Ministerstvo financií
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Information Society Strategy for 2009 – 2013

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1. Introduction

Only those countries which pay adequate attention to the development of information society and digital technologies stand a chance of achieving economic success and securing high standard of living for their citizens. It is a challenge and a must for Slovakia to catch up with the most advanced knowledge-based economies that are able to capitalise on the knowledge and information and put to use the latest know-how in the field of information and communication technologies.

In this document, the Ministry of Finance of the Slovak Republic, in collaboration with the Government Plenipotentiary for Information Society, presents an updated strategy for the information society building in Slovakia. Apart from the effort to reflect the new areas and trends of ICT development, this high-profile strategic document for the development of information society has also been inspired by a need to streamline and update the existing strategic documents the timeframes of which have been mostly expired. At the same time, it has become necessary to clearly define the key areas of information society development, emphasise mutual linkages, and put in place a framework for the new, partial strategic documents covering different areas of information society development, which either have been or are being prepared.

The information society development is largely determined by the ability to increase general access to the information and communication technologies, to the Internet in particular, which has a direct impact on the quality of citizens' life and competitiveness of enterprises within the single information space. It is obvious nowadays that the quality of life, as well as the level of collective wealth and productivity, which characterise the most developed countries, are determined by the ability of their societal and economic structures to make sophisticated use of the state-of-the-art information and communication technologies and, at the same time, support research and innovation. In the state administration, social care, healthcare and education, but also in other domains, such as the environment, justice or business, which collect, analyse, process, assess and, subsequently, share and disseminate large quantities of data, the ongoing dynamic development has made the use of such technologies very demanding, yet absolutely necessary in today's world.

The forming of the strategy required cooperation among all stakeholders, their mutual understanding and consensus, and a clearly defined and realistic political support. These factors will be of no lesser importance when it comes to the strategy implementation, which will require concentrated and efficient cooperation among the bodies of state administration. The Slovak Ministry of Finance, as a central body of state administration for information society, in collaboration with the Government Plenipotentiary for Information Society, will coordinate the measures aimed at achieving the goals of the strategy, in line with the vision of taking up the possibilities and opportunities offered by information and communication technologies in order to ensure successful development of Slovak society.

2. Brief analysis of the current state of play

2.1. OVERVIEW AND EVALUATION OF STRATEGIC DOCUMENTS

The direction of the existing strategic documents adopted by the government for the area of information society points out a systematic effort geared towards developing information society, along with the ambition to follow and, gradually, catch up with the most advanced EU Member States. Already back in 2001 the Slovak government, in its document entitled Information Society Policy of the Slovak Republic[1] declared the comprehensive and systematic approach towards information society development as one of its strategic intentions and one of the main priorities for Slovakia in the years to come.

The Information Society Strategy[2], which the Slovak government adopted in 2004 along with the Action Plan, elaborated on the Information Society Policy from a long-term perspective, set the priority areas and goals, and laid down a specific and binding timetable for the steps to be taken in developing information society. The Information Society Strategy set ambitious goals for individual priority areas, constituting the building blocks of the three identified pillars of the information society development, namely the content, human resources and

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[1] Slovak Government Resolution No. 522/2001

[2] Slovak Government Resolution No. 43/2004

infrastructure. Until 31 December 2008, the fulfilment of the tasks set out in the Action Plan had been monitored on a continuous basis; the open nature of the plan enabled the addition of new tasks as the needs of individual sectors developed. On the downside, however, the plan contained quite a number of generally formulated tasks without specific financial allocations, as a consequence of which some tasks have not been performed at all while some were performed to a limited extent only, or with delay. The progress in the field of information society development is difficult to measure. The resounding need of today is to integrate the information society development strategies into the current national and European policy frameworks, factor in the emerging trends and aspects of ICT development, update the monitoring systems, and emphasise mutual linkages and interdependencies among the key areas of information society development, which was the reason for drawing up this document.

In reaction to the Lisbon Strategy endorsed by the EU summit in Lisbon in 2000, the Slovak government adopted the Competitiveness Strategy for the Slovak Republic until 2010[3] in 2005, which defined those priority areas of the Slovak policy that have the most significant potential in terms of meeting the goals of the Lisbon agenda. The priority areas also included the information society development. Specific tasks which should have been accomplished by the end of the election term in 2006 were laid down in the Action Plan for Information Society[4] entitled Minerva. Most of the tasks were taken over from the Action Plan for the Information Society Strategy, causing overlaps and disarray in the set of strategic documents. Despite the fact that only less than a half of the specific tasks formulated in the Action Plan for Information Society was accomplished within deadline, several projects have been indeed successful (a project of free electronic access to the Land Register, a project for schools entitled Digitalised Stur Legacy, training of staff in public administration focusing on digital literacy, and preparation for the ECDL certification through electronic training).

The tasks in the area of support to information society development in Slovakia were also formulated in the 2005 government-endorsed Sustainable Development Action Plan for 2005-2010[5], which sets out, in a compact form, the priorities and tasks ensuing from the National Strategy for Sustainable Development ("NSSD"). The NSSD transposes the tasks and obligations ensuing from Slovakia's membership in the EU and from its international commitments vis-a-vis the UN and OECD; the notion of sustainable development is enshrined in the Slovak law as development providing for the basic needs of the present and future generations without undermining biodiversity and/or disrupting the natural functions of ecosystems. The specific tasks formulated in this Action Plan concerned, in particular, the school sector, emphasising active use of ICT in the teaching process. The Sustainable Development Action Plan for 2005–2010 is a valid and continuously monitored strategic document. However, its contribution to the information society development does not lie in the formulation of tasks (which copy the tasks defined in the aforementioned strategic documents), but rather in the definition of the goals and principles of sustainable development which are incorporated into and implemented through various long-term economic and social development strategies of the Slovak Republic.

In connection with the renewed Lisbon Strategy and within the overall strategic framework for sustainable development, the Competitiveness Strategy for the Slovak Republic until 2010 served as a basis for the development of the National Reform Programme of the Slovak Republic for 2006 - 2008[6], adopted by the Slovak government in 2005. It focused, in particular, on the activities and measures aimed at enhancing competitiveness and economic growth and on the job creation; the programme stipulated information society development as one of its priorities and included the tasks defined in the Action Plans of the Information Society Strategy and the Competitiveness Strategy for the Slovak Republic until 2010. The current National Reform Programme of the Slovak Republic for 2008 - 2010[7] is a dynamic strategic document monitored by the Slovak government and the European Union and regularly updated in line with the guidance provided by the European Commission and with the conclusions formulated by the spring European Councils. In the Action Plan, an annex to the National Reform Programme of the Slovak Republic for 2008-2010, the information and communication technologies section

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[3] Slovak Government Resolution No. 140/2005
[4] Slovak Government Resolution No. 557/2005
[5] Slovak Government Resolution No. 574/2005
[6] Slovak Government Resolution No. 797/2005
[7] Slovak Government Resolution No. 707/2008

contains those tasks and measures that are critical to achieving the goals of the Lisbon Strategy and capable of boosting competitiveness, economic growth and job creation. Again, rather than being newly formulated, they represent a selection of the key measures covered by – and largely also funded from – the Operational Programme Information Society (electronic public administration, implementation of electronic register services and their interconnection, wider availability and support of broadband access infrastructure, electronic public procurement, and others).

The Roadmap for e-Government[8], prepared on the basis of the Information Society Strategy and the Competitiveness Strategy for the Slovak Republic until 2010, represented a comprehensive proposal for the systematic development of e-Government in Slovakia through the introduction of electronic services. Apart from introducing e-Government services for citizens and enterprises, the Roadmap also contained a timetable for the implementation of the basic elements necessary for electronisation. Most of the tasks were not implemented in line with the project timetable (i.e. by the end of 2008) due to the insufficient allocation of funds. The unfulfilled tasks, or their parts, necessary for the implementation of e-Government are dealt with in the strategic documents for e-Government adopted by the Slovak government in 2008. These documents include the e-Government Strategy and the National Concept of e-Government, which are described in a greater detail in Chapter 3.3.

The above-outlined strategic documents, which cover information society development, clearly point out a need to reconsider the strategy for information society development, taking into account both the experience gained and the current economic situation. The new Information Society Strategy for 2009 - 2013 replaces the original Information Society Strategy and Action Plan, taking on board the new trends in ICT development, taking into account partial achievements of the recent years, and focusing on those areas where the progress achieved failed to meet expectations. Although this document places the individual areas covered by partial strategic documents[9] from the viewpoint of information society development in the context, the present strategy does not elaborate on them any further. This is done in order to avoid lack of clarity and eliminate duplicities in tasks, which caused problems particularly when evaluating the implementation of the tasks laid down in the previous strategic documents.

2.2. INFORMATION SOCIETY IN THE EU

The information society development can generally be characterised by fostering individualism and personal independence, improving ICT accessibility and interoperability, reducing digital aversion, increasing citizens' participation, facilitating cultural homogenisation across the EU, decentralising public administration, and generating pressure on the efficiency of public spending. The trend of enhancing the citizen and enterprise participation (eDemocracy), as well as cultural heterogeneity, characterised by the development of information communities and active participation of the state (central government and municipalities) where the market fails to deliver ICT accessibility, is estimated to prevail by 2020.

These trends are confirmed by the European leaders in the information society development, particularly the Nordic states and Austria. In the late 1990s, the governments of these countries launched strategic investments designed to boost information society development. Nowadays, these countries boast a well-developed communication infrastructure and a good back-office for public administration. Most services in public administration are provided electronically and their processes are measurable. The development of services with a higher value added for the user, based on good service management and development of pro-active and aggregated services (several services aggregated into one) is rising to prominence. The execution of the key processes in public administration is gradually transferred from customer contact points to the back office (servicing departments without direct contact with the customer). At the same time, the availability of services provided via the Internet, telephone, digital TV, or at one-stop shops operated by public administration or private sector, is increasing.

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[8] Slovak Government Resolution No. 837/2005

[9] For example, Strategy for Informatisation of the Regional School System, National Strategy of the Slovak Republic for Digital Inclusion, eGovernment Strategy of the Slovak Republic, National Concept of eGovernment, OPIS

From the EU perspective, the policy of information society building has shifted in the past decade from purely infrastructural issues to socio-economic goals being achieved with the support of the Internet and electronic means of communication. The governments of Member States are increasingly integrating the information and communication technologies into various aspects of business and social life. They are coordinating their information society development strategies with policies designed to stimulate economic growth, job creation, adjustment of education systems, reduction of digital divide, and healthcare improvement.

In line with the goals of the Lisbon Strategy, the European Commission proposed a strategic framework in 2005, which provided a broader political orientation. Initiative i2010 – European information society for growth and employment formulated an important task for ICTs in the horizon of five years in such areas as modernisation of e-Government services, investment in knowledge and innovation, or the revision of the regulatory framework for electronic communications. In this connection, the information society development strategies of Member States are based on three common priority areas:

o Single European Information Space – creation of an open, rich in content and a single EU market for services in the field of ICT and media; Under this priority, the Commission accentuated interoperability, security, regulatory mechanisms for electronic communications, and a comprehensive approach for compatible digital rights management;

o Innovation and Investment in ICT research – strengthening of innovation and investment in ICTs and promotion of business development and ICT-based reorganisation of business processes.

o Inclusive Information Society – make the benefits of information society available to all, promote the growth and creation of new jobs, improve e-Government services, enhance the quality of life.

Two years after the launch of the i2010 Initiative, the European Commission, in its mid-term review[10], accentuated the role played by the information and communication technologies in the pursuit of the Lisbon goals. Since 2005, Europe has become one of the world leaders in the development of digital economy. The European broadband market has more subscribers than any other economic region, and half of European citizens use the Internet on a regular basis. As much as 77% of companies, 67% of schools and 48% of physicians in the EU used the benefits of broadband connection. Nevertheless, some EU areas are not yet fully connected and their development is lagging behind. The review thus appeals on all Member States to step up their efforts in implementing broadband access and continue developing cross-border communication services and making services available also in rural and remote regions.

In the first months of its tenure the newly created European Commission will focus on the new priorities of the i2010 Initiative for 2010-2015, which are currently being prepared. If the European Union wants to defend its key position in the international ICT market also in the future, increased attention needs to be paid to high-speed infrastructure (next generation access networks, IPv6, „Internet of Things"), research and innovation, Internet services and promotion of the international competitiveness of the European ICT industry. The building of the Internet on the basis of open platforms and standards, developing a new model for Internet administration, strengthening the EU position in those international forums that have an impact on global ICT development, and ensuring extensive use of the information and communication technologies, particularly for projects leading to energy-efficient (or the so-called "green") infrastructure, remain challenges ahead. To the extent commensurate to the level of information society development in Slovakia, these new priorities are reflected in the present document.

2.3. CURRENT STATE OF PLAY AND INFORMATION SOCIETY PERSPECTIVE IN SLOVAKIA

Similarly as other industries, also the sector of information and communication technologies in Slovakia is currently affected by the economic crisis. According to an OECD analysis[11], the upcoming period will be characterised by a slowdown in the ICT industry growth as a consequence of the recession caused by the unfolding global economic crisis and decline of certainty on the part of customers and enterprises. On the other hand, some areas will be less affected, such as software development and ICT services. Moreover, in the case of broadband and communication infrastructure, which are more resilient to recession, certain favourable effects

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10 COM(2008) 199, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Preparing Europe´s digital future, i2010 Mid-Term review
11 OECD Information Technology Outlook 2008

and economic growth can be expected, not only in terms of profit, but also in terms of increased economic activity and creation of new markets for applications. At the government level, ICT investments until 2013 will be significantly supported through the implementation of the Operational Programme Information Society (OPIS), as well as through other operational programmes featuring information society as their horizontal priority.

The level of information society development can be characterised through a number of indicators. For the purposes of this document, three basic indicators suffice in order to get a good picture of the situation in Slovakia: (i) availability of electronic services, (ii) penetration of broadband Internet connections, and (iii) digital literacy of citizens. While the availability of electronic services and broadband penetration characterise the supply side of the information society, the level of digital literacy among Slovak users characterises its demand side.

The availability of electronic services and, in particular, the availability of the so-called 20 basic e-Government services that should be provided via the Internet at a higher level of sophistication and without direct personal contact between the client and the institution, represents one of the basic indicators of information society development. These services, monitored and evaluated annually in all Member States, were defined by the European Commission already in the "eEurope 2002" action plan for information society. They can be divided according to the final beneficiary into services for citizens (12 services) and services for enterprises (8 services), and also according to the level of sophistication where the highest level, called "pro-active", offers not only electronic forms and the related transactional functionalities of services, but also enables the service provider to anticipate certain life situations of the user and thus offer the services proactively or handle them automatically. Based on the on-line availability of the 20 basic e-Government services and based on the level of sophistication of pro-active services, the last available evaluation (2007) placed Slovakia 24th amongst 27 Member States. Slovakia is considerably lagging behind especially when it comes to the availability of electronic services to citizens. A noticeable improvement in the evaluation can be expected only once the first e-Government projects contemplated by the Operational Programme Information Society have been implemented. The situation in the take up of e-Government services by citizens and enterprises is far more positive: Slovakia stands above the EU average and is one of the countries with the highest take-up of these services by enterprises.[12]

A comprehensive assessment of broadband penetration in individual Member States (so-called Broadband Performance Index – BPI) places Slovakia 21st in the European Union. According to the 14th implementation report released by the European Commission[13], Slovakia ranked 27th with the penetration of 10.9 fixed broadband connections per 100 inhabitants. The low penetration of fixed broadband connection is partly attributable to the relatively low number of connections through xDSL technologies and cable modems, which the most advanced EU countries use dominantly. However, Slovakia scores better than most EU members when measured by the number of optical and fixed radio connections. The comparison of the penetration of fixed broadband connections among households is not that pessimistic for Slovakia. With broadband access penetration covering 35% of households, Slovakia ranks 22nd out of 27 Member States. The penetration of mobile broadband connections has increased quite significantly in recent years. According to the 14th implementation report of the European Commission, the average mobile broadband penetration in the EU reached 13% in January 2009. Slovakia ranked 5th with a penetration of 14.9%. Thanks to its properties, the mobile broadband connection is, in some cases, becoming an alternative to the fixed broadband access. With fixed and mobile broadband connections taken together, the cumulative broadband penetration in Slovakia as of January 2009 reached 25.8%.

Although the Slovak telecom market is advancing rapidly thanks to technological changes, it has not yet delivered the degree of Internet penetration comparable to the advanced countries. The situation is particularly bad in the less developed areas (rural settlements with low density of population, areas with low industrialisation); about 33% of the schools with access to the Internet suffer from sub-standard connectivity parameters. At present, 14 schools have no Internet access. In the areas unattractive to the private sector due to long return on investment and the associated high business risk, funds will be made available under the OPIS programme to develop broadband access networks.

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[12] COM(2009) 390, Europe's Digital Competitiveness Report, Volume 2: i2010 — ICT Country Profiles

[13] Commission Communication to the European Parliament, Council, European Economic and Social Committee and the Committee of Regions – Progress Report for 2008 Concerning the Single European Electronic Communications Market in (14th Report)

The ability of the population to use modern information and communication technologies, also referred to as digital literacy, means the ability of the people to understand and use information in different formats and from different sources. The digital literacy of EU citizens is monitored in detail and from different aspects.[14] In terms of the intensity of ICT use, the level of the users' skills in Slovakia is relatively low and thus the country is also lagging behind in the preparedness of human resources to use ICTs efficiently. A moderate improvement can be noticed in the number of regular and frequent Internet users, which is slightly above the EU average; likewise, the percentage of those who have never used the Internet is lower in Slovakia than the EU average. The fact that all pupils on a regular course of study have a possibility to acquire basic digital literacy on the completion of compulsory education can be considered a positive investment in future.

The last places occupied by Slovakia in international comparisons are anything but flattering for they indicate a low degree of ICT inclusion into the socio-economic processes. The state budget expenditures on ICTs in the past, when the repercussions of the recession were not felt, were quite considerable[15]. Nevertheless, their impact in terms of pushing Slovakia higher up the EU charts has been minimal. The factors behind the stagnation include the fragmentation of competences among the bodies of central government in the area of informatisation. In the recent past, individual ministries exercised a large degree of autonomy in designing and implementing their informatisation measures, while the coordinating mechanism – which should have ensured a well-managed process and efficient use of government funds – remained insufficient.

The Slovak government understands that ICTs have a horizontal impact on the entire society, influence the quality of life, and constitute the backbone and a key stimulus for the development of a knowledge-based economy. In its manifesto, the government undertook to contribute towards the economic success and prosperity of the whole society through efficient use of information technologies. The consequences of the economic crisis and the related public spending restrictions underscore the need to have a coordinated government approach towards the development of information society. It is necessary to further intensify the integration of ICT policies into various government strategies (particularly in the area of education, healthcare, energy efficiency and social inclusion) in order to stimulate economic growth, employment and social welfare. To this end, the years to come will be dominated by themes such as the effectiveness and efficiency of spending policies, more vigorous reallocation of funds aimed at achieving the goals of the Lisbon Strategy, and implementation of the measures adopted by the Slovak government to overcome the impacts of the financial and economic crisis[16]. In other words, Slovakia will have to primarily support investments in the development of human capital and knowledge-based society, which entails, in particular, the areas of education, science, research and innovation, e-Government and broadband access.

3. Definition of key development areas and priorities of the Slovak Republic

3.1. BROADBAND CONNECTIONS BUILDING

Over the past decade the Internet has changed our economy and society to a considerable extent. As revealed by a report published by the European Commission in November 2008, broadband penetration in Europe continues to grow, the gap between EU countries is narrowing and mobile broadband is starting to take off.

In the years to come, the Internet will be much faster with the rise of high-speed networks offering broadband connection, thus enabling the introduction of a number of new interactive media- and content-related services. As the "Internet of Things" will continue to evolve, the web will become a means of interaction for machinery, cars, devices, sensors, to name but a few. This will lay the groundwork for a host of new applications, e.g. monitoring in energy industries, traffic safety systems or the security of buildings. And finally, with costs expected to plummet on a large scale, the performance of software facilitating the use of services over the Internet will be given a

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14 Document: Digital Literacy Review 2008
http://ec.europa.eu/information_society/eeurope/i2010/docs/digital_literacy/digital_literacy_review.pdf
15 About SKK 20 billion in 2004 – 2006; source: Ministry of Finance of the Slovak Republic
16 Slovak Government Resolution No. 420/2009, Measure No. 20

boost, all of which will, to a considerable extent, encourage productivity increase in all companies irrespective of their size. If deployed effectively, the 'Internet of the Future' will bring innovation, higher profits from production, new markets and economic growth, including more jobs in the upcoming decade.

In general, the transition to the Internet of the Future would be impossible without making broadband access available for all citizens. The gap between the strongest and the weakest broadband market participants is still considerable. The responsibility for this gap can be attributed to insufficient competition and the weaknesses of regulation. These issues were addressed by the Council and the European Parliament when discussing draft revision of the regulatory framework for electronic communications, which should become effective no later than at the beginning of 2010. Therefore the policy makers must stay focused on broadband access strategies. The documents approved by the Slovak government, which discuss the issues of broadband access strategy to a greater detail, include the National Policy for Electronic Communications for 2009-2013[17] and the National Broadband Strategy of the Slovak Republic[18], both of which are within the remit of the Ministry of Transport, Posts and Telecommunications of the Slovak Republic.

In its annual report on the renewed Lisbon strategy[19], the European Commission suggested the launch of the "broadband performance index". The broadband performance index reflects the needs as far as the speed, coverage, affordability, innovation, high-quality services and favourable socio-economic environment are concerned. The "broadband performance index" is therefore a combined indicator allowing the Member States to benchmark their performance on a range of factors and to get an insight into areas that should be given due attention. Due to an upsurge in the use of the Internet, it will also be necessary to tackle the issues of security and privacy.

As stated in Chapter 2.3 of this document, the data from the 14th Implementation Report of the European Commission indicate that broadband penetration in the Slovak Republic ranks among the worst of all EU-27 countries. In order to bring broadband Internet penetration on par with the advanced EU-15 countries, Slovakia defined the third priority axis entitled "Improving access to broadband Internet" within the Operational Programme Information Society. By means of indirect tools, the priority axis will foster sustainable development of broadband access networks in territories deemed unattractive by commercial providers, thus increasing the quality of competitive environment in the telecommunications market. This effort is aimed at making broadband Internet accessible for all citizens, whereas the strategy of the commercial operators is to cover areas with the highest density of the population or with the highest concentration of business activities. The third priority axis will therefore target the least advanced territories of the Slovak Republic. The number of Internet broadband connections will be increased on a case-by-case basis. In particular, due account must be taken of the geographic and socio-economic setting and, depending on the character of the environment, an optimal technological and economic solution will be chosen. Investments into access networks from the funds allocated for the OPIS should be, for the most part, undertaken at the level of the regional and local administration, as their construction can be substantially accelerated in this manner. However, it will also be necessary to address further issues related to the extension and operation of optical networks and the provision of broadband services as such. The implementation of this measure will therefore be based on a feasibility study that is to be incorporated in the specific project packages offered to municipalities, network operators and providers of broadband services from the resources of this priority axis. As the key outcome of the feasibility study, solutions will be prepared for specific territories. The preparations for the implementation (including the implementation of projects and its monitoring) will be made in line with the adopted strategic documents, i.e. the "National eGovernment Strategy", the "National Concept of Informatisation of Public Administration", and the "Municipal Administration Modernisation Concept"[20].

3.2. INFORMATION SECURITY AND STANDARDS

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17 Slovak Government Resolution No. 360/2009
18 Slovak Government Resolution No. 269/2005
19 COM(2007) 803, Communication from the Commission to the Spring European Council, Strategic report on the renewed Lisbon strategy for growth and jobs: launching the new cycle (2008-2010) Keeping up the pace of change
20 Slovak Government Resolution No. 497/2009

The importance of information security increases in proportion to the use of ICT in our everyday lives. As people increasingly rely on information systems, networks and related services, what they expect is reliability and security.

During a security incident, the data and systems, which are part of the digital space, are in peril. The state must ensure that information is protected from misuse and, if this happens, its duty is to minimize the consequences. In Slovakia, the powers related to information security are shared by several bodies – the protection of classified information is within the remit of the National Security Authority and the protection of non-classified information falls under the Ministry of Finance of the Slovak Republic[21]. The Ministry of Culture of the Slovak Republic is in charge of the protection of copyright, whereas the protection of personal data is the responsibility of the Office for Personal Data Protection. Confidential statistical figures are in the purview of the Statistical Office of the Slovak Republic.

With the development of information society, it was necessary to adopt a document that would clearly define the areas to be kept in focus when tackling the issues of information security. The basic strategic document defining the tasks related to information security between 2009 - 2013 is the National Information Security Strategy of the Slovak Republic[22]. This underlying document defines the basic objectives, priorities and specific tasks in the above field. The most important tasks include the setting up of a contact point to handle computer incidents and the formation of a specialised CSIRT.SK team[23]. Besides the above scope, the specialised CSIRT.SK unit, established by the Ministry of Finance of the Slovak Republic in August 2009, will also be in charge of cooperation and the exchange of information and experience at the domestic level, while acting as a liaison for the pan-European area. Central to supporting information security is a new approach to education, as detailed in the document entitled "The System of Information Security Education in the Slovak Republic". The document defines the scope and manner in which education is provided to respondents, ranging from lay users to researchers and teachers, in the field of information security.

In order to ensure adequate protection of the digital space, the people active in this area must at least observe the elementary rules and take part in its protection to an extent which corresponds to their position in this space. It is therefore necessary to set additional tasks which will be incorporated in the Action Plan for the National Information Security Strategy of the Slovak Republic. For the sake of unification and compatibility, it is advisable to prepare a unified methodology for security projects, security policies, emergency plans and the resumption of system operation, which would be applied in practice by the public administration. Another important task associated with information security is the preparation of a legislative objective for the Act on Information Security of the Public Administration in the Slovak Republic, which will be submitted to a session of the Slovak government by the end of 2009. The contents of the document will, for the most part, revolve around the powers of the CSIRT.SK unit, standardisation activities, as well as information security-related management and education.

In terms of mutual communication between information systems and eGovernment services, it is necessary to address the issue of domestic and, subsequently, international interoperability of information systems of the public administration as a whole. These goals can be achieved by means of standards, whereby a standard means a set of rules that are associated with the creation, development and use of the information systems of the public administration and contain characteristics, methods, procedures and conditions, in particular as regards the security and capability to integrate with other information systems. Standards must be open and, from the technology point of view, neutral. The standards predominantly apply to the technical resources and network infrastructure, programming resources (operating environment, database environment, office software and application software), data, registers, code-books and data exchange formats. The Act on Information Systems of the Public Administration (hereinafter the "ISPA Act")[24] obliges the system administrators to make sure that public administration information systems comply, by 1 June 2008, with the standards defined in the Decree on

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21 The Commission on Information Security was set up as an advisory coordination committee at the Ministry of Finance of the Slovak Republic
22 Slovak Government Resolution No. 570/2008
23 Slovak Government Resolution No. 479/2009
24 Act No. 275/2006 Coll. on Information Systems of the Public Administration and on amendments to certain acts as amended

Standards for Information Systems in Public Administration[25], which lays down the mandatory requirements for website accessibility. Considering that the system compatibility obligation, as prescribed by the Act, applies to public administration only, in the absence of public pressure it is also very difficult to drum up interest within the public sector in order for it to comply with the standards. The situation in terms of standards is that Slovakia presently suffers from the fragmentation of competences, dual issuance of standards and their incompatibility. The answer seems to rest in finding a solution to the powers and in coordinating the preparation and issuance of norms and standards to be addressed by the prepared amendment to the ISPA Act which, as a direct follow-up to the National Information Security Strategy of the Slovak Republic, makes the issuance of standards for the public administration information systems subject to approval by the Ministry of Finance of the Slovak Republic.

The accomplishment of the objectives and tasks under the National Information Security Strategy of the Slovak Republic and other related strategic documents is a prerequisite for the gradual removal of key problems associated with information security in Slovakia.

3.3. eGOVERNMENT

In the eGovernment area, the information society strategy aims to provide sophisticated interoperable services and ensure an effective eGovernment system, where the collection, use, administration and provision of data is transparent, secure and user-friendly, and where public services are available and widely used through multiple electronic channels (such as the Internet, mobile phones, digital television). Information and communication technologies should become a means for expanding the user's options of accessing public services, while preserving the possibility to provide services personally for all those who are, for various reasons, unable or unwilling to use electronic means. It is necessary to implement legislative measures and to transform and simplify public administration processes in order to overcome the barriers hindering the use of eGovernment services by citizens and businesses. In this context it may be useful to learn from the experience of countries which, despite ranking high in eGovernment service provision, encounter a lack of interest by the citizens in using such services. In order to promote the utilisation and further expansion of eGovernment services, best practices from countries where eGovernment services are widely used must be combined with a continuous and intensive awareness-raising campaign. It will also be necessary to support the citizens with easier access to a valid electronic signature and to make sure that eGovernment services only require it in justified cases, in line with the trend of reducing administrative burdens. Healthcare and education predominantly rank among the areas of public administration with the greatest potential for the use of information and communication technologies with a view to transforming traditional ways of service provision. It is for this reason that the document discusses them in two separate chapters (see Chapter 3.4 and 3.5).

One of the effects brought about by large-scale introduction of information and communication technologies is a digital divide, which could potentially lead to the exclusion of certain specific groups of citizens from the society. The Slovak government acknowledged the need to take on the digital divide challenge by approving and updating the National Strategy of the Slovak Republic for e-Inclusion[26]. The adoption of a separate document on e-Inclusion in Slovakia was mainly driven by the need to clearly define the measures and steps aimed at ensuring e-Inclusion of certain endangered citizen groups. The document provides information on the current situation with regard to e-Inclusion in Slovakia and also proposes solutions in this area. An active approach is needed in order to address and implement specific e-Inclusion steps and measures by the Government, and to encourage the engagement of third-sector organisations.

The development of an information society through the digitisation of and provision of access to cultural heritage directly depends, in particular, on establishing broadband connections, increasing digital literacy, and developing e-Education. Until the present, the availability of cultural heritage in digital form was limited in terms of scope and time, it was only available in certain locations and complicated to search for. Its greater availability carries

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25 Decree of the Ministry of Finance of the Slovak Republic No. 013261/2008-132 on Standards for Information Systems of the Public Administration, methodology guideline
26 Slovak Government Resolution No. 876/2008 of 3 December 2008, Update of the National Strategy of the Slovak Republic for e-Inclusion, submitted to the session of the government on 1 July 2009

immense potential for the development of an information society – particularly in view of supporting education systems, science and research, tourism, etc.

As the confidence in electronic services (eServices) grows, eServices provided by the central government will start to blend with the eServices provided by regional and local authorities and, in the long run, also with the eServices on EU level. Via its ministries, the Slovak government will cooperate in cross-border initiatives and participate in significant pan-European projects with a view to ensuring the best possible interoperability and compatibility level of electronic processes, as required by the Single European Market. Since, for many citizens, the regional and local authorities represent the main point of contact with the public administration, this tier continues to play an extremely important role in the computerisation of government services. Carrying out a rather large number of powers (original, as well as those delegated from the central government), it offers the citizens a broad range of services. The level of eService introduction is inconsistent, however, affected mainly by the availability of funds, as well as regional localisation and the size of towns and municipalities[27]. Although the publishing of information on websites is becoming common practice, there is a need to support the deployment of eGovernment services by local authorities, and it is this area where part of the funds from the Operational Programme Information Society will be directed.

It is vital to encourage the involvement of citizens in governance and their active participation in the public administration's decision-making processes by applying ICT in the so-called e-Democracy services (e.g. discussion forums and Internet groups on public affairs, live streaming or records of public sessions – webcasting, acquisition of feedback via electronic forms, electronic submission of petitions, electronic election, provision of free access to electronic registers and databases). In this respect, citizens are allowed to observe and actively participate in the current legislative process via the Legislation Portal. An electronic collection of laws is also publicly available, offering the public free access to legislation.

The implementation of eGovernment in Slovakia is based on the eGovernment Strategy[28] and the National Concept of eGovernment[29] approved by the Slovak government in 2008. In line with the Government Manifesto of 2006, the eGovernment Strategy sets out a vision of eGovernment in the Slovak Republic by 2013, defining four main objectives:
- Enhancing the satisfaction of citizens, businesses and other public bodies with public administration
- Electronic public administration services
- Achieving efficient and effective public administration
- Enhancing the competency of public administration

National Concept of e Government elaborates on the fundamental principles of eGovernment development, including the formation of a legal framework and infrastructure, and the digitisation of the individual public administration sectors. This strategic document also defines the architecture of an integrated information system of the public administration. Both strategic documents referred to in above are based on the present eGovernment level in the Slovak Republic, take account of the best practices of countries with advanced eGovernment services, and comply with the i2010 initiative of the EU.

Key projects to be implemented by 2013 also include projects aimed at developing an integrated infrastructure of the public administration information system and its fundamental architectural components – namely the electronic identification card, basic identifiers, basic code lists and registers (register of natural persons, register of legal entities and entrepreneurs, register of spatial information, register of addresses), the fundamental access components (central public administration portal, call centre, integrated service points), joint modules of the central public administration portal (Identity and Access Management, payment module, eDesk module, notification module, electronic delivery module, eForm module, central electronic filing room module, module for long-term archiving of electronic registry records). The implementation of these projects, including compliance with the individual standards of public administration information systems and with the principles of information

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27 Screening of eGovernment services: e-Government in Slovakia 2007, author: Marián Velšic, publisher: the Institute for Public Affairs
28 Slovak Government Resolution No. 131/2008
29 Slovak Government Resolution No. 331/2008

system interoperability, will serve as the basis for eGovernment and the public administration's technological communication infrastructure, which will ensure an efficient and simple interconnection of the individual public administration systems at the central, regional and local level.

Pursuant to the Act on Information Systems of the Public Administration, the individual obliged persons draw up information system development concepts detailing the architecture of an integrated information system of the administration sectors, including the specific development projects. The concepts are then submitted to the Ministry of Finance for approval.

Feasibility studies implemented within the first OPIS priority axis, which focused on electronic services and the infrastructure of public administration, followed the approved strategic documents and laid the groundwork for the implementation of actual projects. This approach will determine the environment for a significant change in the way the public administration operates and for the accomplishment of the eGovernment vision by 2013.

3.4. eHEALTH

The entire society can benefit from the concept of eHealth by providing improved access to and a better quality of healthcare. It encompasses a wide range of instruments that use information and communication technologies designed to support prevention, diagnostics, treatment and monitoring of health. The concept also covers communication between patients and healthcare providers, transfers of data from one institution to another, health information networks, electronic medical records, telemedicine services and mobile personal communication devices designed for the monitoring of and provision of assistance to patients.

eHealth instruments can help improve the accessibility of the vital health information, which is particularly important in view of the increasing cross-border mobility of citizens and patients. The healthcare service entails the provision of a large number of services where informatisation is highly beneficial, such as the use of patients' electronic records, electronic prescription and medication, automated examinations, electronic appointments with first-contact physicians and specialists, processing of graphic information from examinations, telemedicine, support to decision making, improved teaching of medics and doctors, electronic communication among doctors, pharmacies, laboratories, health insurance companies and other entities, and many other types of services.

Slovakia is currently in the initial phase of introducing eHealth services. Even though the first phase of hospital information system development is complete and medical registers already exist, the interoperability of information systems remains limited, the Internet take-up by outpatient facilities is poor, and standards are lacking (e.g. for electronic medical records). The eHealth vision in Slovakia is to promote, through the use of state-of-the-art information and communication technologies, the quality and efficiency of all healthcare services, reduce the occurrence of errors and duplicities, the administrative burden on the healthcare system and on patients, raise the citizens' satisfaction with the publicly funded healthcare system, facilitate the introduction of the new forms of healthcare services, and provide the stakeholders with the relevant, timely and high-quality information, as may be required for their decision-making and monitoring activities. It is also necessary to provide for the security of eHealth information systems, especially in view of the sensitivity and confidentiality of the information they store.

The implementation of eHealth follows the eHealth Strategic Objectives - a document approved by the Slovak government, which represents a key instrument for healthcare informatisation[30], laying out the basic framework, setting the course and forming the entire process of citizen healthcare informatisation. eHealth will not only provide services to citizens, but also to healthcare professionals, healthcare providers, professional chambers, health insurance companies, public healthcare system, national, regional and local administration bodies, employers and non-profit organisations active in the healthcare sector. The proposed eHealth implementation timeframe is set out until 2013 and envisages the use of the Structural Funds. Selected eHealth services will be implemented in line with the eHealth Services and Needs Catalogue, approved by the Ministry of Health of the Slovak republic in February 2009, and in line with the outcomes of feasibility studies defining the legislative and

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30 Slovak Government Resolution No. 497/2008

normative measures necessary for eHealth development. A national health portal will also be set up, serving as a presentation layer for the provision of relevant health-related information and as a point of access to individual eHealth services.

In view of Slovakia's current demographic development, the financial costs of healthcare services are expected to grow considerably in the future. Apart from reducing mortality, morbidity, permanent and temporary effects of illnesses and injuries, and bringing down the error rate in healthcare provision, dedicated efforts to implement eHealth services will also result in reduced costs of specific procedures, improved efficiency of healthcare provision, elimination of duplicate and fictitious procedures, and alleviation of the administrative burden. EU experience shows that the direct economic benefits of eHealth projects outweigh the costs by far.

3.5. DIGITAL LITERACY AND EEDUCATION

The citizens' readiness to embrace modern information and communication technologies (the so-called digital literacy) is vital to harnessing the benefits of an information society. Although improving digital literacy does not, in itself, warrant the mitigation of economic and social disparities in society, it may have profound impacts – for example, the job seeker's chances to succeed in the labour market are feeble without the ability to use information and communication technologies in an effective and responsible way.

At present, eEducation rates among the most dynamically developing areas; it is a hybrid of distance and conventional learning that employs cutting-edge software and hardware equipment. In the current economic situation, the eEducation technology could become the key to improving educational efficiency. There are multiple advantages ranking eEducation among highly progressive methods, such as the possibility to study at one's own pace anytime, anywhere (assuming one has access to the Internet), good availability of up-to-date information and the reduced economic costs of studying. However, since the ICT industry constantly advances, the knowledge once obtained must be constantly updated. Approximately half of our knowledge in this field becomes obsolete in five years' time. Therefore, eEducation should not be limited to education at schools – it has a much wider potential in the context of lifelong learning. In order to achieve sustainable development of information society, it is necessary to improve the use of ICTs as a means of lifelong learning. Furthermore, it is vital to link eEducation with the development of digital content, since the objective here is not only to learn how to find information, but also how to process and utilise it.

The pressure for improving digital literacy has necessitated the development of a new concept and structure, especially in the education system. The contemporary educational process places great demands on the ability of pupils and pedagogues to apply digital technologies in the teaching and learning process. Despite the fact that the present school system has its problems (insufficient information and communication infrastructure, schools lacking educational software and the corresponding literature, absence of a central educational portal and of own digital resources), the Ministry of Education is actively supporting the use of ICTs in the educational process. It has a network of directly subordinated organisations in place to manage the informatisation of the regional education system, capable of providing technical and software support, as well as further training both for pedagogical and non-pedagogical staff. In April 2007, the Ministry of Education of the Slovak Republic established the ICT Council – an advisory body to the Minister. The amended Act on Training and Education[31] promotes the idea of enabling children to acquire ICT skills already during school years. In the beginning of 2008, the Slovak government approved a document entitled the Strategy for Informatisation of the Regional Education System[32], which has the ambitious goal of bringing, in the course of four years, the Slovak education system closer to modern European schools preparing pupils for life in a knowledge-based society. This strategy proposes steps to ensure that every pupil has access to education featuring information and communication technologies. Schools will be equipped with computers where and as necessary, as well as with proper high-speed Internet access; curricula and textbooks are being updated. The pedagogues' current level of computer literacy should improve substantially, as well. The Strategy for Informatisation of the Regional Education System follows up on the Concept for ICTs in Education, which stresses the need to establish dynamic horizontal and vertical ICT links

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31 Act No. 245/2008 Coll. on Training and Education and on the amendment of certain acts as amended (the School Act)
32 Slovak Government Resolution No. 112/2008

within the educational system covering all types and levels of education, research and development, sports and youth, in cooperation with educational institutions, public administration bodies and research institutions based on modern ICTs.

The success in developing digital literacy ultimately affects the economic success of the whole country. Although the situation is changing for better, Slovakia continues to lag behind the advanced EU countries and the issue of improving digital literacy remains highly topical.

3.6. REDUCING ENERGY CONSUMPTION AND INCREASING ENERGY EFFICIENCY

Information and communication technologies that can help reduce the energy consumption of the economy and increase its energy efficiency[33] are becoming a powerful tool supporting the Slovak government's sustainable development efforts. Structural changes designed to harness the potential of ICT, such as trading through the Internet or new working methods (teleworking, videoconferences) can support the energy efficiency of the economy. ICTs plays an increasingly significant role in reducing energy consumption. It is also necessary to engage ICTs more in the management and utilisation of natural resources and in reducing environmental pollution. The Slovak government will actively monitor the EU policy in the field of energy efficiency, while seeking opportunities for stakeholder cooperation. It will initiate, actively support and coordinate national and regional initiatives and measures, including cohesion policy initiatives in the field of ICT, which are a key factor of energy efficiency with a view to achieving sustainable social development.

4. Financing and monitoring

4.1. FINANCING

The experience of the past years shows that where an exact amount of funds was not specifically allocated to implement a particular measure and the purpose of expenditure was not rigorously monitored, such measures were either not implemented, implemented only partially or implemented with delay. The funding for projects implemented within the priority areas listed in this document will be provided from the general government budget within the approved limits, without placing increased burden on the state budget or the budgets of municipalities, higher territorial units and public institutions. EU Structural Funds represent the most significant source of funding. The National Strategic Reference Framework of the Slovak Republic for the period of 2007 – 2013 represents the reference document setting out a framework for the drawing of EU funds. Within the Operational Programme Information Society, the EC allocated a contribution of EUR 993 095 405 for the informatisation of society. The priority areas of this document, which are to be supported from the OPIS, include mainly the building of broadband connections (Chapter 3.1), eGovernment (Chapter 3.3) and eHealth (Chapter 3.4).

Other sources of funding may also potentially include funds from the EU Community programmes – in particular the Competitiveness and Innovation Framework Programme – a programme to support information and communication technology policy. Regional and local administration bodies also have the authority to allocate additional funds from their own revenues. Other sources could include funds from foundations, grants, funds from third-sector activities, international institutions, as well as private investments.

4.2. MONITORING

Monitoring of the progress achieved in the development of an information society will, as a priority, focus on those tasks ands projects with clearly allocated sources of financing, as well as on measurable indicators assessing the general progress made in the development of an information society. The monitoring will be carried out annually in cooperation between the Ministry of Finance of the Slovak Republic and the Office of the Plenipotentiary of the Government of the Slovak Republic for Information Society. It will include the evaluation of available measurable indicators (from sources such as Eurostat and the Statistical Office of the Slovak Republic), as well as the collecting of new data to track progress in the individual areas. The Progress Report on the Information Society will also state the benchmarks for the strategy to achieve in the individual priority areas. The acquired inputs

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33 COM(2008) 241 Commission Communication: Addressing the challenge of energy efficiency through Information and Communication Technologies

serve for the drawing up of the Progress Report on the Information Society, which will be submitted to the Slovak government and will include an assessment of the Slovak information society, international comparisons and year-on-year progress.

The Progress Report on the Information Society will consist of two parts. The first describes the status quo and the progress achieved in the implementation of the individual projects financed from the Operational Programme Information Society. The Ministry of Finance of the Slovak Republic will monitor the implemented projects financed under the OPIS. Acting as the intermediary body under the managing authority, the Ministry will ensure thorough and regular monitoring of the progress achieved (and the current situation) of the activities carried out within the individual projects, including the current values of measurable indicators. The first part of the Progress Report on the Information Society also contains a brief assessment of the projects implemented within the Development Concepts for Information Systems by obliged persons, giving the Ministry of Finance of the Slovak Republic comprehensive information about the activities planned in the field of information system development and operation. This concerns information society tasks and projects, which the individual ministries fund initiatively from their own sources or from sources other than the OPIS.

The second part of the Report describes the overall situation and the progress achieved with respect to the information society by means of measurable indicators and statistical results. The monitoring of the overall development in society will focus on three main areas, namely the progress achieved in the field of electronic services, digital literacy and the introduction and use of broadband Internet access. The Report also includes the evaluation of data obtained from a survey of satisfaction of citizens and businesses with eGovernment services, launched by the Ministry of Finance of the Slovak Republic in 2008. The presence and level of eServices electronic services will be monitored in line with a methodology based on that used by the Commission for assessing the level of eServices. The methodology used clearly defines the set of measurable monitoring indicators, the target and maximum values of the individual measurable indicators, and the method of collection and evaluation of data[34]. The added value to EU parallel monitoring is that it will produce a wider portfolio of monitored eGovernment services. Emphasis will be placed on preventing duplicated data collection. Another aim is to monitor the degree of service utilisation. This information serves as the basis for further increases in service utilisation, return on the related investment, as well as the number of users. The Progress Report on the Information Society also identifies problematic areas and may recommend measures to address or eliminate them.

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34 eGovernment Benchmark Method Paper -8th Measurement, Capgemini Consulting