of the technological platform a joint strategic research programme is prepared (SRP), which lists the needs and vision for future development of the area and attempts to mobilize a critical mass of national and European private and public resources (in the framework of public-private partnerships) in order to achieve the set goals.

On the national level a "bottom-up" concept of creating technological platforms must be implemented, with emphasis on the business initiative, which ensures that the areas and plans

of activity are both viable and efficient. The latter is a condition for suitable investment in research & development performed by the information & communications technology industry. The creation of technological platforms should be based on the principles of openness, transparency and unbiased consideration, and it should be open to all interested parties. Because of the broad range of possibilities for cooperation, suitable organization and decision-making processes must be put in place in order to ensure efficiency of operation. This is especially important because of the characteristics of the national environment, where SMEs have limited resources (time, finances, human resources) and interest for activities not directly tied to the company's commercial operations. A technological platform is an informal organization not limited by or organized for the purpose of carrying out individual projects. However, it provides an excellent way to create an interest network between partners and to allow for the establishment of consortiums in order to carry out projects involving research & development, business cooperation or submitting bids in government grant procedures.

Vision:

CREATE AN EFFICIENT DEVELOPMENT ENVIRONMENT BETWEEN RESEARCH INSTITUTIONS, THE ECONOMY AND USERS IN THE FIELD OF ICT, WHICH WILL CREATE THE CONDITIONS FOR SUCCESSFUL INVESTMENTS IN RESEARCH & DEVELOPMENT AND SEEKING OUT INNOVATIVE SOLUTIONS.

Strategic goals:

- establishing links and collaboration between research institutions, the economy and users in ICT research & development with the purpose of ensuring appropriate investments in this area, in accordance with the Barcelona goals and the National Research and Development Programme;
- including the technological platform into the development of open ICT standards in world standardization organizations (W3C, OASIS, etc.);
- improving the involvement of national actors in research & development in the field of ICT to establish guidelines and policies for research & development of the information society;
- supporting the development of innovative technologies and product testing in terms of combining various technologies and programmes to provide working solutions in terms of meeting user demands, and introduction of innovative services and processes.

Scope of activity:

- support for the establishment and operation of technological platforms in information & communications technology in the form of informal organizations;
- supporting the creation of a standardization environment for developing technological standards on the basis of the open standard principle in the context of technological platforms;
- supporting the involvement of technological platforms in world industrial standardization organizations;
- taking strategic development programmes into consideration when preparing government guidelines and policies to support research and development (support for R&D projects, building technological centres, etc.);
- supporting the participation and development of national technological platforms in European programmes, supporting the operation of European technological platforms and collaboration with technological platforms in other EU Member States.

6.4 Research & development and implementation projects

In accordance with the concept of building technological platforms, the state will support research & development in information & communications technology, particularly in areas mentioned in the strategic development programmes of individual technological platforms. Individual activities must take into consideration priority tasks and fields set out in these programmes, which ensure a resolute policy of supporting information & communications technology research and development.

Vision:

SUPPORT RESEARCH AND DEVELOPMENT IN ICT IN ACCORD WITH NATIONAL PRIORITY TASKS, INTERESTS AND CAPACITIES OF INDUSTRY AND RESEARCH ORGANIZATIONS TO ENABLE THE DEVELOPMENT OF GLOBALLY COMPETITIVE INNOVATIVE PRODUCTS AND SERVICES.

Strategic goals:

- to combine interdisciplinary R&D capacities to streamline the development of innovative products and services in the field of information & communications technologies which will be able to compete on the global market;
- to ensure the level of investment in research & development in information & communications technology as per the Barcelona goals, as foreseen by the NRDP;
- to establish systems of large and small innovative companies in order to successfully implement large-scale R&D research projects;
- to establish a testing environment to test the operation and use of innovative products and services.

Scope of activity:

- **Targeted research programme**

  The targeted research programme (TRP) was created in 2001 as a new system of interdepartmental collaboration for planning and implementing network-based R&D projects in individual spheres of public interest. It is a special type of scientific research programme by which the Ministry of Higher Education, Science and Technology, in cooperation with other ministries and project contracting authorities, aims to contribute to the creation and realization of Slovenia's strategic goals and thereby to improving its competitiveness.

  Research in the framework of the TRP is targeted and problem-oriented to improving the competitive advantage of Slovenia as a basis for its successful development and increasing the well-being of its population. It takes into consideration the basic guideline of EDSS for Slovenia's sustainable development and mutual interconnection and interdependence of the economic, social and environmental dimensions of development. The targeted research programme should therefore be seen and used as a tool for direct implementation of Slovenia's Development Strategy and other programming documents for the development of the RS.

  The purpose of the targeted research program is to secure targeted, focused research support for:

1. preparing documents for long-term development planning and system solutions for their implementation on the national level and in individual priority areas agreed on an interdepartmental level;
2. monitoring and evaluation of implementation of the basic guidelines proposed by these documents and system solutions;
3. adapting or amending their goals and actions to reflect changed circumstances in the domestic and/or international environment.

Around SIT 500 million has been earmarked for projects which were awarded contracts at past TRP public tendering procedures in the information society domain. Projects in the framework of the programme focused on research of monitoring and projecting the development of the information society and on research to help in creating policies for development and controlling the information society, especially in the domain of infrastructure and technology, the labour market, education and social integrity, development of democracy, culture and public administration.

In the coming years support for R&D projects in the domain of the information society will continue in the context of the targeted research programme Slovenia's Competitiveness 2006–2013, where special attention will be placed on more efficient transmission or application of results of projects in the development of innovative programmes, products, procedures and services. The subjects of public tendering procedures will reflect general European and global trends in information & communications technology, and special attention will be placed on promoting areas where we can use our own knowledge to compete on the increasingly more demanding global market.

- **R&D projects co-funded by the structural fund for development of regional potential**
  In the period 2001–2006, the information society was a horizontal priority task, meaning that submitted projects at public tendering procedures of structural funds had to demonstrate their contribution to the development of the information society. It turned out that a strictly horizontal approach failed to contribute sufficiently to faster achievement of the set goals in relation to the information society, which was also evident in research and development in the domain of information & communications technology.

  In the next period, several vertical guidelines will be implemented in order to accelerate the development of the information society. The priority guidelines in the development priority task of the Slovenian Development Network will be mainly devoted to research & development.

  In the priority guideline Information Society, special support will be dedicated to development projects involving representatives of Slovenian industry and economy, and academic institutions dealing with information & communications technology. Combining research capabilities, which can include particularly SMEs (prevalent among Slovenian enterprises dealing with this particular sector) will enable development of new e-services, programmes and products, which will be able to compete on the global market and raise the level of development of the information society in Slovenia. With the help of various instruments, we will mainly support

innovative projects dealing with e-business and development of e-content/e-services, as indicated in the national technological platforms (NESSI, Media in e-Networks, eMobility). Special attention will also be devoted to establishing connections with EU projects in the context of the second pillar of CIP and FP7 in order to pursue maximum synergy.

- **Pilot reference implementation projects**
  The purpose of pilot reference implementation projects is to present the operation and successful integration of existing technologies, services and products in order to cater to special user demands. In such projects, the role of the user is particularly highlighted because their response helps to improve the user experience when using e-services, which results in increased demand for such services. Successfully implemented implementation projects can be examples of good practice which may be applied in other EU Member States.

6.5 Supporting the development of solutions based on open code

Today software is a key element of information systems. Hardware development and software development take place alongside each other and respond to the needs and demands of the market. Large corporations have dictated the pace of development and the pricing of goods and services in information technology. Software producers have established a monopoly with their software licensing policy. Because of market protection, licensed software is protected and closed, leading to closure and unconnectivity of systems, making them less adaptable, while solutions are only useful over the short term.

Development of free and openly accessible software began in the sixties. It gained broader popularity in the mid-nineties with the development and increase in popularity of the Linux operating system, which is most likely the response of users and developers to the increasing monopolization of the software industry.

Open-source software is mainly developed in the context of non-commercial and voluntary initiatives, where commercial companies are becoming more and more involved on a non-commercial basis. In the majority of cases, such software may be used without paying a special license fee or another form of remuneration to the authors. The user even gains an unlimited right of ownership over the source code, together with the right to change and adapt the code to his or her individual needs. The conditions for use and distribution of individual parts of the software code or software products as a whole are determined in one of the license agreements prepared by the Open Source Initiative (OSI). The basic premise of this licensing policy is that software should allow unrestricted customization and redistribution. In the context of the si2010 strategy, the concept of open code means not only software whose source code is freely visible, but also includes the complete business and licensing model for development, use, alteration and distribution to the end-users, which includes different technical and business services and knowledge of how to use such software.

A basic and perhaps the most interesting characteristic of open-source software is free access to the source code, which can be used to make operational software solutions. Free access to source code and the right to change and redistribute it is the factor which, in combination with

a relatively large number of developers, offers a great deal of opportunity for quick changes and adaptations to tailor the software to the needs of individual users. In this context we should take into consideration the operation and essential coexistence of existing information systems and new open-source systems, and provision of knowledge and experience of users and administrators. The transition cannot and should not be one-way; it must allow for the interoperability of existing systems and new solutions. The use of open-source software has been among us for a number of years and the solutions have proven to be useful, and this segment of software has grown in importance. Based on a cost-benefit analysis, encouraging the development and use of such software is certainly viable, sensible and economical.

In open-source software and solutions we can see at least the following important characteristics:

- high level of stability,
- high level of security,
- zero or extremely low licensing costs,
- legal use of software,
- option to change the software code,
- free distribution of developed solutions,
- access to a relatively large pool of IT experts,
- independence from large traditional license-based software producers.

The key effects we aim to achieve are focused on increasing competitiveness, improving business results and reducing costs. Actions are focused on organizations and communities which develop such software, and on end-users and clients. Support for this area is founded on the Government of the Republic of Slovenia's policy for introducing open-source software.

Vision:

PROVIDE APPROPRIATE POSSIBILITIES FOR DEVELOPMENT, INTRODUCTION AND APPLICATION OF OPEN-SOURCE SOLUTIONS IN ALL AREAS OF PUBLIC INTEREST.

Strategic goals:

- active support for equal treatment of proprietary and open-source software;
- implementation of computer solutions based on open standards and protocols;
- training, education and introduction to working with open-source software and active promotion of transfer of knowledge and best practices;
- avoiding limitation by individual computer solutions;
- obtaining full rights to ownership and change of open-source computer solutions;
- ensuring protection of copyrights and other material and non-material rights;
- promoting broad use of open-source software solutions;
- encouraging the use of open-source software solutions outside the public sector (in business and the civil society).

Scope of activity:

- transfer of best practices and knowledge in keeping with the principle of frugal conduct. Avoiding being limited by individual computer solutions and ensuring interchange of data and interconnectivity between systems, which are also easily adaptable. A good regulatory environment in the area of open-source software also brings a higher level of trust and privacy, as well as better security;

- encouraging development and introduction of open-source driven software and solutions;
- developing IT for open-source driven software and solutions.

6.6 European programmes

In order to stay competitive in the EU's ICT sector, support must be provided to enterprises, R&D institutions and regional development actors by involving them in Community programmes and allowing them access to EU budgetary funds. The Ministry of Higher Education, Science and Technology is coordinating the EU programmes eContentPlus, eTEN, MODINIS, SaferInternetPlus, ERIS@, FP6 and FP7 (IST), and the second pillar of the Competitiveness and Innovation Framework Programme 2007–2013. The Ministry of Public Administration is overseeing coordination of the IDABC programme, the Ministry of Culture is currently overseeing coordination of the MINERVA programme, and the Ministry of Education and Sport is overseeing coordination of multiple programmes aimed at supporting the development of e-education (Lifelong Learning, Youth in Action, Europe for Citizens).

Vision:

ENSURE THAT ALL SLOVENIAN ORGANIZATIONS BECOME SUCCESSFUL, RESPECTED AND SOUGHT-AFTER PARTNERS FOR COLLABORATION IN THE CONTEXT OF EU PROGRAMMES.

Strategic goals:

- to ensure wide participation of Slovenian partners in EU programmes.
- to ensure quality collaboration of Slovenian partners in EU programmes.

Scope of activity:

- active collaboration, encouraging and informing Slovenian partners and institutions about the implementation of EU programmes and the possibilities for collaboration;
- active involvement in the process of shaping the subject matter for and adoption of EU programmes and overseeing their implementation;
- ensuring synergy between the measures in European programmes and measures on the state level;
- assistance in finding partners for collaboration on European projects.

7 AN INCLUSIVE INFORMATION SOCIETY AND THE QUALITY OF LIFE

7.1 Introduction

In accordance with i2010, establishing an inclusive European information society which promotes growth and employment in a manner consistent with the principles of social inclusion and sustainable development, and which favours higher-quality public services and the quality of life, is part of the third module of the si2010 strategy. This module defines various topic areas which collectively contribute significantly to the quality of life and the environment and inclusion of society as a whole. In the 2007–2010 period, given the level of development of the information society in Slovenia, we intend to place particular attention on selected areas which are currently relevant and which comply with the national priority tasks and guidelines. The presented areas are not mutually exclusive and independent, but overlap in certain cases.

7.2 e-Content

Digital content, or e-content, a term which comprises various types of content and services available on the Internet and other global communications networks, is an essential factor for further development of the information society, as it affects the economy and society as a whole. With the increasing need for improved and faster contacts, services and equipment, content significantly contributes to the development of information & communications technology, currently one of the fastest-growing industries in the increasingly competitive world. Because they integrate various topics such as language and linguistics, literature, journalism, publishing and cultural heritage, as well as distribution and sales, all of which are essential for the successful development and use of content and services, e-content is an important driver of non-commercial and commercial activities. With the introduction of electronic services and e-business, e-content is a tool for increasing knowledge and efficiency and consequently the competitiveness of the economy and society as a whole. The level of demand of the commercial environment in the field of e-content stimulates the creation of innovative products, processes and business models, which are then applied in other areas as well, spurring broader development of the innovative environment.

Establishment of the use of e-content in society at large greatly assists in overcoming the barriers brought by the pace of life and lack of time in this day and age, and greatly increases efficiency and the quality of life. By enabling the possibility of e-learning, e-jobs and other e-services (e-banking, e-commerce, e-purchasing, etc.) via the Internet and other global networks – i.e. remotely – e-content is a significant factor in increasing the accessibility of sources of knowledge and overcoming physical space barriers, enabling more balanced spatial and regional development. Due to its ease of access, e-content gives various social groups, e.g. marginalized groups, socially disadvantaged individuals, people with special needs, the elderly population and unemployed, etc., a much greater opportunity to become involved in society, effectively breaching the digital gap and reducing social exclusion. Enabling global access and spreading information and knowledge, e-content increases the possibilities for

better cultural, social and political integration. By enabling access to the global market, e-content also encourages development of the quality of the supply of and demand for products and services, effectively raising the quality of life for society as a whole.

Together with communications infrastructure, e-content forms the core of modern-day cyberspace and requires special consideration due to its integration of different media and devices. Traditional content, such as books and other documented information, film, video and music, is becoming more and more accessible in digital format; services are emerging which were originally interactive, digital and based on hypertext. In order to achieve successful development, comprehensive action will be needed involving various horizontal areas which directly or indirectly affect the development and use of e-content. This includes areas such as legal aspects and relevant regulations, intellectual rights in the digital world, provision of e-learning and e-skills, Internet security, consumer protection and providing privacy and confidentiality. All these areas are critically conditioned by various technologies (by enabling or restricting them). Interconnectivity and the use of open standards are clearly becoming a condition for future development. From the aspect of access, technologies that employ speech and other types of user interfaces are gaining in importance, for example the W3C WAI (Web Accessibility Initiative), which enables access to e-content for various groups of people with limited physical capacities. Visualization, personalization and cognitive models allow presentation, understanding and reception of content in a user-friendly manner. In terms of value added services, attention is increasingly shifted from technologies which enable presentation and access to e-content on a syntactic level to technologies which give the option of describing the meaning of e-content (metadata) and build more advanced services on this foundation. Special attention is devoted to technologies involving semantic networks, ontologies, intelligent browsing, structuring and viewing. From the aspect of transparent and efficient infrastructure for access and use of e-content, technologies, legislation and best practices which ensure authenticity, identity management, digital rights management, security, data protection and privacy, consumer protection and the like are essential components. From the aspect of changing technologies, a thorough understanding of the complete digital data lifecycle is becoming more and more important, including everything from creation or capture to storage and technological changes up to the reuse and application of such data. Archiving in the digital world is gaining new dimensions, especially with the emphasized meaning of digitization and access to digital information. In this context, cultural heritage and its availability in digital libraries are gaining in popularity, as are scientific and educational content. With the development of the Galileo positioning system, locational services are gaining in importance.

Vision:

ENSURE AVAILABILITY OF SLOVENE LANGUAGE E-CONTENT FROM ALL AREAS WHICH AFFECT THE LIFE AND WORK OF INDIVIDUALS.

Strategic goals:

- ensure a suitable volume and quality of Slovene language e-content in areas which significantly affect the life and work of individuals;
- establish a service-oriented infrastructure which uses communication between sets of software applications to provide automatic interconnection between individual distributed e-services (e.g. web services, GRID) for the provider and the user. The latter will enable development of innovative e-content and e-services tailored to the particular needs of the user;

- establish standards of website design tailored to the user, which include access for users with limited capacities (WAI) and provide for a better user experience for all;
- ensure a clear publication of policies and promote the use of copyright protection for e-content on all Slovenian websites;
- provide for clear publication of policies and protection of privacy in accordance with the law on all websites in Slovenia, especially in places where individual user data is provided in order to connect to or use individual services;
- provide citizens with the broadest possible access to an appropriate volume of quality e-content in foreign languages, which serve as the basic material for scientific, professional and other cultural activities.

Scope of activity:

- support for e-content published by individuals and communities (personal websites, blogs, forums, wikis, etc.);
- support for the development and use of educational and scientific e-content;
- support for the development and use of e-content in e-culture, which includes digitized cultural heritage;
- support for the development and use of e-content for consumers;
- spreading the use of e-content licensed under the Creative Commons license;
- support for development of the national IT infrastructure to provide adequate digital data archiving facilities;
- promoting and informing the public about the challenges of using the Internet and e-content by creating best practices which are aimed at increasing user trust in the Internet and increasing demand for innovative services.

7.3 e-Education

On the one hand the information society creates new demands and challenges, while on the other hand it also provides the tool to manage these demands and challenges. The development of information & communications technology has also brought new ways of learning and teaching for all population groups, further increasing the efficiency of learning opportunities to fulfil the demands and overcome the challenges of modern-day society. The application of ICT in education is known as e-education.

E-education is one of the key and vital components in the development of individuals and society as a whole in the capacity of an employment and business environment, and the growing importance of knowledge in Slovenia and abroad is increasing the demand for new forms of education.

E-education comprises the people who use technology for educational purposes and without whom technology would not function. E-education is therefore learning and teaching through the use of modern information & communications technology. Most importantly, e-education places the focus of the learning process on the receiver of education and the educator, in line with the basic guidelines for efficient education. At the same time, it allows for adjustment of the learning process to the needs, goals and wishes of the receiver, allowing him or her access to knowledge in a time, place and manner which suits his or her individual needs.

E-education is focused on increasing economic growth and the competitiveness of Slovenian society, and raising the quality of life for all Slovenian citizens. The strong emphasis on e-education in the context of Slovenia's strategic goals requires the highest levels of government to provide coordination and incentives for the development of e-education.

Knowledge is one of the basic foundations of society. Since in this day and age we live in an information society, it is therefore necessary to support the giving and receiving of knowledge with modern tools provided by information & communications technology. The key subject in the process of computerization of the learning and teaching process is the student. The key critical factor for success is the teacher, as he or she is the one who must adopt modern information & communications technology. This does not constitute a change of or replacement for the traditional teaching process, but is rather a way to complement it, adding new opportunities to adapt and change the learning and teaching process and making them more efficient and appealing.

The modern tools afforded by this technology effectively change the learning process and subject matter. This means that, more than the mere transfer of knowledge, students gain a myriad of new resources which are no longer passive in nature (words and images) but are also supported by multimedia and interactive forms. This makes learning more effective and user-friendly. It should be pointed out that such learning can be done anywhere and at any time and that it is no longer based on memorization alone, as this manner also allows for (self-) verification of knowledge, teamwork (virtual classrooms), research work and remote learning. It is also possible to separate different skill levels (groups) of students, who can learn the subject matter in various ways without interfering with each other's learning process.

Vision:

ESTABLISH AN EFFICIENT AND FULLY COMPUTERIZED NATIONAL EDUCATION SYSTEM WHICH WILL ENABLE MODERN WAYS OF PASSING ON AND ACQUIRING KNOWLEDGE SUPPORTED BY MODERN INFORMATION & COMMUNICATIONS TECHNOLOGY.

Strategic goals:

- provide the entire population of the Republic of Slovenia with fast, easy-to-use, friendly and user-tailored access to knowledge;
- establish a central Internet portal where content is made available to all interested participants willing to partake of e-education technology;
- establish an (organizational) education system supported by information & communications technology for all interested participants;
- adapt the regulations and perfect the initiatives for provision and use of e-education services and products between natural persons and legal entities;
- perfect the public-private partnership initiatives for R&D activities in the fields of e-education and mutual exchange of knowledge between these entities.

Scope of activity:

- supporting the political and professional community in introducing information & communications technology into existing learning and teaching processes;
- reorganizing existing institutions in charge of coordinating the operation and computerization of higher education institutions on the national level and of the

development/supply of information & communications technology intended for preparation/supply of e-content;
- constant spreading of the use of information & communications technology and ready-made solutions in professional environments;
- increasing the accessibility, efficiency and success of learning and teaching on all levels of the Slovenian society;
- raising awareness about knowledge as an essential virtue for the growth, development and success of individuals and Slovenian society as a whole, with the aim of active participation in lifelong learning;
- increasing the educational structure and improving the skills of the entire Slovenian population, increasing employability, improving the quality and number of jobs, and accelerating development of quality products and services created through the application of local knowledge;
- enabling educational institutions and companies to provide the highest quality e-education services while taking into consideration their status as a public/private institution;
- encouraging all (key) participants for a wide application of information & communications technology in teaching and learning;
- establishing a central Internet portal where content is made available to all interested participants willing to partake of e-education technology.

7.4 e-Culture

As a major segment of the information society, e-culture is understood as the integration of information & communications technologies in the basic processes of creation, storage, dissemination, public exhibition, preservation and reuse of cultural content by the direct authors of works of culture, as well as in libraries, museums, galleries, archives, media and other cultural institutions.

With its choice and availability of digital cultural content, Slovenia is trailing behind other EU Member States (EU-15), and in certain segments of digital culture we are also trailing behind new EU Member States and even non-member states (Serbia, Croatia). On the other hand, however, we should not ignore Slovenia's great progress in the broader European context in terms of excellent innovation achievements in certain areas, e.g. registration of cultural heritage, the National and University Library, archives, multimedia centres and general libraries.

The culture industry is based on knowledge and requires creativity. It is also the driving force behind technological innovations, particularly in the field of information & communications technology. Digitization, digital content, digital services and public accessibility in culture and the cultural heritage are crucial not only for marketing the aforementioned and related segments of the creative industry and tourism, but they also provide a foundation for direct application of digital cultural content in educational, training and lifelong learning processes. Digital cultural content is one of the most efficient methods for increasing the international profile and competitiveness of Slovenia and its economy as a whole.

Vision:

ENSURE DEVELOPMENT AND BROAD ACCESS TO SLOVENIAN DIGITAL CULTURAL CONTENT AS A FOUNDATION FOR INCREASING SLOVENIA'S INTERNATIONAL PROFILE, CREATING ADDED VALUE IN CULTURE AND RELATED CULTURAL INDUSTRIES, AND CONTRIBUTING TO KNOWLEDGE FOR A BETTER QUALITY OF LIFE.

Strategic goals:

- accelerating the process of digitization of existing analogue cultural content found in museums, libraries, archives, the media and art;
- introducing digital content, e-business and e-services for collaboration between cultural institutions and citizens and other information society organizations;
- participation in the European digital cultural area in the field of content, standards, protocols and digital rights management systems;
- exploiting Slovenia's advantage in Europe – its small size makes it an ideal environment for experimental implementation of complex digital culture models involving material, legal, commercial and informational dimensions;
- ensuring the material, professional, legal and educational incubator support for creators and users of digital cultural art.

Scope of activity:

- ensuring adequate computer and broadband communications infrastructure for transmission, processing, long-term storage and use of digital cultural content;
- encouraging digitization of all types of cultural content through suitable documentation, development of Slovene language terminology and permanent storage of digital content;
- supporting the creation of digital cultural content and services, especially by SMEs and individual authors;
- continuing the development of the Slovenian Digital Library (dLib.si), Slovenian e-Archive and the national television broadcasting service's multimedia centre;
- expanding the central cultural heritage register to include all segments of cultural heritage;
- establishing one-stop-shop Internet access for the entire range of Slovenian cultural heritage and culture, connected to the European digital library and other places storing digital cultural content around the world.

7.5 e-Health

Healthcare is of great strategic and national significance. It is a strong element for developing general welfare and the economy, creating jobs and accelerating the development of the information society. The computerization of healthcare, or e-health, is an area where the healthcare system can receive the highest added value.

E-health comprises information systems and services which, in combination with organizational changes and development of new skills, contribute to the development of

healthcare, improve access to healthcare and the quality of services, its efficiency and effectiveness, and the development of the information society as a whole. Research performed through e-health solutions supports progress in healthcare services, improves management and dissemination of relevant knowledge, and contributes to the healthcare profession as a whole, based on actual findings. Such solutions are intended for all participants in healthcare: patients, to provide them with relevant information in a form specifically tailored to them; healthcare workers, allowing them to access the patient's medical records created over time on multiple levels of the healthcare system; and administrators, to provide them with organizational and operative information.

Vision:

ESTABLISH AN EFFICIENT, ADAPTABLE AND MODERN HEALTH INFORMATION SYSTEM TO SUPPORT THE PURSUIT OF STRATEGIC GOALS OF THE SLOVENIAN HEALTHCARE SYSTEM AND SATISFY THE NEEDS AND INTERESTS OF SLOVENIAN CITIZENS, HEALTHCARE PROFESSIONALS, HEALTHCARE ORGANIZATION EXECUTIVES AND ADMINISTRATORS OF THE HEALTHCARE SYSTEM, AS WELL AS TO CONNECT LOCAL INFORMATION SYSTEMS, ALLOWING CITIZENS AND HEALTHCARE PROFESSIONALS TO BRIDGE ADMINISTRATIVE AND ORGANIZATIONAL ISLANDS WHEN SEEKING INFORMATION AND FOR DIRECT COMMUNICATION FREE OF TIME AND ORGANIZATIONAL CONSTRAINTS.

Strategic goals:

- establishing the basic information infrastructure and defining the basic collection of healthcare and social information in order to establish and maintain an electronic database of patient medical data, and laying the foundations for electronic records of such data on the national level by the end of 2007;
- setting security and technological standards for secure communication, management and storage of healthcare information;
- preparing an implementation plan of development programmes according to the criteria of the best and most economical effects;
- merging healthcare and social information databases in a central national system with special emphasis on establishing a central healthcare information portal (CHIP), which would enable all subjects involved in the healthcare system secure and reliable interchange of data, performance of electronic services and uniform (standardized) and transparent dissemination of information and connectivity with similar systems in the EU by the end of 2010;
- establishing e-transactions as a normal work method in Slovenian healthcare by the end of 2010.

Scope of activity:

- participating in the process of planning, coordinating, managing and carrying out development and application of IT in healthcare;
- perfecting the basic IT infrastructure in healthcare for the secure and transparent interchange of information between patients, healthcare service providers and payees;
- preparing the legal bases for introduction of e-health;
- participating in European activities involving e-health;

- making presentations to raise awareness on the role and possibilities for e-health, mobilizing additional financial and developmental investments and support for specific activities;
- introducing incentive schemes for special IT achievements in healthcare.

7.6 e-Government

Electronic public administration (e-government) is a manner of carrying out and modernizing procedures in public administration, which is based on the use of modern information & communications technology and involves the adaptation of organizational, legal and technical frameworks; it is focused on end-users (citizens, corporate entities, public servants and other governments). It is intended to achieve increased accessibility, transparency and quality of user services and improved internal efficiency. A key factor for its success is the public administration's ability to identify the needs and demands on the one hand, and to use and evaluate the offered e-government services on the other hand.

By introducing e-government in public administration, significant long-term synergetic effects are ensured in terms of transparency, rationalization and adaptability of operations, as well as in terms of future development of the information society. Slovenia will undertake to continue its endeavours to further the development of e-government in line with national strategic documents and action plans, the i2010 initiative and the Action Plan for e-Government, as well as with EU trends and other measurable results in the field of e-government (e.g. customer satisfaction, elimination of administrative barriers).

Another important area of e-government is ensuring the involvement of various stakeholders and organizations in the consideration of topics of national importance and in the operation of public administration.

Vision:

TO PROVIDE CITIZENS AND CORPORATE ENTITIES WITH A USER-FRIENDLY, SIMPLE, ACCESSIBLE AND SECURE CHOICE OF ELECTRONIC ADMINISTRATION SERVICES AND E-DEMOCRACY SERVICES IN ALL SITUATIONS IN LIFE, AND TO PROVIDE VITAL INFORMATION WHICH WILL BE AVAILABLE ANYTIME AND ANYWHERE VIA MODERN COMMUNICATION CHANNELS.

Strategic goals:

- development of new and improvement of existing e-government services and solutions through electronic public procurement procedures;
- further development and perfecting of the national e-government Web portal to offer new services and more information tailored to the needs of individual users, and providing secure access to the portal in line with W3C WAI recommendations (Web Accessibility Initiative);
- systematic approach to establishing and managing e-government projects with central coordination, with management of projects in the framework of the e-Government Action Plan;
- provision of joint applicability for e-government services (e-delivery, e-signature, e-signing, e-payments, e-archives, e-identity, etc.);
- modernization and integration of official records;

- establishment of a national framework of connectivity in public administration;
- encouragement for the use of open standards and open code in state administration;
- further provision of ICT infrastructure for government bodies following the principle of uniform architecture;
- development of joint solutions for state administration and local self-governance.

Scope of activities:

- developing progressive, comprehensive and quality e-government services tailored to users, accessible anytime anywhere;
- carrying out rationalization of operations, increasing efficiency, transparency and responsibility of operation, and reducing the duration of administrative procedures;
- reducing administrative barriers and increasing user satisfaction;
- providing organizational, semantic and technical interoperability-based interconnectivity of systems used in state administration, and consequently enabling interconnectivity with the administrations of EU Member States,
- providing user security and privacy when using e-government services;
- ensuring inclusion of all citizens;
- increasing e-involvement of the public and e-support to democratic processes;
- ensuring the ICT infrastructure to provide for the unhindered operation and use of e-government services.

7.7 e-Justice

E-justice signifies the implementation of IT in legal proceedings in the broadest sense, when law enforcement and other bodies make use of IT at all stages and on all levels. Efficient administration of justice and state administration can greatly contribute to maintaining the highest democratic principles of modern society (the principle of legality and ensuring legal certainty) for its citizens and natural entities, as well as the private and public sectors.

Preparation of a strategy for implementing IT in justice is currently underway, where we would like to point out that the main guidelines for IT implementation need to be defined with regard to subsidiary, potentially electronic services, and with regard to the set objectives.

Vision:

ENSURING FULL IMPLEMENTATION OF IT SUPPORT FOR LEGAL PROCEDURES AND THE APPROPRIATE INFRASTRUCTURE FOR EFFICIENT ADMINISTRATION OF JUSTICE IN ALL SEGMENTS, ESPECIALLY IN ORDER TO SECURE THE WELFARE OF SLOVENIAN CITIZENS AND THE ENTIRE PRIVATE AND PUBLIC SECTORS.

Strategic goals:

- the fundamental long-term goal of Slovenia in the area of justice is to reduce judicial backlogs, and to provide legal certainty, equality before the courts and efficiency of the entire justice system.

Scope of activity:

- modernization of procedures: modernization of operating processes in terms of improving them, adapting to new technical solutions, introducing new operating procedures, harmonization with the legislation;
- IT implementation: modernization of infrastructure as a foundation for improving procedures, constructing new systems for new business processes (G2C, G2B, G2G, etc.);
- employee training: establishing a training system to manage content, leadership, technology and use of modern tools.

7.8 e-Transport

In today's time the safe, unhindered and efficient transport of people and goods is a basic need. Due to the high requirements imposed on transport systems and vehicles, incentives are being provided for technical and technological development, especially for electronic devices, telematics and support systems which contribute to the achievement of targets in the field of transport, thereby contributing to the development of the information society. For this purpose, innovative programmes, services, technical solutions and orders in road, railway, air and maritime transport are constantly being improved and developed. An important role in maintaining the desired state of affairs is played by intelligent transport systems and services which provide support in the planning, management and provision of transport service, helping to increase the level of safety, save time and money, and reduce negative impacts on the environment, while creating new opportunities for business both in the private and public sectors.

In the European area, and consequently in Slovenia, activities driven by research & development collaboration are underway in the field of provision of safe, unhindered and efficient transport. Due to the particular increase of road transport in recent times, this area has been put on a priority list, which is reflected in Slovenia through the introduction of an electronic fee collection system in free traffic, and implementation of intelligent transport systems.

Vision:

PROVIDING SAFE, EFFICIENT AND ENVIRONMENTALLY-FRIENDLY MULTI-MODAL TRANSPORT OF PERSONS AND GOODS THROUGH THE USE OF INFORMATION & COMMUNICATIONS TECHNOLOGY.

Strategic goals:

- renovation, supplementation and modernization of railroad, road, air and maritime transport by means of information & communications technology;
- establishment of an ICT system for calculating fees for the use of infrastructure on a market basis, which will provide a more balanced distribution of use of individual transport infrastructures and more balanced development of the transport activity in Slovenia;
- further active involvement of Slovenia in strategic European projects intended to improve transport with the help of information & communications technology.

Areas of activity:

- using information & communications technology to ensure safer, unhindered, economical and efficient transport of persons and goods, regardless of mode;
- developing and introducing new ICT methods and technologies in transport;
- ensuring more efficient use of the current traffic infrastructure through the use of information & communications technology;
- ensuring better symbiosis between transport and other segments of the (information) society in order to create synergetic effects.

7.9 e-Environment

Spatial planning and real estate are two areas important for society, as well as the information society, when we speak about e-environment and real estate. The foundation for accelerated development of both areas is the constant and precise documentation of real property and space. In recent years, the foundations for digital spatial planning and real estate data were laid in Slovenia, providing a resource for all other users of such information. Real property information is presently kept in multiple basic archives (land cadastre, building cadastre, land register). Work is currently underway on two new archives, namely the real property register (multi-purpose collection of information on real estate) and a consolidated cadastre on public and business infrastructure.

Services and solutions of e-space and real estate should be looked at as a competitive advantage rather than simply a technology, as they not only support operations on the implementation level, but they can also provide new services for numerous users through proper use. Because of the introduction of great changes in IT support, great changes are also happening in society in the field of documenting real property. Real property data is of critical importance for the operation of practically all ministries, municipalities and local communities, and often also for the business community and individuals; therefore documentation of real estate requires quality IT support focused largely on connectivity: two-way information connections are being established.

Vision:

TO SATISFY USERS AND CONTRIBUTE TO THE PROTECTION OF CITIZENS' PROPERTY AND BETTER RELATIONS IN SOCIETY AT LARGE THROUGH THE PROVISION OF COMPLETE, ACCURATE, TOPICAL AND CENTRALLY ACCESSIBLE SPATIAL PLANNING AND REAL PROPERTY DATA.

Strategic goals:

- simplifying procedures, management and ongoing administration of quality data on all real property in the land cadastre and building cadastre, and data on the actual state of real property in the real property register;
- renovating and consolidating real property records in a central externally connectable system;
- ensuring the conditions for meeting the requirements of the European directive INSPIRE for ensuring national and European-level spatial planning data infrastructure;

- establishing a central organizational structure for comprehensive record-taking of all data on real property;
- establishing a system of general market value of real property and mass valuation of property for the purposes of property taxation and improving transparency and efficiency of the real estate market;
- managing basic spatial planning systems with the application of topographic and mapping standards, and introduction of standardized technological solutions which will enable electronic use.

Scope of activity:

- ensuring complete, accurate, topical and centrally accessible data on real property in an integrated multi-purpose database;
- locating the maintenance of real property records in society, as this is not only the task of one public institution, but rather of society as a whole;
- supporting development of the real estate system and development of the topographic system in order to support the implementation of spatial planning and environmental policies, as well as agricultural and land policies;
- regulating the real property market by providing a comprehensive and user-friendly service which the user can take advantage of at any time to gain central access to the required data, as well as to obtain certificates and carry out any required services.

7.10 Public Internet access points

A public Internet access point allows access to modern information & communications technology and online content. In simple terms, it is a computer workstation with Internet access which is available to the general public. Here anyone can use such technology, learn to use the computer, perform e-services and work with the computer. This allows access to all: tourists, citizens, passers-by, and especially those who would otherwise not have the opportunity to use modern technology and Internet access.

Studies show that people show demand for public Internet access points in order to use modern information & communications technology and to gain Internet access. The possibility of access to electronic transactions, information, content and services at any moment and anywhere is a goal which requires the establishment of public points of access to modern information & communications technology and online content and services. In this context, access to technology is the first step which provides the possibility, and this possibility depends on the content and services and on suitable incentives. The available technology must be used, and it can only be used properly through adequate training and education, which is the second step. Using skills and knowledge required in the information society is the final goal which is expected from public Internet access. The paths to public access with the general public as the target group are very different. In Slovenia, the establishment of public access points is generally in the domain of independent institutions (student and youth clubs, societies, civil initiatives, etc.) and libraries, which are generally limited in terms of technology. Another provider of public access points are various commercial organizations (e.g. Telekom Slovenije, the Slovenian postal service), which offer services in addition to technology (proprietary services, e-government, etc.). The state has taken a broad approach to this issue, establishing public access points in the form of centres (e-schools, e-libraries, multimedia centres, Internet cafes, Internet booths), which offer

technology, services and content (workshops, education, presentations, etc.). Technology only provides a basic foundation, while content and services, as well as suitable knowledge, are critical for living as part of the information society. All documented and registered public access points across Slovenia are listed at http:\\e-tocke.gov.si.

Vision:

ENSURE FREE ACCESS TO THE INTERNET AND E-CONTENT FOR ALL CITIZENS REGARDLESS OF LOCATION, GENDER, SOCIAL STATUS, AGE, EDUCATION LEVEL OR PHYSICAL ABILITY.

Strategic goal:

- to provide public access to the Internet across all regions in Slovenia.

Scope of activity:

- supporting the process of establishing and the operation of public access points across Slovenia;
- providing for the establishment and operation of public access points and information & communications technology in various public institutions, such as libraries, multimedia centres, tourist and information centres, etc.

7.11 e-Inclusion and e-Accessibility

E-inclusion is a priority task of the EU in the field of the information society, as is evident from the guidelines of the i2010 initiative. The European Commission is very sympathetic to the issues of e-inclusion and the related issue of e-accessibility. One of the important leverages to ensure that ICT products and services are accessible to disabled and motion-impaired individuals is the public tendering system. It is estimated that Europe will soon have 98 million people – disabled persons and functionally impaired persons – who face difficulties in relation to e-inclusion. Most European legislations provide for, but do not require, IT solutions which meet the standards of e-inclusion and e-accessibility.

Slovenia will focus on ensuring inclusion of its entire population in the modern social and technological channels. Critical activities will be focused on special needs populations and other groups who find themselves at a disadvantage in becoming part of the information society (e.g. young families, job seekers, older population). Inclusion of these population groups in the information society requires the use of results and advantages brought and enabled by modern information & communications technology.

One important feature of the Internet is its social independence, where differences between races, classes, special needs groups and marginal groups do not present a barrier to communication, such as is often the case in the real world. Modes of communication such as e-mail, e-publications, e-conferences, chat rooms and websites increase the access of large groups of people to information and open up the possibilities that experts, researchers, students, professionals, laymen and users have more or less equal access to information and contribute to the creation of content and to the virtual community. Information & communications technology can help greatly in raising the quality of communications and information exchange among all those involved in the resolution of a particular issue. It allows access to most social services even outside regular working hours, and meetings of

supervision groups and self-help groups anytime, anywhere. Forms of e-communication offer a wide choice of making contacts, increase the freedom of individuals, and give them access to an increasing number of social and emotional resources and sources of knowledge. People with higher levels of social activity and with a more pronounced sensitivity to social and community relations experience improvement in psycho-physical well-being and live a healthier life. The globalization of relationships already points to new forms of social integration and opportunities for social outreach. Virtual social help means a combination of technological, social and cultural necessities, and is a combination of anonymous public support and individual environments. The need for virtual socialization is more pronounced in special needs persons, as they have trouble accessing social services and obtaining information. This form of communication is particularly suitable for people with physical and mental disabilities, for people with a pronounced need for social assistance, and for dislocated people, people with verbal communication impediments or people with social impediments. The virtual social network affords unimaginable opportunities for seeking out sources of help. Providing people with access to information & communications technology with all of the aforementioned features means that we focus not only on the person's health, but also on the social dimension of the quality of life and resolution of problems.

E-accessibility means the overcoming of technical barriers and issues faced by disabled and functionally impaired persons when they attempt to participate as an equal part of the information society. It is an element of the broader concept of e-inclusion, which also resolves a number of other barriers such as financial, geographical, educational and others. E-accessibility is a notion which denotes access to the real world and the growing information society, enabled through the use of new information & communications technologies.

The term "e-accessibility" points to a need that information & communications technologies themselves be accessible, in the sense that they can be used by as many people as possible, including special needs populations and other population groups which are at risk of being left behind in the wake of the rapid development of this technology on all levels of life and society.

Vision:

USING MODERN INFORMATION TECHNOLOGY TO ENSURE ADEQUATE OPPORTUNITIES FOR THE INCLUSION OF ALL POPULATION GROUPS IN THE INFORMATION SOCIETY, AND ACTUALLY INCLUDING THEM IN MODERN SOCIAL AND TECHNOLOGICAL CHANNELS THROUGH INCENTIVES.

Strategic goals:

- developing suitable technologies and solutions for disabled and functionally impaired persons, and enabling these persons ease of use of the information society, providing equal opportunities and access to government administration information and services online;
- regularly informing the population about services enabling better inclusion in the information society;
- implementing an active employment policy to help job seekers with training in the field of the information society, and implementing training programs for the information society, which is in the domain of the Employment Service of Slovenia;
- allowing young families and the older population easy resolution of cases through e-services;

- increasing investments in education and promoting lifelong learning;
- establishing Web information solutions and social service solutions which will allow equal opportunities for all users (connections between various registers and social welfare systems will need to be established);
- establishing a central access point/information point (social services centre) where citizens can obtain all information about social welfare in one place, and social rights can be also exercised and decided in one place;
- encouraging the use of information & communications technology for better integration and better connections of the disabled and functionally impaired persons in terms of e-accessibility, which includes use of the Internet, hardware and software;
- adapting content, materials, information and goods so that disabled and functionally impaired persons can use them in the same way as others (e.g. adapting public transport vehicles, better use of sign language for the hearing impaired, marking products with Braille, etc.);
- including people with special needs in research and developing ICT solutions (facilities for employment of such persons, additional employee training in companies, etc.);
- establishing cross-generational centres to encourage and develop e-content and make everyone capable of life in the information society.

Scope of activity:

- providing equal opportunities for inclusion in the information society for all population groups;
- enabling the actual inclusion of all populations in modern social and technological channels;
- research, development and implementation of solutions and services of the information society, adapted to disabled and functionally impaired persons;
- breaching the digital divide – policy and professionals for a faster and better introduction of ICT in the social welfare system and social work.

8 STRATEGY IMPLEMENTATION PLAN

8.1 Carrying out the strategy and the actors involved

The strategy will be implemented on a sectoral basis. In line with the set strategic objectives, the bodies responsible for individual areas will prepare and coordinate sectoral strategies and action plans, which will detail the sectoral objectives, actions and manner of implementation in order to achieve the set goals; relevant indicators to measure the effects will also be prepared. Individual bodies are responsible for the execution of sectoral action plans, and the government of the RS is responsible for implementation of the strategy as a whole. Table 3 shows the responsibility of individual ministries for individual segments of the strategy.

	MVZT	MG	Ministry of Public Administration	MC	MoESP	MŠŠ	MOP	Ministry of Labour, Family and Social Affairs	MzP	MH	Other bodies
SINGLE EUROPEAN INFORMATION SPACE AND SLOVENIA											
broadband accessibility	○	●		○		○				○	
transition from analogue to digital broadcasting	○	●		○							
e-business	●	○	○								
INNOVATIONS AND INVESTMENT IN ICT											
scientific research infrastructure	●										
innovative R&D environment	●										
R&D and implementation projects	●	○		○						○	
supporting the development of solutions based on open code	●		○								
European programmes	●	○	○	○		○	○			○	
AN INCLUSIVE INFORMATION SOCIETY AND THE QUALITY OF LIVING											
e-content	●			○		○				○	
e-education	●					●					
e-culture	○			●							
e-health	○		○					○		●	
e-government	○	○	●	○	○	○	○	○	○	○	○
e-justice					●						
e-transport	○								●		
e-environment	○		○				●				
public access points	●		○	○		○		○	○	○	
e-inclusion	●	○	○	○		○		○		○	

Table 3: Matrix of responsibility and involvement of ministries in terms of implementing individual segments of the strategy

● – in charge of preparation and implementation ○ – involved in preparation and implementation

The activities involved in implementation of the strategy will be financed through:

- the national budget – funds from individual ministries and bodies;
- economic funds (investments in ICT and R&D, PPP);
- structural funds (EFRDP, ESF);
- EU programme funds (IST, eContentPlus, CIP, Safer Internet plus);

8.2 Monitoring implementation of the strategy

The ministry in charge of monitoring the implementation of this strategy is the Ministry of Higher Education, Science and Technology, which has established an interdepartmental taskforce for this purpose involving representatives from all ministries involved in preparing the strategies. It also involves representatives from all other ministries and bodies which have expressed an interest in collaborating on the implementation of this strategy. The taskforce will be charged with monitoring the fulfilment of the objectives of the strategy, while at the same time it will also dynamically adapt priority tasks and manners of further implementation of the strategy based on changing circumstances, priority tasks and fulfilled objectives. At the end of the year, members of the interdepartmental taskforce will prepare a report on the implementation of sectoral action plans and an annual assessment of the indicators for the si2010 strategy (for their assigned department). The Ministry of Higher Education, Science and Technology (Information Society Directorate) will examine these reports and collaborate with the interdepartmental taskforce to prepare an annual report on the implementation of the strategy for the Government of the RS.

For ReNDP projects in the segment of the information society (eJustice, eHealth, NUK-II/digitization and Sustainable Mobility/intelligent systems architecture), the provisions of the implementation plan have been applied, as well as provisions of the resolution on national development projects for the period 2007–2023, adopted by the Government at its regular meeting of 7 December 2006.

For the successful and comprehensive monitoring of the strategy implementation, the Ministry of Higher Education, Science and Technology will establish an advisory body consisting of:

- Expert Council:
  The Expert Council will be the advisory body tied to the Ministry of Higher Education, Science and Technology. It will consist of high-profile experts from the topical fields involved in the strategy, equally representing professional (universities, institutes), business (private sector) and civil society environments. The purpose of the Expert Council is to provide expert opinions on the comprehensive implementation of the strategy and further development of the information society in Slovenia and the EU.
- expert taskforce by individual subject fields:
  For topical issues involving narrow individual fields, expert teams will be organized, providing expert opinions and proposals which will serve as a basis for planning decisions and measures. If there is already an expert team active within the framework of the public administration dealing with the relevant topical field, such a team will deal with the relevant tasks.

The procedure of creating the Expert Council and expert teams will be public and will take place in a transparent manner; the main standard applied in the selection process of its members will be their expertise.

Implementation of the strategy is planned until the year 2010. Monitoring the implementation and realization will take place in stages, as follows:

2009	interim analysis of strategy implementation for the 2007–2008 period
2011	interim analysis of strategy implementation for the 2009–2010 period

Table 4: Monitoring implementation and realization of si2010 in two stages

In individual development areas, we will monitor the issues and solutions and compile appropriate analyses and best practices. These analyses will focus on all aspects of individual involvement, the economy and society in the context of the information society. In this context, comprehensive solutions and services will be studied, especially user needs and their everyday situations. Analyses and established cases of good practice will be published as the implementation of the strategy is monitored.

9 INDICATORS

The effects of implementing the strategy will be measured through the application of information society indicators, as measured by the Statistical Office of the Republic of Slovenia and Eurostat. At the same time, they will be harmonized with consolidated indicators on the European level for the purposes of determining the success of implementing the i2010 initiative. Proposed i2010 indicators are presented in the document i2010 High Level Group – Benchmarking Framework (20 April 2006).

The measured consolidated indicators, broken down by individual areas of si2010, will be included in segment action plans, which are already being successfully implemented in certain cases (e.g. e-government action plan).

Areas	Indicator	Opening balance	Target position
SINGLE EUROPEAN INFORMATION SPACE AND SLOVENIA			
	broadband coverage (number of subscribers per 100 inhabitants)	8	20
	number of subscribers to broadband connections (DSL, cable internet, optical cable connection, broadband wireless connection)		
	share of households with broadband connections	36%	90%
	share of households with home Internet access	54%	70%
	share of companies with broadband connections	75%	80%
	Internet access speed (256, 512, 1024 Kbps, 2 and 4 Mbps)		
	mode of Internet access (computer, TV, mobile device)		
	share of individuals who use the Internet on a regular basis (at least once per week)	56%	80%
	share of individuals who have performed special services over the Internet in the last three months (by activity, mode of Internet access and age)		
	share of the ICT sector in GDP and number of employees in the ICT sector		
	growth of ICT (added value)		
INNOVATIONS AND INVESTMENT IN ICT			
	investments in research and development and ICT development in the public sector, measured as a percentage of GDP, and the share of all investments in ICT		
	investments in research and development and ICT development in the economy, measured as a percentage of GDP, and the share of all investments in ICT		

	share of companies with LAN and intranet or extranet	LAN 78% intranet 27% extranet 13%	
	share of companies with broadband connections	75%	80%
	share of companies using an open-code system	Browsers (32%), operating systems (30%) database applications (19%)	
	share of Internet sales in companies (e-commerce)		
	share of companies which received orders over computer networks	9%	20%
	share of companies which sent orders over computer networks	21%	30%
	share of companies which have internally connected automatic business systems (ERP)	14%	
	share of companies which have integrated automatic business systems with supplier, customer networks (SCM)	6%	
	share of companies using customer relations management applications (CRM)	7%	
	share of companies sending or receiving electronic invoices		
	share of companies which enable secure online transactions		
	share of companies using e-signatures (digital certification)		
	share of employees using computers with Internet access		
	share of computer technicians in the employee structure		
	share of employees with ICT skills		
AN INCLUSIVE INFORMATION SOCIETY AND THE QUALITY OF LIVING			
	reasons for the inaccessibility of home Internet connection or reasons for inaccessibility of home broadband Internet connection		
	level of development of basic public services available online in line with the European Commission's measurements of development in the EU		
	share of the population using government websites according to SORS data		
	share of the population using government websites according to SORS data		

Table 5: Information society indicators

10 CRITICAL FACTORS FOR THE ACHIEVEMENT OF GOALS

Below are presented some of the most critical factors for the realization of this strategy:

- Strong and unified political will to implement the strategy

Due to the scope of the factors and topic areas involved, it is imperative to connect multiple areas, making it possible to efficiently coordinate planned activities. The latter requires strong and unified political support. In the process of preparing and implementing individual action plans, a priority list of projects to be carried out and a particular timeframe must be prepared on the level of individual ministries. In order to successfully carry out these activities, the progress of all projects must be monitored on an interdepartmental level, which provides for the possibility of efficient monitoring and taking appropriate action in the strategy implementation process. Constant support must be provided by the executive manager or head of the body, as well as the government.

- Involvement and collaboration with all interested stakeholders

All interested stakeholders must be involved in the process of preparing and implementing measures, representing the business community (measures to increase innovation and investments in information & communications technology), the non-profit sector (ensuring an inclusive information society) and the public sector (establishing an environment to improve the quality of life), all of which will ensure a more successful achievement of the set goals. In preparing and evaluating measures, it is particularly important to involve representatives from communicological, social and political sciences, who will be able to monitor and shape the development of social processes from a social and communicological standpoint, as these mark the development and character of modern information societies.

- Qualification and informing users

With regard to developing and using e-services and e-content, adequate skills to use such services and content must be provided, and users must be made aware of the possibilities afforded by ICT and information society services, or we cannot hope to take full advantage of such e-services.

- Financial means for realization of the set tasks

The availability of financial means required for carrying out planned activities and projects is crucial in order to achieve the set goals. This is particularly important in planning the budget for projects in which the state is a participant. At the same time, budget planning is a condition for reaching the level of investment in information & communications technology, which assumes a certain portion of co-funding for research & development in the field of information & communications technology in public and private corporate entities.

- Training for IT and computer professions

The possibility of quality training for computer and IT professions should be ensured, so that these professions can develop and support e-services and background systems, as well as the required technological infrastructure.

– Investment in research & development and application thereof in information society solutions and services

Ensuring adequate investments in research & development for areas involving the development of the information society is a precondition for achieving other strategic goals, as it creates the knowledge needed to develop new technologies, services and applications, and at the same time enables the generation of new and innovative ideas for use. Ensuring the conduct of research studies to generate useful results which can be integrated into information society solutions and services is also crucial.

– Digital content archival

The increasing development and use of e-content generates a growing amount of digital data which must be properly processed and stored, especially if the legal and topical significance warrants it. This will enable data use over a longer period of time. This is especially important from the aspect of preserving the digital national cultural heritage. Adequate and quality use of archival systems must be ensured, which will be able to withstand changes in technologies and digital data formats.

– Dialogue with users and measuring satisfaction levels

In order to provide quality and appropriate e-content and e-services, a system for determining user satisfaction and e-service suitability must be established, as this will help improve the user experience and thereby increase user interest.

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