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The Development of eServices in an Enlarged EU: eGovernment and eHealth in Slovenia

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PREFACE

Policy context

At the European Council held in Lisbon in March 2000, EU-15 Heads of Government set a goal for Europe to *become the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion.* The renewed Lisbon goals of 2005 emphasize working for growth and jobs, and include plans to facilitate innovation through the uptake of ICT and higher investment in human capital.[1]

Information and Communication Technologies, and related policies, play a key role in achieving the goals of the Lisbon strategy. In 2005, the new strategic framework for Information Society policy - i2010[2] - identified three policy priorities: the completion of a single European information space; strengthening innovation and investment in ICT research; and achieving an inclusive European Information Society.

All three priorities, and especially the last one, consider public services to be a key field for the application of ICT, because of the impact that ICT-enabled public services could have on economic growth, inclusion, and quality of life. Within this framework, policy actions have been taken in fields such as e-government[3] and e-health.[4] Public services have also been included as application fields for ICT in the 7th Framework Programme for Research and Development[5] and in the ICT policy support programme of the Competitiveness and Innovation Programme (CIP).[6]

Research context

IPTS[7] has been researching IS developments in acceding countries[8] since 2002.[9] The outcomes of this prospective research, which aimed to identify the factors influencing Information Society developments in these countries and the impacts these developments have on society and the economy, point to the need for better understanding the specific contexts in each member state for the take-up of e-applications, in particular eGovernment, eHealth, and eLearning. These key application areas have an impact not only on the relevant economic and public service areas but also on the development of the knowledge society as a whole.

Taking the above into account, IPTS launched a project to support eGovernment, eHealth and eLearning policy developments managed by DG INFSO and DG EAC. The research, which was carried out by a consortium led by ICEG EC in 2005, focused on the three application areas in the ten New Member States[10] that joined the European Union in 2004, in order to build up a picture of their current status and developments in the field, the most important opportunities and challenges they face, the lessons other member states may learn from them, and the related policy options. National experts from each country gathered the relevant qualitative and quantitative data for analysis, in order to develop a meaningful assessment of each country's current state, and trajectory, and to find out the main factors. This allowed them to derive the relevant conclusions in terms of policy and research.

The IPTS team designed the framework structure for the research, the research questions and methodology. This team and the consortium coordinator jointly guided the national experts in their

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1 http://ec.europa.eu/information_society/eeurope/i2010/index_en.htm
2 "i2010 – A European Information Society for growth and employment" COM(2005) 229
3 "I2010 eGovernment Action plan" COM(2006) 173
4 "e-Health - making healthcare better for European citizens" COM (2004) 356
5 See http://cordis.europa.eu/fp7/ict/ and Official Journal L 412 of 30/12/2006
6 Official Journal L 310/15 of 9/11/2006
7 Institute for Prospective Technological Studies, one of the seven research institutes that make up the Joint Research Centre of the European Commission
8 Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia, Slovenia, and Turkey
9 For a list of complete projects and related reports see http://fiste.jrc.es/enlargement.htm
10 Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovenia and Slovakia

work through workshops, extended reviews and editing of the various interim reports. Data sources such as international and national survey data, literature, policy documents, and expert interviews were used to capture the most recent situation of the country.

In addition to national monographs describing eGoverment, eHealth and eLearning developments in each country, the project has delivered a synthesis report, based on the country reports, which offers an integrated view of the developments of each application domain in the New Member States. Finally, a prospective report looking across and beyond the development of three chosen domains was developed to summarize policy challenges and options for the development of the Information Society towards the goals of Lisbon and i2010.

eGovernment and eHealth in Slovenia

This report was carried out by the Slovenian member of the consortium, the University of Ljubljana, and presents the results of the research on eGovernment and eHealth in Slovenia.

First, it describes Slovenia's government and health system and the role played by eGovernment and eHealth within this system. Then, the major technical, economic, political, ethical and socio-cultural factors of the eGovernment and eHealth developments, as well as the major drivers and barriers for them in the country, are assessed. These provide the basis for the identification and discussion of policy options to address the major challenges and to suggest R&D issues for facing the needs of the country. The report reflects the views of the authors and does not necessarily reflect the opinion of the European Commission. Its content has been peer reviewed by national experts, ICEG EC, and IPTS.

In this study, **eGovernment** (European Commission COM (2003)567) is defined as the use of information and communication technologies in public administrations, combined with organisational change and new skills, to improve public services and democratic processes and strengthen support to public policies. Thus, it encompasses the dimensions of public administration, democracy, governance and policy making.

Furthermore, the vision of eGovernment in the EU for the next decade as a tool for better government in its broadest sense should be taken into account when considering the scope of eGovernment developments. This vision places eGovernment at the core of public management modernisation and reform, where technology is used as a strategic tool to modernise structures, processes, the regulatory framework, human resources and the culture of public administrations to provide better government, and ultimately, increased public value.

The creation of public value is a broad term that encompasses the various democratic, social, economic, environmental and governance roles of governments. Concrete examples of these roles are: the provision of public administration and public services (health, education, and social care); the development, implementation and evaluation of policies and regulations; the management of public finances; the guarantee of democratic political processes, gender equality, social inclusion and personal security; and the management of environmental sustainability and sustainable development.

eHealth is defined as the use of modern information and communication technologies (ICTs) to meet the needs of citizens, patients, healthcare professionals, healthcare providers, and policy makers. It makes use of digital data, transmitted, stored and retrieved electronically, for clinical, educational and administrative purposes, both at local sites and at a distance from them. Hence the study looks into the use of ICT in public health policy and prevention of disease, information services to citizens, integrated patient management and patient health records, and telecare and independent living services applications.

From early 2008, all reports can be found on the IPTS website at: http://ipts.jrc.ec.europa.eu/publications/index.cfm

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LIST OF ABBREVIATIONS

AJPES	Agency of the Republic of Slovenia for Public Legal Records and Related Services
AP	eGovernment action plan
ARNES	Academic and Research Network of Slovenia
CIS	Central information system for receiving applications, serving and notification
CITI	Central information and telecommunications infrastructure of eGovernment
CRP	Central population register
ERM 2	Exchange Rate Mechanism for EU countries not taking part in the monetary union
EU	European Union
G2B	Government services for businesses and other legal persons
G2C	Government services for citizens and other natural persons
G2E	Government services for government employees
G2G	Government-to-government services
GCI	Government Centre for Informatics
GDP	Gross Domestic Product
HIIS	Health Insurance Institute of Slovenia
HKOM	Fast Communications Network
ICT	Information and communications technology
IDAbc	Interoperable Delivery of European eGovernment Services to Public Administrations, Businesses and Citizens.
ILO	International Labour Organisation
IMAD	Institute of Macroeconomic Analysis and Development
IPH	The Institute of Public Health
ISPO	Information system for decision-making support
IST	Priority task of Information Society Technology in the framework of the Sixth Framework Programme
MDDSZ	Ministry of Labour, Family and Social Affairs
MID	Ministry of the Information Society
MJU	Ministry of Public Administration (SLO)
MPA	Ministry of Public Administration
MVPDU-IT	State government project leadership methodology in the field of information technology
NATO	North Atlantic Treaty Organisation
NUTS	The Nomenclature of Territorial Units for Statistics
OSS	One-Stop-Shop
PPP	Public Private Partnership
PRS	Central Business register
R&D	Research and development
RIS	Research on the Internet in Slovenia
RPE	Register of spatial units
SDS	Slovenia's Development Strategy
SEDS	Strategy of the Economic Development of Slovenia
SEP-2010	eBusiness Strategy for the Public Administration in the RS for the period 2006 (2001) to 2010 (2004)
SEPLS	Strategy of Electronic Commerce in the Local Communities
SIBIS	Statistical Indicators Benchmarking the Information Society
EUR	Euro, Slovenian currency
SOS	Association of Municipalities and Towns
UTS	Uniform tax system
WHO	World Health Organisation
ZOS	Association of Municipalities
ZPIZ	Pension and Disability Insurance Fund
ZZZS	Health Insurance Institute of Slovenia

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INTRODUCTION: COUNTRY FEATURES

a) General data

Figure 1: Map of Slovenia

Source: http://www.appliedlanguage.com/

Area: 20 273 km^2
Population: 2 002 000 inhabitants (2006)
Capital: Ljubljana
Language: Slovenian; Italian and Hungarian in some areas
Currency: the euro (EUR)
GDP at market prices: EUR 26 146.3 million (2004)
GDP per inhabitant in PPS (purchasing power standards): EUR 17 600 (2004)

Since its independence in 1991 following the collapse of the Yugoslav federation, Slovenia has successfully integrated with the international community and is becoming a rapidly developing and prosperous country. It acquired full membership of the European Union in 2004 and joined NATO in 2003.

The Slovenian economy's macroeconomic performance has been stable since 1993, i.e. almost immediately after the turbulence related to independence. We should note here that the country's starting position in 1991 was radically better than in other transition countries because Slovenia (within Yugoslavia) had enjoyed free and open borders with Western Europe. Slovenians could work in Austria, Germany, Italy, etc. while the country's companies also intensively co-operated directly with foreign partners. These all had a considerable impact on the economy, as well as on consumption. Upon the country's independence in 1991, a considerable part of the economy was already in tune with global business standards. Correspondingly, Slovenia's GDP per capita was more than twice the level of the next most developed transition country (i.e. Czech Republic).

After its independence, the country remained extremely closed to foreign investment (between 1.5 and 2.5% of GDP), while on the other hand the export/import of goods and services rapidly increased to 70% of GDP. The level of economic development was steadily growing and Slovenia is now closing its developmental gap relative to the EU-15 average. In the last few years, this gap has shrunk from 63% of the EU-15 average (PPS) in 1996 to 75% in 2005 with a forecast of 78% in 2007. If we express the latter figure vis-à-vis the EU-25 average then the percentage is 82%.

Due to its relatively high GDP for a transitional economy, the annual growth rates seen in the last few years are slower than in some other new EU member states. However, they were still around 4% in 2005 and thus much above the corresponding growth rates in the EU-15 (2005 - 2%).

Slovenia's economic development has basically been driven by some globally innovative companies, high export activities and the fast growth of domestic consumption. The latter has also included intensive highway construction activities.

The co-ordinated macroeconomic policies of the government and the Bank of Slovenia regarding stabilisation of the exchange rate after the country's entrance to the ERM II helped stabilise the growth in consumer prices. Inflation thus dropped to 2.5% in 2005, thereby achieving one of the key criteria for introduction of the euro (€). Slovenia took on the euro as its currency in January 2007 as the first and only new EU member state to do so.

Table 1: Economic indicators

	GROSS DOMESTIC PRODUCT		**GROSS FIXED CAPITAL FORMATION**		**PRIVATE CONSUMPTION**		**WAGES**
	Real in %	In million SIT current prices	Real growth in %	% of GDP	Real growth in %	% of GDP	Average gross wage per employed person real growth in %
1997	4.8	3 48 957	13.5	23.1	2.5	58.1	2.4
1998	3.9	3 494 600	9.3	24.1	3.0	57.6	1.6
1999	5.4	3 918 974	18.2	26.4	5.9	58.0	3.3
2000	4.1	4 300 350	1.8	25.6	0.7	57.4	1.6
2001	2.7	4 799 552	0.4	24.1	2.3	56.6	3.2
2002	3.5	5 355 440	0.9	22.6	1.3	55.5	2.0
2003	2.7	5 813 540	7.1	23.3	3.4	55.8	1.8
2004	4.2	6 251 244	5.9	24.1	3.1	55.4	2.0
2005	3.9	6 557 698	3.7	24.8	3.3	55.4	2.2

Source: Bulletin of Government Finance 3/2006
Source: http://www.gov.si/mf/angl/tekgib/bilten/bulletin_march_2006.pdf

Whether Slovenia has truly performed optimally since 1991 remains an open and unanswered question. There is no doubt some serious deficiencies continue to exist, such as: the generally high over-regulation and low level of liberalisation, the state's dominance within all the largest corporations (telecom, gas, banking, insurance...), one of the highest taxes on labour in the EU, one of the lowest competitive indexes, the extremely low labour flexibility, low FDI and closed economy, the disproportionally high social benefits, the many monopolistic structures, administrative restrictions on entrepreneurship… In the near future, these deficiencies could create a serious slowdown in national economic development. Critics are warning that the pre-transition comparative advantages and sales of the best national companies to foreigners may soon exhaust the corresponding positive potential for economic development so the awkwardness of Slovenia's economic regulations might lead to considerable developmental stagnation.

As a consequence, the national Development Strategy was adopted in 2005. It is a relatively radical document aimed at liberalisation and stimulation of the economy. However, its full implementation would require various unpopular measures so, due to political resistance, it might not be fully realised. Public attitudes are generally oriented to solidarity, social protection and against radical change.

We should also add here that, politically speaking, throughout the transition period the prevailing power was held by popular politicians who already held power in the period before independence, which further contributed to the country's smooth transition. In 'socialist' times (i.e. before 1990) they were already relatively liberal and they also effectively adapted themselves to the new circumstances after independence. Independent observers also generally agree they relatively successfully governed Slovenia through the entire transition period. In any case, except for shorter periods these left-leaning

party leaders were thus in power for almost the entire period from 1991 until 2004, when today's the right-wing coalition finally won the elections for the first time for a full four-year mandate.

The stable transition period was also accompanied by relatively low unemployment levels. After rising in the ILO unemployment rate to 7.5% in 1995 it is now steadily declining, having reached 6.5% in 2005. In part, the restructuring of industry – featuring troubles in labour-intensive industries – was partially compensated for by early retirements. Slovenia is currently one of the leading EU countries with respect to the share of the non-active population aged 55 years or more. In the future, this will put a heavy burden on the country's pension systems.

b) Population

At the end of 2004 there were 1 997 590 persons living in Slovenia, which is only a slight increase (0.06%) compared to the previous year. For more than a decade the population has oscillated around 2 million, reaching 2 007 498 inhabitants in October 2006. Of those, there were 95.3% Slovenian citizens, 2.4% foreigners as permanent residents and 2.5% foreigners as temporary residents. In addition, around 40 000 Slovenian citizens temporarily live abroad.

The slight increase in population was basically the result of positive net migrations. In 2004, only 17,961 children were born in Slovenia. On average, 9 children per 1 000 persons have typically been born in the last few years, including 2004. On the other hand, 19 451 persons died so the natural increase was negative, similar to previous years. Despite that, in 2004 the total increase remained positive (0.7 per 1 000 population) because of the 10 171 immigrants and only 8 269 emigrants. The majority of this migration involves foreigners. In the last few decades, Slovenia had extremely little emigration, which was particularly true for all the years following independence and in the period since joining the EU. We may also add here that internal migration is also extremely low: just 30 000 people (1.5%) move within the country per year and of them one-third moved within the same municipality. This low level of mobility may be partly explained by the relatively high standard and relatively high quality of life, accompanied by one of the highest shares (80%) of households which own their house or apartment. Although farmers represent less than 5% of the active population, most of the population actually lives in rural areas, i.e. in settlements with less than 2 000 people.

Thirty years ago, 63 live born children were born on average per 1 000 women. In the last few years this has shrunk to a mere 35.6. An accompanying trend is the postponing of the first birth (27.5 years in 2004). After the 2nd World War, Slovenia closely followed demographic trends seen in other European countries. When the population replacement level dropped below its replacement rate in half the European countries at the beginning of the 1980s this rate also dropped in Slovenia. However, since then the fertility rate (i.e. live childbirths per woman) was further continuously dropping and reached a value of 1.25 in 2004 (it also remained around this level in 2005 and 2006). Slovenia is now, according to Eurostat, the country with the lowest fertility rate among the EU-25 member states. The accompanying trends are increasing divorce rates (only 6 885 marriages but 2 411 divorces in 2004), the growing number of children born outside of an official marriage (8 053 out of 17 961 in 2004) and the considerable number of abortions, which is fortunately rapidly decreasing but still relatively high (6 403 compared to 17 910 newborns in 2004).

In the coming years the low fertility level will pose serious problems to pensions, the education system and the labour market. This year the cohort of secondary school graduates (born in 1987) includes 25 000 people, whereas the 1993 born cohort numbered 20 000 and the 2004 one only around 17 000, which is also the number of newborns that has stabilised in the last few years.

The aging of the population is thus very intensive and in 2004 the mean age of the population was 40.3 years. The ageing index (the ratio between the population aged 65 or more and the population younger than 15 years) increased in 2004 by almost four index points to reach 106.9. Life expectancy is also rapidly rising and reached 81.1 years for women and 73.5 for men.

There is an indigenous Slovenian minority living in Italy, Austria and Hungary. Besides historical Slovenian minorities in neighbouring countries, a huge emigration occurred at the beginning of the 20th century after the 1st World War and immediately following the 2nd World War. The main directions were South America (particularly Argentina), along with the USA and Western Europe.

Cleveland has long been regarded as the city hosting the second largest number of Slovenians in the world. Between 250,000 and 400,000 Slovenians (depending on whether second and subsequent generations are counted) thus live outside the country.

Ethnic Slovenians make up the vast majority of the population – 83% according to the 2002 Census, where there were almost 10% of nationally undeclared persons or persons who for some other reason were missing data on their nationality. The Italian community in the coastal region and the Hungarian community in the northeast are the two national minorities (each with less than 10 000 inhabitants); their rights are safeguarded by the Constitution. Some other ethnic groups are much larger – particularly Croats, Serbs, Muslims (each with above 1% of the population), but there are also Macedonians, Montenegrins, Albanians and many others. They mostly came to Slovenia as economic migrants from former Yugoslavia after the Second World War.

c) Government and health systems in Slovenia

Government system

According to the Constitution, Slovenia is a democratic republic governed by the rule of law and a social state. The state's authority is based on the principle of the division of legislative, executive and judicial powers, with a parliamentary system of government.

The highest legislative authority is the parliament – the National Assembly (*Državni zbor*) – consisting of 90 deputies elected for a term of four years by a secret ballot on the basis of direct universal suffrage. The autochthonous Italian and Hungarian national communities are guaranteed two seats in the National Assembly. The National Council (*Državni svet*) is mainly an advisory body composed of representatives of social, economic, professional and local interests. The National Council comprises 40 members who are elected for a term of five years. The head of state is the President of the Republic (elected for a maximum of two consecutive five-year terms by direct general elections). According to the Constitution, he represents the Republic of Slovenia and is the commander-in-chief of its defence forces. The executive authority is vested in the Prime Minister and the 16-member cabinet. The Government with its 58 administrative units is responsible for the policies it adopts to the National Assembly. On the local level, Slovenia is divided into 210 municipalities, which practice local self-governance.

The structure of government expenditure by function is relatively stable. Critics of the taxation system claim that its relatively high corresponding taxes based on the taxing of labour present a problem for sustainable development. Most of the expenditure is intended for social protection (19%), general public services (74%) and health (7%).

Table 2: General government expenditure by function, 2000-2004, in % of GDP

	2000	2001	2002	2003	2004
TOTAL	48.0	48.6	48.0	47.9	47.4
General public services	8.3	8.7	8.1	7.7	7.9
Defence	1.1	1.2	1.3	1.3	1.4
Public order and safety	1.8	1.9	1.9	1.9	1.9
Economic affairs	4.0	3.3	3.6	3.9	3.5
Environmental protection	0.4	0.4	0.4	0.5	0.5
Housing and community amenities	0.2	0.3	0.2	0.4	0.2
Health	6.6	6.9	6.7	6.6	6.6
Recreation, culture and religion	1.0	1.0	1.0	0.9	0.9
Education	5.7	5.8	5.8	5.8	5.8
Social protection	18.9	19.1	19.0	18.9	18.7

Source: http://www.gov.si/mf/angl/tekgib/bilten/bulletin_march_2006.pdf

All in all, Slovenia enjoys stable development with considerable growth, low unemployment and – relative to its development – extremely high social security (workers' rights, free education, free healthcare, social benefits etc.)

According to the Strategy for the Economic Development of Slovenia (SEDS), the key development factors include the formation of a knowledge-based society, increasing the competitiveness of the economy, liberalising infrastructure and changing the state's role in economic development. In general, Slovenia is slowly closing its gap vis-à-vis the EU-15 in knowledge-based society aspects despite its remarkable progress in certain eras (e.g. increased tertiary education enrolment, business sector, R&D expenditure, Internet access). The shortcomings in the area of education and training mainly lie in its efficiency and quality, while the problems concerning R&D activities are chiefly tied to insufficient innovation activities by firms and inadequate institutional support framework, which has also been hindering the technological modernisation of the economy.

Health system

The healthcare system in Slovenia is almost entirely government-ruled and the main investor in health is the government. General government expenditure on health represented 76.3 per cent of total expenditure on health in 2003. This percentage has been quite steady over the last six years (the figure was slightly lower in 1998, 75.7, but had risen to 77.7 in 2000). The percentage of general government investment in Slovenia is slightly higher than in the EU-10, in 2003 the EU-10 average was 69.24 (see the statistical annex).

Life expectancy at birth in Slovenia was 76.53 years in 2003, which is lower than in the EU-15 (79.08 years in 2003) and higher than the EU-15 (74.3 years in 2003). The two biggest causes of death are cardiovascular diseases and cancer, followed by diseases of the respiratory system and diabetes.

Healthcare capacity in Slovenia is structured at three levels; primary, secondary and tertiary. At the primary level, local healthcare centres provide healthcare to the population of one or several communities. Both public and private providers of care deliver primary healthcare. Secondary outpatient medical services are provided at the polyclinics affiliated with hospitals or in community health centres contracted through a hospital specialist or consultant. The tertiary level includes national university hospitals and institutes performing highly specialised services, education, research, transfer of knowledge and development. Tertiary care services are generally organised at the national level.

d) General ICT usage indicators

households with Internet access: 48% (2005)
enterprises with Internet access: 96% (2005)
individuals using the Internet at least once a week: 40% (2005)
households with a broadband connection: 19% (2005)
enterprises with a broadband connection: 74% (2005)
individuals having purchased/ordered online in the last three months: 8% (2005)
enterprises having received orders online within the previous year: 12% (2005)
individuals using the Internet for interacting with public authorities: obtaining information 17.6% (2005), downloading forms 9.5% (2005), returning filled forms 2.9% (2004)
enterprises using the Internet for interacting with public authorities: obtaining information 69%, downloading forms 61%, returning filled forms 45% (2005)

Source: RIS 1996-2005

Historically, in 1995-1998 Slovenia was one of the most advanced adopters of the Internet. This can be confirmed by host-count statistics, the high number of PCs per 100 inhabitants and, in particular, the considerable level of Internet penetration. The reasons for this phenomenon were the traditionally high interests in information society technologies, the high PC penetration rates since the early 1990s (above the EU-15 average), active school informatisation policy, and the Internet access provider ARNES, which already enabled convenient public access for the schooling and research population in

the mid-1990s. Those developments were also accompanied by an early online payment system for companies, as well as ambitious programmes of school informatisation.

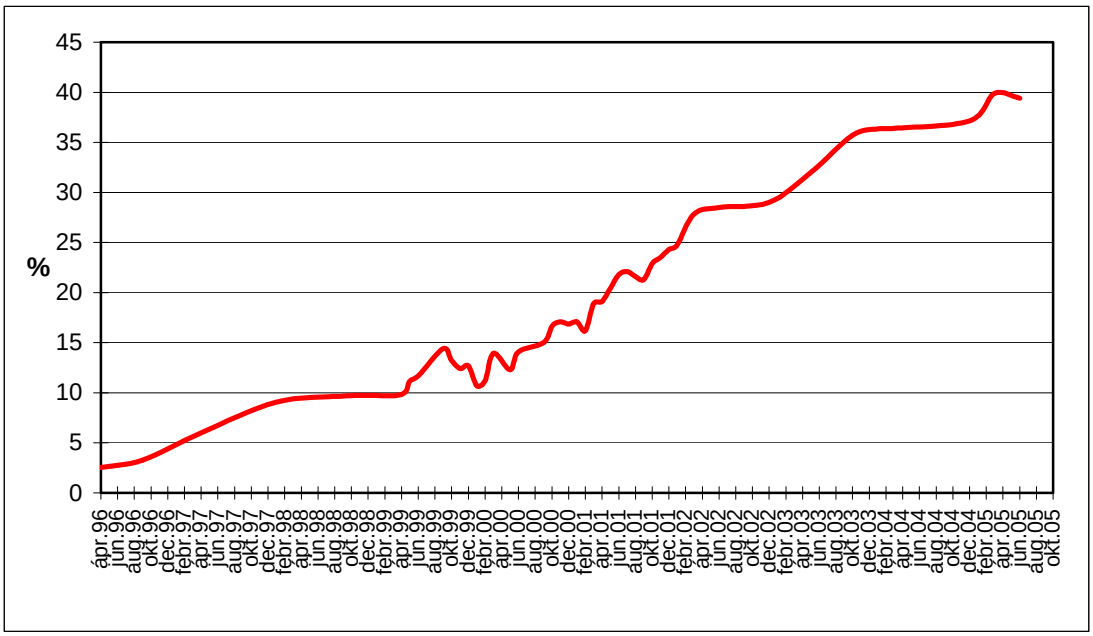
Comparisons with the Eurobarometer EB 50.1 survey data in 1999 clearly showed that the percentage of persons interested in information society services was much higher in Slovenia than in the EU-15, which was also confirmed in various other surveys (e.g. SIBIS). This was particularly true of interests regarding online consumer rights services, the online consulting of medical doctors, online travel plans and telework.

We may also add here that already in 1996 the regular and independent monitoring of the Internet developments in Slovenia was established at the University of Ljubljana, Faculty of Social Sciences, in the project RIS – Research on the Internet in Slovenia (http://ris.org) so the corresponding developments of the information society have been well documented. The RIS data also served as a major source for the present analysis in this project.

However, after the late 1990s a certain slowdown in ICT developments has appeared. Despite being the leading transitional country and still surpassing some four to five of the EU-15 member states, the position of Slovenia has now moved below the EU-15 average as regards the majority ICT benchmarks. Here are some reasons for this decline:

- Critics of the national telecom claim that the liberalisation and deregulation of the telecommunication market has been extremely slow, which has made certain services expensive or unavailable. In 2006, the government still owned the national telecom and its subsidiaries, the largest mobile operator and the largest Internet service provider. The EU authorities have criticised the slowness of this process in Slovenia on many occasions.
- The critical public often refers to the sub-optimal government policy in this area in the last 10 years. Besides the slow deregulation and weak ICT stimulation measures for the business sector, the lack of content in the Slovenian language has been especially critical. The slow development of governmental sites, particularly G2B and G2C services, has also contributed to this, together with the non-co-ordinated and awkward developments of the business sector in key online shopping segments: music, book and groceries. The slow reaction of the banking system enabling relatively late options for online credit card authorisation on Slovenian Websites further contributed to the delay. Some minor issues can further illustrate the lack of a proactive policy, such as the removal of tax stimulation for household PC purchases in the late 1990s and the extremely restricted Internet domain registration.

Figure 2: Percentage of regular Internet users



Source: RIS 1996-2005

Of course, the small market and related economies of the scale also present a considerable problem for the development of many information society services. However, the success of much smaller and less developed countries (e.g. Estonia) demonstrates that proactive government measures can actually create much greater dynamics.

The establishment of the Ministry of the Information Society in 2001 (the corresponding directorates continued their work after 2004) was a very positive sign of overcoming this certain degree of slowing down. Unfortunately, the Ministry did not have any big influences on crucial government strategies. Similarly, an independent telecommunication regulator was established, which has had some positive effects despite being severely criticised for being not efficient enough when acting against the national telecom.

All in all, the changes have been relatively slow and in 2002/2003 the general growth rates of Internet penetration slowed down to 10-15% annually. We could say that Slovenia did not take full advantage of the development of the information society, even though it was from the early 1990s in a very good position. The opportunity was particularly convenient for the fast development of eGovernment because almost all governmental informatics were traditionally highly centralised and 'register-oriented'. Here, we note that information support for the administrative processes of the parliament and government was developed very early on and very efficiently so it was one of the most advanced in the EU.

Nevertheless, the general development of the information society was not set as a high national priority comparable, for example, with other top priority targets such as low unemployment, road construction, farmers' funds etc. Despite that, Slovenia still enjoys considerable development (see Table 7), although this might not be optimal.

In 2005 almost half of all households (48%) had access to the Internet, with broadband access rapidly increasing. In the previous year, 22% of households with Internet access had broadband connections while in 2005 the percentage was 40%. The main reasons of households still not having access to the Internet are a lack of knowledge (43%), and the high costs of the equipment (48%) and access (40%). As mentioned, Internet penetration is at the average EU level (see Table 7).

There were more than 840 000 people (47% of the population) aged 10 to 74 in 2005 who were regularly – i.e. in the last three months – using the Internet. Around 40% of the population was using Internet at least once a week.

The digital divide exists similar to other countries as regards gender, age, education, employment status and urban, rural components. The gap with respect to education has been particularly high (78% of Internet users in the population with more than 12 years of schooling, and 31% among the population with 12 years of schooling or less) and has been stable for more than five years.

Table 3: Percentage of Internet usage and access from households in European countries, (2004, 2005)

	Use of Internet1		Internet access2		Broadband access3	
	2004	**2005**	**2004**	**2005**	**2004**	**2005**
Iceland	82	86	81	84	45	63
Sweden	82	81	:	73	:	40
Norway	75	80	60	64	30	41
Netherlands	69	79	65	78	31	54
Denmark	76	77	69	75	36	51
Finland	70	73	51	54	21	36
Luxembourg (Grand-Duché)	65	69	59	65	16	33
United Kingdom	63	66	56	60	16	32
Germany	61	65	60	62	18	23
Estonia	50	59	31	39	20	30
Belgium	:	58	:	50	:	41
European Union (15 countries)	51	55	46	53	17	25
Austria	52	55	45	47	16	23
European Union (25 countries)	47	51	43	48	15	23
Euro-zone (EUR-12)	47	51	44	50	:	23
Slovakia	46	50	23	23	4	7
Slovenia	37	47	47	48	10	19
Spain	40	44	34	36	15	21
Latvia	33	42	15	31	5	14
Ireland	34	37	40	:	3	7
Hungary	28	37	14	22	6	11
Poland	29	35	26	30	8	16
Italy	31	34	34	39	:	13
Lithuania	29	34	12	16	4	12
Czech Republic	32	32	19	19	4	5
Portugal	29	32	26	31	12	20
Cyprus	32	31	53	32	2	4
Greece	20	22	17	22	0	1
France	:	:	34	:	:	:
Bulgaria	16	:	10	:	4	:
Romania	12	:	6	:	:	:
Turkey	13	:	7	:	0	:
Macedonia	21	:	11	:		

1Percentage of individuals who used the Internet in the last 3 months
2Households - Availability of the Internet
3Percentage of households using a broadband connection

Source: Eurostat, 2005

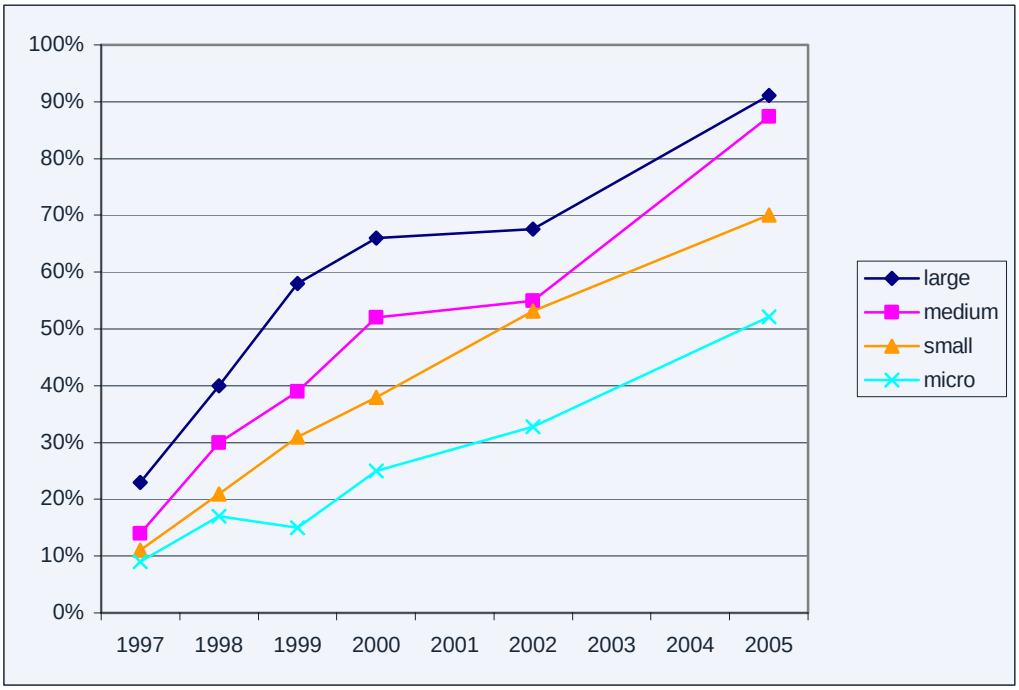
The share of Internet users who have already bought something over Internet is relatively low (20%), particularly for the given Internet development level and it has not risen for several years. Similarly, the share of eBanking has also practically been at the same (21%) level for many years. Security and privacy concerns regarding ePurchasing and eBanking are well below the EU-15 average and are thus not reasons for the relatively limited development. Reasons for the slow development of these services include the convenience of traditional shopping/banking (in a small country), delays in efficient and friendly online payments, as well as the lack of attractively marketed and high quality services. On the other hand, the indirect role of the Internet is rapidly growing and the off-line purchases of more than two-thirds of Internet users were already guided and influenced by information found on the Internet.

Unlike online shopping and banking, the other information society services in Slovenia share a similar situation as with general Internet developments in 2005 – they are around the EU-25 average and slightly below the EU-15 average. This is also true for e-government services, which have considerably improved in the last few years, while they demonstrated a considerable lag in 2003 (SIBIS).

Historically, ICT usage in the business sector has also reflected the general situation among individual users. Slovenia was also one of the first countries that already in the mid-1990s offered electronic payment for businesses operating within the public payment agency. At that time, this was a true killer application because even the smallest businesses immediately recognised its benefits. However, this was later on replaced with a banking online payment system.

Today, the level of Internet access among companies is practically 100%. A better indicator of the evolution of ICT is web presentations, which are also relatively high (Figure 3).

Figure 3: Percentage of enterprises with web presentations



Source: RIS 2007-2005.

Enterprises in Slovenia are traditionally well-equipped. This can be seen in all available comparisons showing that, with respect to basic ICT (PC, Internet, websites, call centres…), Slovenia is above the EU-15 average (see Table 8). The eGovernment application services among business also demonstrate a favourable situation for Slovenian companies compared to the EU-15 or the EU-25. However, with more advanced applications (intranet, video, online purchases etc.) a certain lag appears by comparison.

Table 4: Internet access in enterprises in Slovenia and the EU in percentage (2004, 2005)

	Availability of Internet in enterprises[1]		Broadband access[2]	
	2004	**2005**	**2004**	**2005**
European Union (25 countries)	89	91	52	63
European Union (15 countries)	90	92	55	65
Euro-zone	90	92	57	64
Belgium	96	95	70	78
Czech Republic	90	92	38	52
Denmark	97	97	80	82
Germany	94	94	54	62
Estonia	90	90	68	67
Greece	87	92	21	44
Spain	87	90	72	76
France	:	:	:	:
Ireland	92	92	32	48
Italy	87	92	:	57
Cyprus	82	85	35	40
Latvia	74	75	45	48
Lithuania	81	86	50	57
Luxembourg (Grand-Duché)	90	92	48	64
Hungary	78	78	:	48
Malta	:	90	:	78
Netherlands	88	91	54	71
Austria	94	95	55	61
Poland	85	87	28	43
Portugal	77	81	49	63
Slovenia	**93**	**96**	**62**	**74**
Slovakia	71	92	25	48
Finland	97	98	71	81
Sweden	96	96	:	83
United Kingdom	87	90	44	65
Bulgaria	62	:	28	:
Romania	52	:	7	:
Iceland	:	:	:	:
Norway	86	93	60	78

[1]Enterprises - Availability of the Internet
[2]Percentage of enterprises with broadband access

Source: Eurostat, 2005

Mobile phones are another area where Slovenia has demonstrated extremely fast and high absorption rates – one of the highest in the EU-25 (SIBIS 2003). Unfortunately, up until 1998 there was only one mobile provider (a subsidiary company of the national telecom), which kept the prices relatively high and penetration rates low. With competition coming at the end of the 1990s, the rapid mobile phone expansion put Slovenia among the world's top countries with respect to mobile phone use. In 2005 there were 1.45 million users of mobile telephones, which is 85% of all the population aged between 10 and 75 (source: Project RIS, 2006). The prices are now among the lowest in Europe.

e) Summary

To summarise, we can say that from the late 1980s until the late 1990s Slovenia enjoyed extremely the rapid development of information society technologies. This was partly the result of a genuine openness to ICT, but also the effect of some visionary projects in the public and private sectors such as the early establishment of the public Internet provider ARNES, early and intensive school computerisation, an early public online payment system for companies etc. Some globally innovative and visible ICT companies also contributed to these developments. However, these activities were not interrelated or strategically co-ordinated but occurred more or less spontaneously in various segments of society.

Yet in the last decade ICT has been becoming more global and much more complex. It has also become an increasingly sophisticated asset of contemporary societies, which requires advanced governance of ICT-related processes. Unfortunately, in the last decade this strategic national co-ordination has not been articulated enough in Slovenia and the lack of strategic priorities has become more and more visible. As one of the consequences, a certain lag appeared around 2000 with respect to various ICT benchmarks.

Since 2001 Slovenian governments have been much more consciousness of ICT's importance, in large part also because of the regulations, suggestions and reminders coming from various European Commission bodies. EU membership – together with the pre-accession negotiations/preparations – thus brought about extremely precious and important stimulations for information society developments, particularly in the area of regulation/legislation.

Various strategies and policies related to the information society have been launched in the last few years, some with considerable positive effects. Despite that, the information society's development has never truly been positioned as the highest national strategic goal in Slovenia, although this may be one of Slovenian comparable advantages. Nevertheless, we can still observe very decent developments with respect to the information society and the corresponding ICT benchmarks.

I DESCRIPTION OF THE ACCUMULATED FACTUAL KNOWLEDGE

I.1 Government of the Republic of Slovenia

Slovenia is a parliamentary republic.

Legislative power is held by a unicameral parliament, the National Assembly, which has 90 members (88 elected representatives of the parliamentary parties and one representative each from the Italian and Hungarian national communities). Apart from the National Assembly, the Constitution also provides for National Council, which comprises 40 members elected for five years and is mainly an advisory organ without full lawmaking powers.

The Head of State is the President of the Republic (elected for a maximum of two, five-year terms by direct elections). Executive power is exercised by the Government, which consists of the Prime Minister and other Ministers. The government and the ministers are independent within the framework of their jurisdiction and responsible to the National Assembly.

The Constitution of Slovenia was adopted in December 1991.

Slovenia became a member of the European Union on 1 May 2004.

Current Head of State: President Janez Drnovšek (since December 2002)

Current Head of Government: Prime Minister Janez Janša (since 9 November 2004)

I.1.1 Central government

The government consists of the Prime Minister and other ministers. The Prime Minister manages and directs the government's work, co-ordinates the work of the ministers, represents the government as well as convenes and chairs its sessions.

Office of the Prime Minister
The Prime Minister has an Office which performs professional and other tasks on his behalf.

Government Secretary-General's Office
The Secretary-General's Office performs co-ordination and special tasks for the government and is headed by the Secretary-General of the government.

The government comprises ministers appointed for the following areas: finance; the interior (home affairs); foreign affairs; justice; defence; labour, family and social affairs; the economy; agriculture, forestry and food; culture; environment and spatial planning; transport; education and sport; higher education, science and technology; health; and public administration. The government may also have a maximum of two ministers without portfolio.

The Ministry of Public Administration holds political responsibility for the information society, including eGovernment. It is also responsible for co-ordinating stakeholders from local self-government and national levels in terms of implementing the Strategy of Electronic Commerce in the Local Communities.

The government sets up government services for organisational, professional and other assistance in the functioning of the government and in co-ordinating the work of ministries.

Government offices

- Government Office for Local Self-Government and Regional Policy
- Government Office for European Affairs
- Government Office for Growth

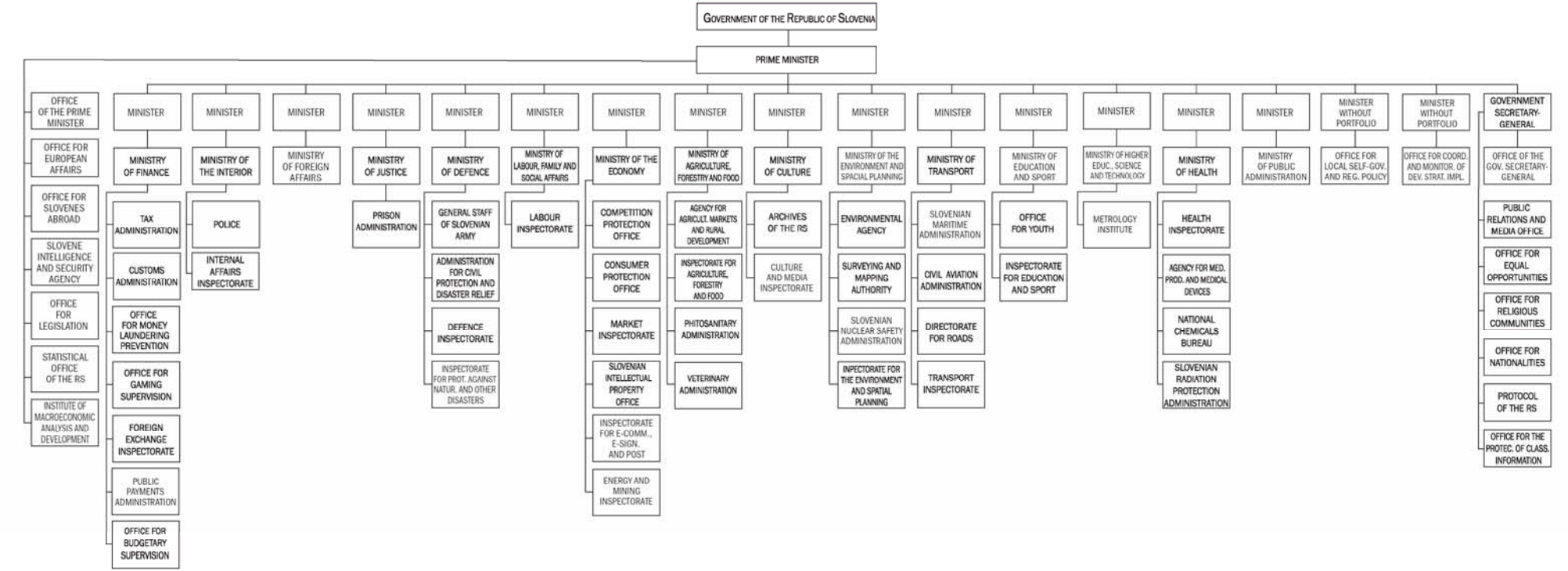
- Office for Slovenians Abroad
- Office for Legislation
- Institute of Macroeconomic Analysis and Development (IMAD)
- Statistical Office of the Republic of Slovenia
- Slovenian Intelligence and Security Agency
- Public Relations and Media Office
- Office for Equal Opportunities
- Office for Religious Communities
- Office for Nationalities
- Protocol of the Republic of Slovenia
- Office for the Protection of Classified Information

Forms of direct democracy

The Slovenian Constitution has introduced into our system practically all the more important and enforced forms of direct citizen participation in the execution of power:

- Referendum: the referendum as a form of direct decision-making of the voters about general provisions and about other important political questions is provided by the Constitution in the area of constitutional revision and legislation and in the process of establishing new municipalities. A statute has also provided for referendums in local communities and a deliberative referendum.
- People's initiative: a people's initiative means the right of a certain number of voters to propose in writing to a representative body the legal regulation of a certain question and/or taking of a certain decision that suits them. The voters may thus participate in the formation of the decision, influence its subject-matter, but cannot have a direct influence on the final decision. The Slovenian system provides a legislative people's initiative, a people's initiative of a constitutional revision and a people's initiative at the local level.
- The right to petition: the Constitution of the Republic of Slovenia provides that every citizen has the right to present petitions and to initiate other activities of a general nature. However, it does not explicitly define the addressees and their obligations to the addressers. The Constitution does not oblige the addressees to give an answer to a petition, which means that this right is exhausted upon presentation of the petition itself.

Figure 4: Organisational structure of central government



Source: Government of Republic of Slovenia; http://www.gov.si/

I.1.2 Local government organisation

Slovenia has a single-level system of local self-government; a municipality only regulates local tasks (there are 205 municipalities, 11 of them have the status of a city municipality).

The municipalities are run by a mayor who is the legal representative of the municipality. Mayors are responsible for the city administration, for proposing the annual budget and for the preparation of other acts within the council's jurisdiction.

Municipal councils, as representative bodies, make basic decisions within the jurisdiction of the municipality. They pass general acts, approve municipal budgets and supervise mayors and municipal administration to ensure the implementation of the councils' decisions. Municipal councils can form committees which are their executive bodies elected from among members of the councils and the municipality's citizens. Based on mayors' proposals, councils appoint deputy mayor(s), the secretary of the municipal administration (chief administrator) and senior administrative staff.

Due to the strict separation of councils and mayors neither can recall the other. However, the parliament can dissolve the municipal council in some extreme cases and call for early elections (if it fails to enact the municipal budget for two consecutive years, or does not achieve a quorum after being called at least three times within a half-year period, or if it violates the law and fails to correct violations when brought to its attention).

The organisation and structure of the municipal administration is left to the municipalities themselves. The size and organisation of the administration are heavily dependent upon a municipality's size. In small municipalities, with a few employees, there is some functional division but they have to perform all the tasks. Larger municipalities and all urban municipalities are organised according to the departmental principle (finance, town planning and environment, public services etc.). Municipalities can decide by statute or decree that the secretary, who is responsible for professional guidance of the municipal administration, also heads up the municipal administration.

Citizen participation on the local level might be realised through different ways such as a local referendum, a people's initiative or 'assemblies' (obligatory and consultative) of the citizens. A local referendum carried out in units of local self-management is not provided for by the Constitution but by statute. It provides three kinds of referenda: a referendum on an act or other decision of the municipal council, a deliberative referendum on individual important municipal issues and a referendum on the territorial formation and reformation of the units of local self-government. A referendum can be called at the request of citizens or councils. A people's initiative in a local community may be submitted by no less than 5% of the voters in a municipality. The body of representatives must consider the proposal of the voters and carry out the prescribed procedure, but it is not obliged to accept the initiative. An 'assembly' of a municipality's citizens can be called by the mayor on his own initiative, on the initiative of the municipal council or on the request of a minimum 5% of the municipality's registered voters. Citizens also participate in consumer protection councils, which submit their proposals and comments to municipal councils when dealing with public services.

If councils agree and citizens accept it through a referendum or a town meeting a municipality can be divided into smaller communities (local, village or ward communities), which are sub-units of the municipality.

Local government responsibilities

At present, the development of local government is still under way. However, in accordance with the current legislation municipalities are responsible for three sets of tasks:

- their own local public affairs (which can differ from one community to another);
- local public matters defined as such by the central government through sectors' national laws; and
- tasks that have been transferred to them from the state (to date there are none).

More accurately, this can mean that the municipalities are responsible for:

- the provision or development of all kinds of social services and activities:
    - preschool, kindergartens and nurseries (all children have the right to a place in public programmes);
    - social care and family support services (the provision of services for socially underprivileged, the disabled and the elderly);
- the provision of social housing;
- the regulation and maintenance of water and power supply facilities;
- the protection of air, soil, and water resources;
- protection against noise;
- the provision of waste collection and waste disposal in urban municipalities;
- the preservation of natural and cultural monuments of local interest;
- the provision of public transport (where feasible);
- the construction and maintenance of local roads and public spaces;
- the management of community assets; and
- the provision of favourable conditions for economic development etc.

Urban municipalities have some additional responsibilities:

- the regulation of local public transport;
- the provision of a public health service and the administration of hospitals;
- the administration of a network of primary, secondary, vocational and higher education;
- support for cultural activities (theatres, museums, archives);
- the administration of public libraries; and
- performing regional administrative functions (in agreement with other municipalities) etc.

Local public services

Municipalities that are responsible for the provision of services in the area of social care, education, healthcare and housing use different arrangements. Some services they provide by themselves while others are provided by specialised public organisations, non-profit and private organisations. Municipalities provide funding for programmes of non-governmental organisations that compliment public programmes.

Some functions are the sole responsibility of the municipalities, while for others the responsibility is shared between the municipality and the state. When responsibility is shared, programmes are very often developed in close co-operation between the responsible state and municipal institutions. Municipalities have to participate by co-financing programmes (for example, adult education, public work programmes, local development programmes etc.)

Division of functions:

- exclusive municipal functions:
    - education (preschool)
    - general administration (fire and civil protection)
    - social welfare (kindergarten and nursery, family welfare services)
    - environment, public sanitation (refuse collection and disposal, cemeteries and crematoria)
    - urban and economic development (town planning, local economic development)

- public utilities (district heating, water supply)

- shared functions with central government:
  - education (primary, adult)
  - social welfare(social housing, social security)
  - health service (primary healthcare)
  - culture, sports (theatres, museums, libraries, parks and public spaces, sport facilities, other cultural facilities
  - environment, public sanitation (sewage, environmental protection, consumer protection)
  - traffic, transport (roads, transport, urban road transport, ports)
  - urban and economic development (housing, spatial planning, regional planning, promotion of economic development)
  - public utilities (gas)

Local government finances

Municipalities have three kinds of financial resources available:

- locally derived sources
- funds from national sources
- borrowing – limited to 10% of the municipal revenues in the previous year, only for financing housing, water supply and waste disposal can they exceed the limit; interest payments cannot exceed 3% of revenues.

It should be mentioned that general government expenditure as a percentage of GDP is around 46%. However, Slovenian public finances are very centralised. Municipal government expenditures only account for about 10% of total government expenditures, which is less than in other CEE countries (e.g. Poland being the nearest with 12.3%, Sycora, 1999). Also the central government determines almost all local revenues, except for property taxes, which most municipalities have not been able to collect so far because they lack reliable records. The Tax Administration of the Republic of Slovenia assesses levies and collects taxes on behalf of municipal governments.

The great majority of expenditures are determined by the state. More than half of municipal expenditures are made in the area of administration, protection and public institutions. Public sanitation, roads and fire protection can be added to this, meaning that more than two-thirds of municipal expenditures are for public purposes. To support local economic development, municipalities spend about 6% of total municipal expenditures; this figure, however, varies greatly among the municipalities, from 1 to 16%, depending on municipal resources.

I.1.3 Regions

Regions are established upon autonomous of municipalities, which seek to join with other municipalities in a broader, geographically rounded off area. The councils of the municipalities concerned decide upon joining a region by a two-thirds absolute majority. On their decision a referendum may also be called. According to the law, it is in the competence of the regions to take control of communal, power and traffic objects, the object in the field of social activities, to promote economic development, agriculture in particular, craft and tourism. In 2001 Slovenia adopted the Strategy of Regional Development of the Republic of Slovenia. It is a fundamental strategic document in Slovenian regional policy. Its main goals are:

- a competitive economy
- improvement of human capital
- improvement of the infrastructure (suitable telecommunication infrastructure, building of the regional development infrastructure

- appropriate institutional organisation
- development potential in the region

So far no region has been established and the main reason for this seems to be a lack of political consensus. Ever since Slovenia's independence, parties and coalitions of parties have held different views regarding regionalisation but to date no method has been enforced.

Parties are using their role in attempts to influence the shaping of the regions. In some places they are even trying to hold back their development or at least try to control it.

I.1.4 Reforms of the public administration

With the change of government after the elections in 2004 a major reorganisation of ministries and governmental bodies began. The new government dissolved some of the ministries and established new ones. The main responsibility for modernisation of the government sector moved from the Ministry of the Interior to the new Ministry of Public Administration. The central tasks of the new Ministry in the field of modernisation are:

- introduction and promoting the development of a strategic planning system in the public administration, and administrative functions regarding methodological, organisational and information bases in this field;
- revision and administrative functions regarding quality policy in the public administration;
- introduction and promoting of quality management systems (ISO, CAF and EFQM) aimed at business excellence and the dissemination of good practices in the public administration;
- introduction and promoting of project work in the public administration, and administrative functions regarding the methodological base and information support in the field of project management; and
- targeted research programmes within the work scope of the Ministry.

Some milestone modernising acts of the Slovenian government:

August 2000
Strategy of qualifying and improving the quality for increasing the administrative efficiency before Slovenian entry to EU

December 2003
Strategy on further development of Slovenian public sector 2003-2005 (Policy on quality of Slovenian public administration)

June 2005
Slovenia's Development Strategy

October 2005
Reform Programme for achieving the Lisbon Strategy Goals

November 2005
The Programme of Measures for Reduction of Administrative Burdens

Source: http://www.mju.gov.si/fileadmin/mju.gov.si/pageuploads/nevladne_organizacije/strategija2.pdf
Source: http://www.gov.si/umar/aprojekt/asrs/ssd-new.pdf
Source: http://www.gov.si/umar/aprojekt/alizb-strategija/alizb-strategija.pdf
Source:http://www.mju.gov.si/fileadmin/mju.gov.si/pageuploads/mju_dokumenti/english/Statement.pdf

Slovenia's development strategy (SDS) is a document adopted by the government in June 2005 setting out the vision and priorities of Slovenia's development. At the forefront of the new Strategy is

the overall welfare of each individual. The SDS therefore focuses not only on economic issues but also on social, environmental, political, legal and cultural matters. Due to such a prioritisation of the objectives, the SDS also serves as Slovenia's strategy of sustainable development. At the same time, it integrates the Lisbon goals within the national setting, bearing in mind Slovenia's specific development opportunities and setbacks. The Strategy comprises provisions for improvement of the public administration. In the third development priority – an efficient and less costly state – there are measures in connection with the public administration:

- launch a regulatory impact assessment system to screen regulations for their restrictive administrative and regulatory impact on competition and economic activity and take steps to remove these obstacles
- raise the standards of professionalism and transparency in the public administration; improve the quality of its services and strengthen its consulting functions
- decentralise the administration
- finalise the 'one-stop-shop' project and reduce the administrative burden on the setting-up of companies
- increase the use of ICT and consequently e-Government services in households.

The main objectives of Slovenia's Development Strategy are the following: (i) exceed the average level of the EU's economic development (measured as GDP per capita in PPP) and increase employment in line with the Lisbon Strategy goals in the next ten years; (ii) improve the quality of living and the welfare of each individual, measured by the indicators of human development, health, social risks and social cohesion; (iii) enforce the sustainability principle as the fundamental quality criterion in all areas of development, including the goal of sustained population growth; and (iv) to develop into a globally recognisable and renowned country through a characteristic development pattern, cultural identity and active engagement in the international community.

The reform programme for achieving the Lisbon Strategy goals is the government's response to the challenges set by Development Strategy, setting out measures aimed at stimulating the economy's restructuring and liberalising the economy even further, and measures aimed at boosting economic growth and employment. The fundamental change in the sphere of an efficient and less costly state is an increase in its efficiency. This will be achieved by raising standards of professionalism and transparency in the public administration, improving the quality of its services and strengthening its consulting function. The implications for the public administration reform are: setting up a portal for the electronic services of the public administration; renovation of certain registers; the one-stop-shop project will be widened to include enterprises.

The Programme of Measures for Reducing Administrative Burdens and the Methodology for the Implementation and Supervising of the Statement on the Reduction of Administrative Burdens and Participation of Interested Publics.

The Programme consists of 34 measures necessary for the realisation of each objective of the reduction of administration burdens. Each measure contains a comment on the present condition, the essence of the measure along with the goal of improvement, the time limit for the realisation and the responsible body or appointed person within the body. If realisation demands the alteration of a valid regulation the required regulations are also stated.

The 34 measures include the reduction of administrative setbacks, extension of the One-Stop-Shop project to limited companies, reduction of the necessary craft licences, simplification of the permission acquisition procedure for space intervening and alterations regarding rights to parental custody.

The Methodology for Implementation and Supervising of the Statement is designed for a more precise definition of the initial evaluation of the effects of regulation. The initial evaluation is the information for the regulation drafter that will include an analysis, possible risks, benefits and costs.

A complete list of adopted measures for the reduction of administrative burdens with responsibilities and time limits is available in the annex to the report.

The government structure in Slovenia can be addressed as standard for European parliamentary republic. The governance in the country is, due to its size, divided on two levels. Central government holds a strong (centralised) position, which is, on the local level, executed through 58 administrative units. Local self-governmental system is divided among 210 Municipalities, which have strong influence on local affairs, but rather weak on issues concerned by Central government. Regarding policies and governmental changes in recent years, we can mention the change of political map in the country in 2004, which influenced restructure of central government and adoption of Slovenia's Development Strategy (2005), setting out the vision and priorities of Slovenia's development and integrating the Lisbon goals within the national setting. One of stronger recently running programmes is the Programme of Measures for Reduction of Administrative Burdens, which reforms the well established bureaucratic procedures of public administration and fosters usage of new technologies and modern organization of PA.

I.2. The national healthcare system

I.2.1 Institutional framework and a description of the main actors

The institutional framework of the Slovenian healthcare system is strongly embedded in its historical structure. The major actors in healthcare and their relationships also derive from past development of the system. The framework is further based on legislation introduced in 1992 when the Law on Healthcare and Health Insurance laid out the basis for the present system of the two-pillar health insurance: compulsory and voluntary. The 1992 law also permitted the privatisation of healthcare and transferred some administrative functions to the professional chambers.

The state and its legislative and executive bodies (ministries, agencies, boards, councils, offices) have key administrative and regulatory functions. These functions are carried out by activities related to the preparing and passing of laws, by-laws, standards and other acts. As presented in Diagram 1, the main actors in the regulatory sphere are: the Parliamentary Committee on Social Affairs, Work, Family Matters and Health, the National Board of Health (which is part of the government), the Economic and Social Council, the Health Council and four internal departments within the Ministry of Health.

The state is also responsible for development of the national health policy and for the development and implementation of disease prevention and health promotion programmes. These tasks are mainly carried out by the bodies mentioned above with the help of the National Public Health Institute, the Medical and Pharmaceutical Chambers and the Public Health Insurance Institute (HIIS) (see Figure 5)
The healthcare delivery system is defined by the Law on Medical Services. Apart from public healthcare institutions (healthcare centres and hospitals), some private healthcare institutions also form part of the public health network and have a contract with the HIIS. Healthcare capacity is structured at three levels:

- primary;
- secondary; and
- tertiary.

At the primary level, local healthcare centres provide healthcare to the population of one or several communities. Both public and private providers of care deliver primary healthcare.

Public providers include healthcare centres and health stations. The locations of healthcare centres correspond to the seats of former self-governing communities (from before 1995), and the locations of health stations correspond to important local centres, which are small towns, hamlets or villages. The aim of the primary care level is to improve the general health of the population and to treat diseases

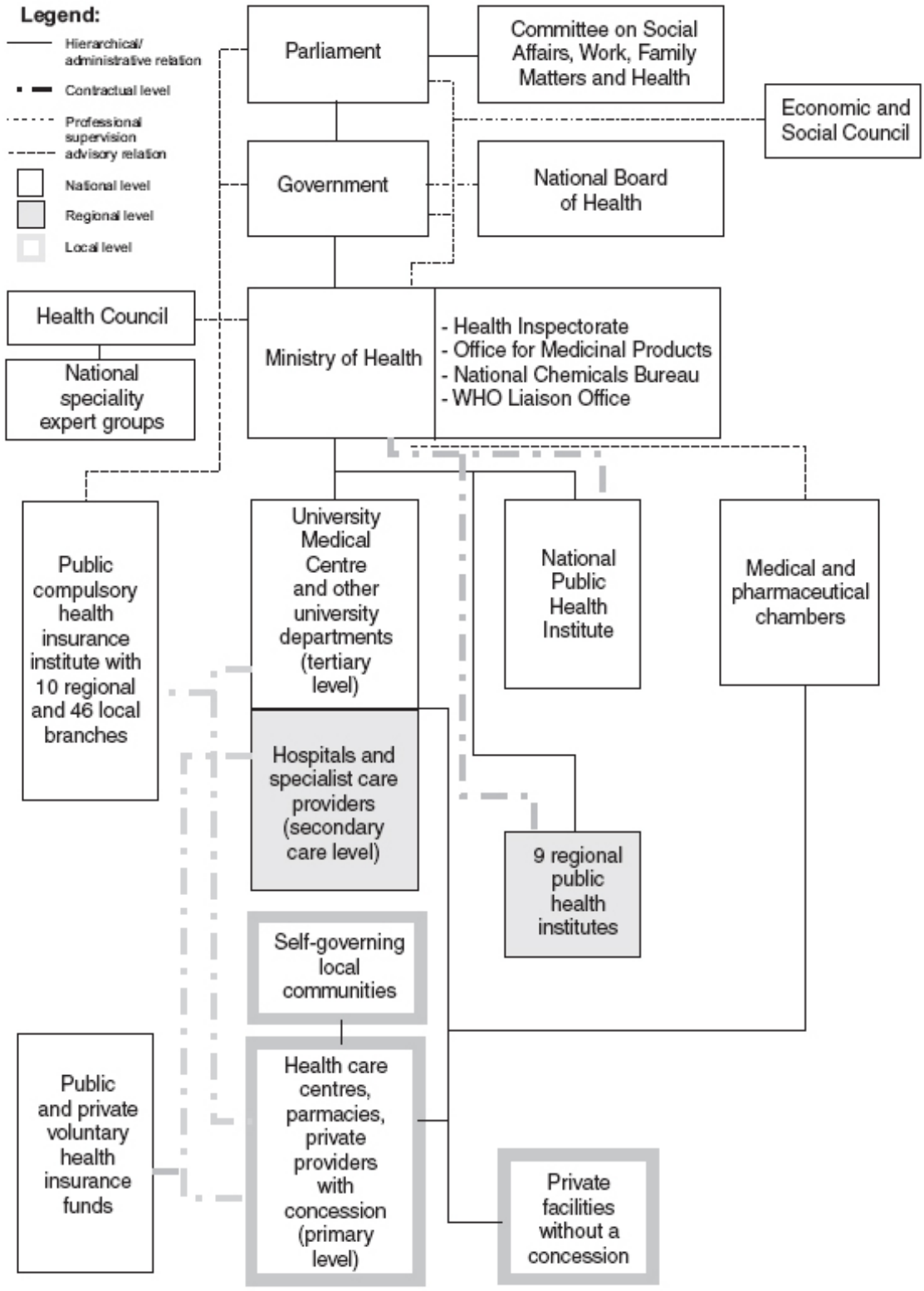
and injuries, which do not require hospitalisation. The primary care services deliver both basic curative care and preventive services through local primary healthcare centres. The main guidelines for the primary level are: comprehensiveness, closeness, accessibility, continuity, quality and safety. Patients have the freedom to choose from among primary healthcare providers. Patients can choose between health centre and hospital outpatient departments within the county council. If a patient wishes to receive medical care outside of his/her county council, a referral may be required.

Secondary outpatient medical services are provided at the polyclinics affiliated with hospitals or in community health centres contracted through a hospital specialist or consultant. Hospitals provide about 75% of secondary care, either as inpatient or outpatient care. Most hospital polyclinics work within the public network of healthcare services. These polyclinics also organise outpatient consultations for self-paying patients under regulations certified by the Ministry of Health. There are also a few purely private healthcare providers of secondary specialist care and diagnostic services, but most work under contract with the HIIS.

The tertiary level includes national university hospitals and institutes, performing highly specialised services, education, research, transfer of knowledge and development. Tertiary care services are generally organised at the national level. Apart from the Central Clinical Hospital in Ljubljana, there are two other national tertiary institutions, the Institute of Oncology and the Institute for Rehabilitation. All hospitals are state-owned but there have already been some initiatives for private hospital care. Private hospitals may be established outside of the network of publicly financed providers. There is also an opportunity for private investment in new hospitals, although this has not yet taken place.

The Ministry of Defence owns and employs its own healthcare facilities within its military premises. A military physician salaried by the Ministry of Defence usually provides first aid care. For more complex primary health services, a general practitioner under contract with the public health insurance fund is often consulted. All specialist care is provided within the public healthcare network. Services for conscripts are paid through the national budget. Healthcare for military professionals is covered by the national insurance scheme.

Figure 5: Organisation of the Slovenian Healthcare System



Source: European Observatory on Healthcare Systems: Healthcare Systems in Transition. Vol. 4 No. 3 2002, p.12

*The name of the central hospital was changed. 'The University Medical Centre' (in Figure 5) is now named 'The Central Clinical Hospital'.

Since Slovenia has a variety of legislative and administrative bodies and institutions involved in the provision of healthcare services, we briefly discus their roles and relationships in the next few paragraphs:

Governmental and other bodies at the national level

- **The National Board of Health** is an advisory body to the government, which can only indicate problems and has no decision-making power. It is responsible for keeping health on the agenda in government and parliamentary procedures. As defined by the Law on Healthcare and Health Insurance, the Board's role is to promote health policy by monitoring the effects of the social and physical environments on health. The Board also assesses the development plans and legislative drafts to assess their potential effects on health.
- **The Parliamentary Committee on Health** prepares legislative proposals for parliamentary hearings.
- **The Ministry of Health** prepares legislation for healthcare and health protection and ensures regulation and supervision of the implementation of legislation. The activities of the Ministry relate to healthcare at the primary, secondary and tertiary levels, including the financing thereof.[11]
- **Other ministries** directly influence the financing and organisation of health services.[12]
- **The Health Council** is the highest co-ordinating expert body of healthcare, advising the Minister of Health and formulating the contents of health programmes with regard to their feasibility, the regular development of all medical specialties and access to healthcare services. The Health Council is based at the Ministry of Health, which also defines the composition, method of nomination and manner of work of the Health Council.
- **The Institute of Public Health (IPH)** covers the fields of social medicine, hygiene, environmental health, epidemiology, informatics and research activities. The most important activities of the national IPH are implementing the national programme of prevention, collecting and analysing data on the health of the population and healthcare services and, based on reliable data, preparing health policy documents and suggesting measures to improve and protect health.
- **The Health Insurance Institute of Slovenia** was created as a public and non-profit entity strictly supervised by the state and bound by statute to provide compulsory health insurance to the population.

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[11] The Ministry also monitors public health, prepares and implements health promotion programmes and ensures the conditions for people's health education. Activities also focus on supervising the production, trade and supply of medicines and medicinal products and the manufacture of and trade in illicit drugs. The Ministry is in charge of implementing international agreements on social security and of developing national health policies related to healthcare financing, health insurance benefits, quality assurance and the planning of public healthcare facilities. The Ministry is responsible for establishing hospitals and public health facilities at the national level.

[12] The Ministry of Finance reviews and approves the budget of the Ministry of Health. The Ministry of Finance and the parliament approve the basic principles and the shares of the national budget, the budgets of local authorities, mandatory health insurance and mandatory pension and disability insurance through a budget memorandum each year.

• The Ministry of Education and Sport and the Ministry of Higher Education, Science and Technology supervise activities related to medical and health professional education and some health promotion programmes. They are also responsible for matters related to basic research and technological development and for university and postgraduate education of junior researchers. In their internal co-operation activities, the ministries are working on participating fully in EU research activities related to health.

• The Ministry of Labour, Family and Social Affairs together with the Ministry of Health co-ordinates the provision of homes for the elderly and handicapped people.

• The Ministry of Environment and Spatial Planning co-operates with the Ministry of Health in the field of the environment and health.

• The Ministry of Internal Affairs, the Ministry of Defence and the Ministry of Justice pay for healthcare for police and military personnel while on active duty, and for prisoners.

- **Unions, professional associations[13] and voluntary organisations**[14]

Organisations at the local level

- Local governments; local governments of self-governing communities have not yet begun to play an active a role in decision-making in the healthcare system as envisioned by the healthcare reform legislation of 1992. They are currently mainly responsible for granting concessions to private healthcare providers who wish to work within the publicly operated primary healthcare system. They are in theory also responsible for planning, establishing and managing primary healthcare facilities, which is in part reflected in their responsibility for capital investment in public primary healthcare facilities and pharmacies.

I.2.2 Ownership and financial structure of the healthcare system

The ownership and financing of the facilities and equipment

The healthcare facilities and medical equipment at the tertiary level (university central hospitals) are owned and financed by the state – the Republic of Slovenia. All doctors who work in central hospitals are employed by the state. However, recently there have been tendencies to allow private expert doctors to perform in state-owned facilities and give them the right to rent state-owned facilities and equipment.

The facilities and medical equipment for specialist care at the secondary level (local hospitals, specialists) are also dominated by state financing – here we also include the contribution of the counties (i.e. local communities) – and only partially by the private sector.

The medical infrastructure at the primary level (local healthcare centres, private GPs) is owned and financed either by the counties or by the private sector. In recent years, the number of private GPs has been increasing. Especially high is the percentage of private dentists in urban centres.

To sum up, the state or county budgets cover capital investment costs of all public primary, secondary and tertiary healthcare facilities and equipment, while private hospitals, specialists and GPs cover their own expenses in the medical infrastructure.

The financing of healthcare services and medicines

In Slovenia, healthcare services and prescribed medicines are mostly covered by compulsory health insurance. The law laid the basis for a centralised compulsory health insurance system to be administered by the HIIS (Health Insurance Institute of Slovenia, http://www.zzzs.si). By statute, the HIIS is the sole provider of compulsory insurance. The HIIS operates autonomously and is governed

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[13] The Medical Chamber of Slovenia and the Slovenian Chamber of Pharmacy are responsible for specialisation, licensing, developing and issuing a code of medical ethics and supervising professional practice. The Nursing Chamber of Slovenia was established more recently. Membership of professional chambers is compulsory for all professionals who are in direct contact with patients. There are also proposals to establish new chambers for other health professions.
The Slovenian Medical Association, a voluntary nongovernmental association of physicians, discusses expert issues and advises the Medical Chamber of Slovenia. The Association publishes a monthly medical scientific journal on medical issues in Slovenia.
Several trade unions represent the interests of health professionals, covering one or several professions (FIDES – the Slovenian Union of Physicians and Dentists; the Slovenian Health Service and Social Service Union; the Federation of Slovenian Free Unions; and the Union of Healthcare Workers of Slovenia). Public health institutions are members of the Society of Health Institutions of Slovenia, which individuals may also join. This society is one of the partners that represent the interests of health providers in negotiations with the payers of services.

[14] The role of non-governmental organisations (NGOs) in healthcare is beginning to emerge in Slovenia. NGOs can realise public participation by proposing changes and drawing attention to anomalies. NGOs can secure a small share of public financing from the national budget if they meet certain budgetary requirements.
Slovenia is currently facing a strong increase in the number of patient societies. Recently, when the Minister of Health proposed a new change to the law on compulsory health insurance the patient societies informally joined in a national patient organisation to oppose the law. However, this was just a temporary agreement and currently there is no national patient organisation in Slovenia.
Slovenia also has several self-help groups. The most prominent are alcoholics anonymous groups and self-help groups for people with chronic diseases such as diabetes, cardiovascular diseases and osteoporosis.

by elected representatives of employers and the insured. In its capacity as the founder of the HIIS, the state has retained some main levels to manage and control operations such as an involvement in determining the contribution rate and the scope of rights (benefit catalogue) and resolving other important issues arising in the provision of public health insurance.

Contributions for statutory health insurance constitute the major system of financing healthcare in Slovenia, providing more than 85% of the funding. Virtually the entire population with a permanent residence in Slovenia is covered under the sole compulsory insurance scheme either as a mandatory member or as a dependant. Opting out of the compulsory system is not permitted. Coverage is also provided to citizens of almost all EU countries through arrangements governed by bilateral conventions.

Besides the statutory health insurance, insurance companies offer the additional non-compulsory health insurance. The additional insurance covers a smaller share of those services and medicines (especially hospital treatments and specialist care), which are not provided by the compulsory insurance. However, these additional insurance contributions are de-facto compulsory as practically all citizens pay them to avoid explicit payment for the services involved. The main insurance companies offering additional health insurance are:

- Vzajemna, the insurance organisation with the biggest share of this specific market, as it was established by the HIIS just to provide these additional non-compulsory services;
- Triglav, the largest national insurance company (still largely state-owned);
- AdriaticSlovenica, a private insurance company;
- Merkur Zavarovalnica, a private insurance company; and
- Tilia, a private insurance company.

I.2.3 Health policy

In October 2004 the newly elected government announced new or changed reforms of healthcare. While the healthcare reforms of previous governments will be partly continued, the overall environment will be more favourable for private provision and market-oriented reforms in both economics and social affairs.

Several policy documents announce the changes: a more favourable environment for private provision of care, instituting the concept of a 'free specialist', introduction of the right to be excluded from co-payments on social status grounds, restructuring of the private insurance market, incentives for more efficient and effective healthcare. The reform will be marked by initial changes to the basic healthcare legislation dating from 1992 and later, and by a process of continued changes in the financing and organisation of healthcare.

Some of the main objectives of the health policy changes are summarised in the Programme of the Government of Slovenia for 2005. The Programme defines three main areas of intervention for the present government:

- Ensuring the rights of patients under a redefined insurance scheme and patient involvement,[15]
- Organisation and healthcare delivery by:[16]

[15] The changes are based on a redefined mandatory health insurance basket of rights, reducing certain rights related to sickness leave financial benefits (lowering percentages of reimbursement for salaries during an absence for injury), introduction of a lower margin of income as the basis for the transfer of such insures to mandatory health insurance instead of voluntary health insurance schemes.

[16] The main organisational challenges are:
- increasing management skills in public institutions/healthcare providers;
- the promotion of healthy life styles and responsibility for one's own health;
- establishment of efficient long-term care legislation;
- establishment of the office of ombudsman for patients' rights;
- redefinition and regulation of the relationship between publicly/state organised healthcare provision and

- enhancing private entrepreneurship and a more flexible approach to the private delivery of healthcare; and
- defining standards (numerical and geographical) for equitable distribution and access to primary care

- Investment in healthcare.[17]

Regarding eHealth, the Programme emphasised that healthcare informatics is the field which can bring the highest added value to the health system. To emphasise its importance and accelerate its development, the Ministry prepared the document named e-Health2010 as the strategic plan for implementing IT in the healthcare system in Slovenia for the 2005-2010 period. Following expert deliberation, the document is envisaged to serve as the basis for adoption of the action plan to accelerate the implementation of e-tools in the Slovenian healthcare sector.

The changes clearly indicate developments toward a more liberal and market-oriented reform of the economic space as well as the social services. The private sector will be gaining more space but at the same time more supervision and quality assurance is to be introduced.

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the private provision of healthcare;
- adoption of a patient code of rights and a definition of complaints procedures; and a distinction in the financing of secondary and tertiary healthcare.

[17] The chief financial incentives of the present health politics are:
- a continued process of introducing DRG (Diagnosis Related Groups) – a system for reimbursement in hospital in-patient care and preparations for its introduction to out-patient care;
- introduction of balance schemes in order to better regulate the voluntary insurance market and prevent cream-skimming;
- exclusion of the poorest part of the population from co-payment/voluntary insurance schemes and their inclusion in the basic mandatory healthcare insurance;
- reduction of absenteeism through a lower level of rights for certain categories of absenteeism (injuries out of work, risky sports, consequences of traffic accidents);
- increasing discipline in paying the mandatory health insurance premiums;
- inclusion of other sources of income as the basis for health insurance;
- financial relief to the mandatory health insurance;
- a redefinition of public investment in publicly-owned healthcare facilities; and
- a fairer system of salaries and incentives for improved productivity at individual and collective levels.

II DESCRIPTION OF THE CURRENT ROLE OF EGOVERNMENT/EHEALTH DEVELOPMENTS

II.1. Institutional structures, resources and funding

II.1.1. eGovernment structures

Policy-making on eGovernment and the supervision of policy implementation in Slovenia is within the domain of the Directorate for eGovernment and Administrative Processes of the Ministry of Public Administration. A few responsibilities lie in the domain of the Directorate for the Information Society at the Ministry of Higher Education, Science and Technology, and the Directorate for Electronic Communications at the Ministry of the Economy. Of course, the final implementation of eGovernment covers a wide range of services provided by different ministries and governmental bodies that carry out specific administrative tasks on regular bases. All of these have to play their part in policy development. All services provided by the national government are united at the national public administration portal http://e-uprava.gov.si/.

The link in the chain between the Ministry of Public Administration and the municipalities as actors on the local level is the Government Office for Local Self-government and Regional Policy which, among other tasks, prepares system regulations in the fields of the organisation, functioning and financing of municipalities. The Office co-ordinates work with the ministries and other bodies in the preparation of system solutions and regulations in the field of organisation, functioning and financing of municipalities and prepare system analyses of local self-government. The main document regarding e-government on the local level is the Strategy of Electronic Commerce in the Local Communities (SEPLS). The final implementation of services rests on the local authorities (municipalities) which are joined in two organisations; the Association of Municipalities and Towns (SOS) comprising 131 municipalities. The SOS is the biggest representative association of local communities in Slovenia. Its representative status allows it to be an 'official' representative of the interests of municipalities in relation to national institutions. The other organisation is the Association of Municipalities (ZOS), which comprises 58 municipalities.

The complete development of eGovernment is supervised by several institutions and organisations. Personal data protection is within the domain of the Officer for access to public sector information. Overall supervision of the state accounts and all public spending in Slovenia is the responsibility of the Court of Audit. This body is independent in the performance of its duties, which are set out in the Constitution and law.

The development structure of eGovernment was a matter of big institutional change after the elections in 2004. The new government dissolved the former Ministry of the Information Society (MID) and the Government Centre for Informatics (GCI), and put up the structure that exists today.

Developing eGovernment

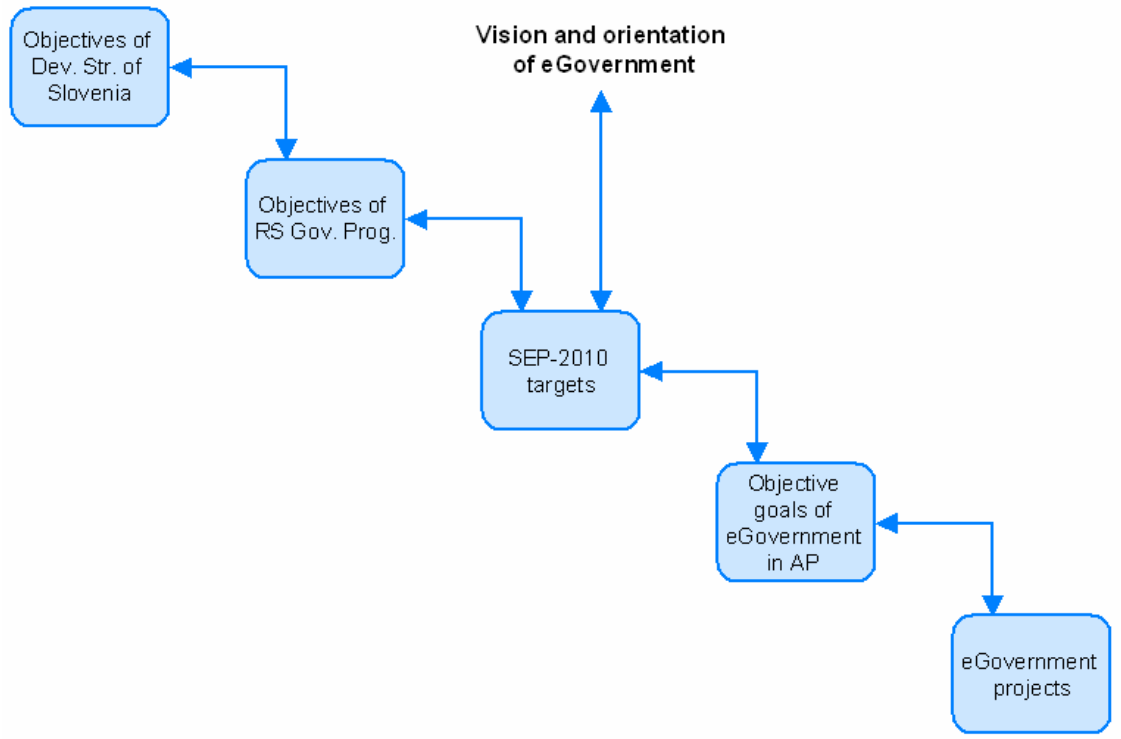
The environment for development established during implementation of the SEP-2004 has proved to be efficient.

One of the most important mechanisms in the organised environment for implementing the strategy is the Action Plan. Its primary intention is that of an implementation strategy for eGovernment since it presents in detail the objective goals, projects and eGovernment e-services which arise from the strategy and at the same time gives an overview of the current status of the projects and information about the progress of eGovernment in Slovenia. The current Action Plan to SEP-2010 had still not been released in October 2006. In future the Action Plan will also be one of the most important mechanisms for providing transparency and traceability in implementation of the SEP-2010 strategy.

The figure below shows the interconnectedness of the objective goals in the eGovernment Action Plan and its pertaining projects with the targets of the strategy and other strategy documents and programmes. The carrying out of eGovernment projects will directly and indirectly contribute to the

fulfilment of the objectives of the Programme of the Government of the RS and the Development Strategy of Slovenia.

Figure 6: Connection of the SEP-2010 targets with eGovernment projects



Source: eGovernment Strategy of Slovenia for the period 2006 to 2010, 2006

The Action Plan's purpose is, in addition to the already known and constant objectives, to make an assessment of the progress since the first adopted action plan and to support those authorities which are lagging behind in their development of e-services or are carrying out less intensive activities.

Another purpose of the Action Plan is to support the development of e-services based on joint EU initiatives and e-services for the internal operations of the administration (internal processes for resolving administrative matters), which in addition to the more efficient development and functioning of these services will also positively affect the speed and efficiency of the performance of services along classical communication channels.

Along with monitoring implementation of eGovernment it will be necessary to monitor the achieving of the AP objectives, which arise from the strategic objectives of the ministry and the directing and area-centred objectives of eGovernment.

Competences and responsibilities for implementing the strategy and reporting

The agreed organisation with respect to eGovernment projects is the basis for further work in this area. It will follow the fulfilment of the Work Programme and objectives of the government and achieving of the SEP-2010. In accordance with the organisational structure and defined competencies, responsibilities and duties, the highest decision-making authority for eGovernment projects is the **Co-ordinating Body for Better Public Administration.**

In accordance with the mandate, the person competent and responsible for managing this area is the head of the **working group for eGovernment project co-ordination** (hereinafter: the eGovernment Manager).

A **working group for eGovernment project co-ordination** (hereinafter: the eGovernment working group) has been established to harmonise the management of this area. It is made up of members appointed from ministries, their component authorities and government offices, which are in charge of e-services and/or the e-services infrastructure in the eGovernment Action Plan (hereinafter: the AP).

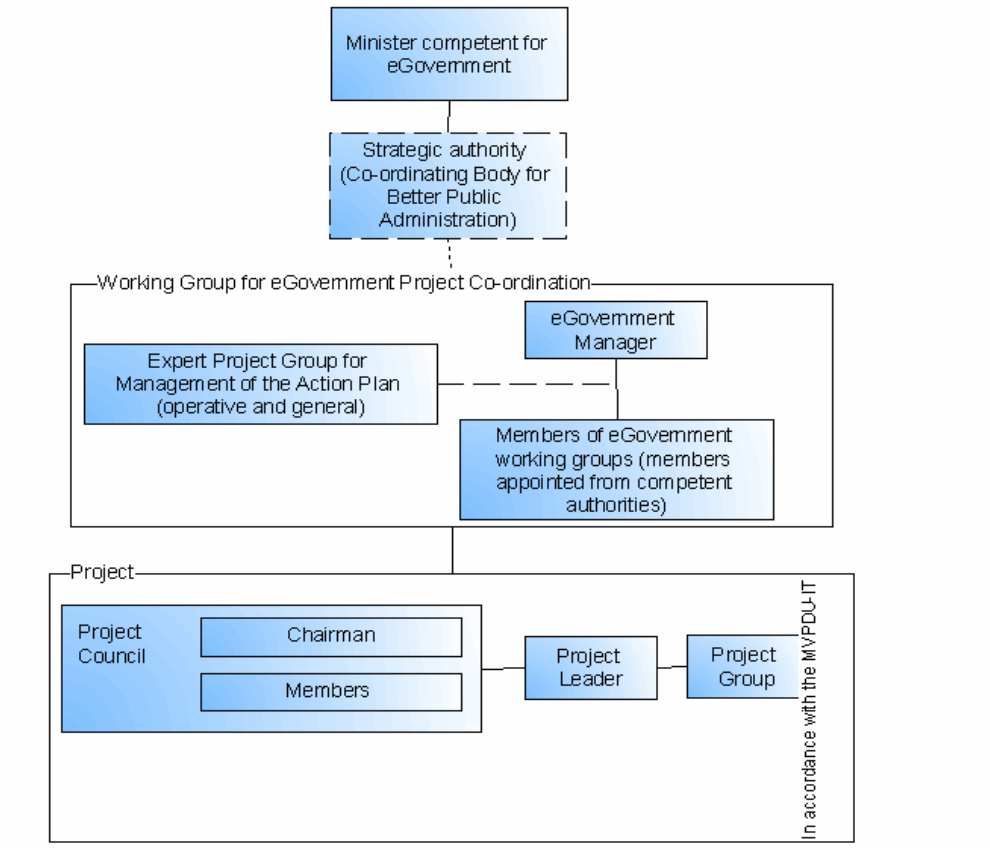
The expert project group for managing the AP (hereinafter: the AP expert project group) is responsible for drawing up the eGovernment Action Plan document.

The **Project Council** is made up of a chairman and members of the Project Council. The authority in charge of the project shall appoint the Chairman of the Project Council to adopt decisions pursuant to these instructions. The extent of their competencies, responsibilities and duties is in accordance with provisions of the MVPDU-IT.

The remaining **members of the Project Council** shall be appointed in accordance with the needs of the authority, which is in charge of the project and other authorities participating in the project. The extent of their competencies, responsibilities and duties are in line with provisions of the MVPDU-IT.

The authority in charge of the project shall appoint the project leader for operative management. The Project Council must approve the appointments. The project leader's duties are in accordance with the MVPDU-IT and determined in individual founding documents of the projects. The project group members are determined by the authority in charge of the project internally.

Figure 7: Proposed organisational structure of project leadership in the field of eGovernment



Source: eGovernment Strategy of Slovenia for the period 2006 to 2010, 2006

Financing structure for eGovernment

The financial structure of eGovernment development corresponds to its institutional structure. Practically all funds stem from the national budget. The present funding is performed by planning and using sources from the national budget, most acquired sources are used for projects of the development of eGovernment services, modernising infrastructure, and outsourcing. The outsourcing and purchasing of equipment for projects is carried out through public tenders, which are concluded with contracts. Contracts are the main mechanism of co-operation with outsourced partners. The share of national funds used for ICT in Slovenia is around 1.2%. The exact amount of total funds used for eGovernment is very difficult to assess due to the fragmented financing structure among the ministries. One estimate is that every ministry spends 4-7% of its budget on ICT.

eGovernment projects are mainly managed in Slovenia at the central administration level. Recent organisational changes have led to the establishing of the Public Administration Ministry which is in charge of co-ordinating the whole state eGovernment policy by identifying operational priorities and the necessary financial resources. Other administrative layers only play a secondary role, although the Government Office for Local Self-Government and Regional Policy is entitled, among its action objectives, to play a significant role in assessing local communities' eGovernment needs. The central eGovernment project financing framework relies on a set of cross-cutting initiatives jointly managed by all interested ministries and supervised by the Public Administration Ministry. There is no specific budget chapter concerning the information society as a whole, nor for eGovernment projects.

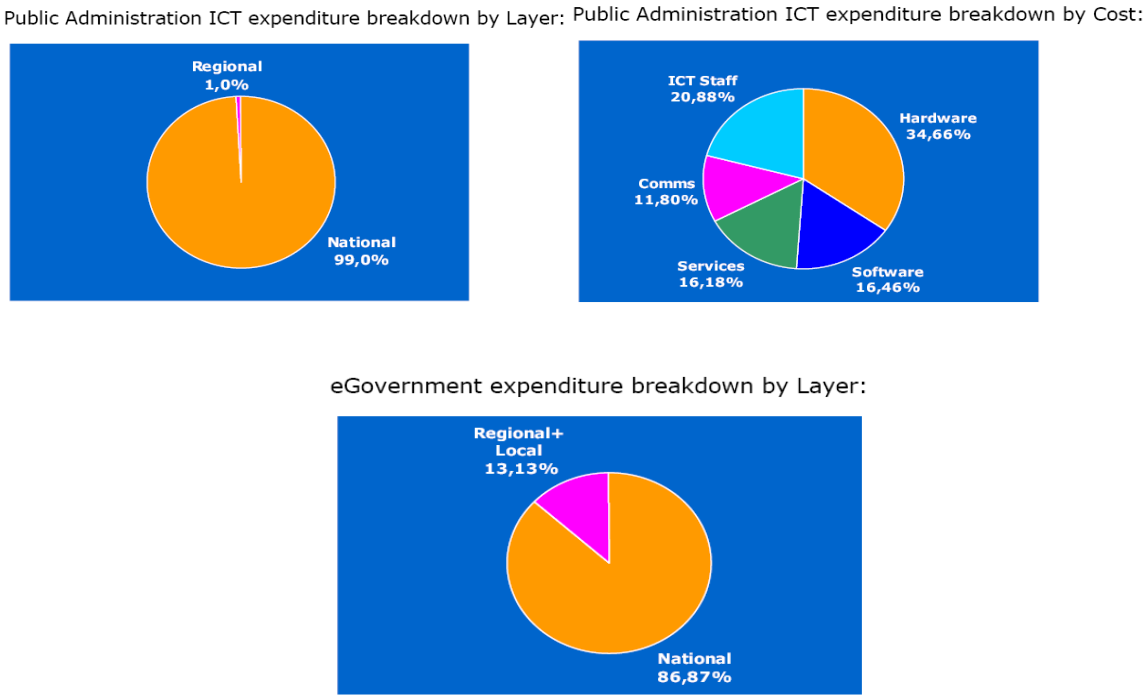
In financing national eGovernment projects a remarkable role is played by European Union funds since Slovenia benefits as an EU objective 1 Region, with EUR 237.5 million in funding for the 2004-2006 period.

Financial sources from the EU (structural funds): there are more and more chances of public and private organisations obtaining funds for different kinds of ICT projects from the EU. Possibilities of funding or co-funding are seen in several European projects: eTen, eContent, 7th FP (IST, IDAbc), Safer Internet programme and Structural funds. To use this way of funding the government has proposed the common activity of all partners developing eGovernment services.

Besides external resources, which should also include loans from international financial institutions, the Slovenian public sector is also trying to involve industry actors through a revision of its eProcurement legal framework.

A further funding resource for eGovernment projects, albeit only for one-off initiatives, should be offered by selling the state-owned IT and TLC companies or assets.

Figure 8: ICT and eGovernment expenditure of Slovenia (eGovernment Economics Project - eGEP)



Source: http://217.59.60.50/eGEP/Static/E_Description.asp , 2006

* The exact amount of total funds used for eGovernment is very difficult to assess due to the fragmented financing structure among the ministries. One estimate is that every ministry spends 4-7% of its budget on ICT.

Involvement of the private and non-governmental sectors

Several regulatory documents were accepted in governmental and parliamentary proceedings in late July 2006. These included a draft law that deals with private/public partnerships. The law presents several mechanisms expected to increase private investment in infrastructure of public interest. Government officials will be obliged to involve the private sector in the projects, while the role of the public officials will be reduced to monitoring the process. The government expects the new law will boost the level of competitiveness, while ensuring transparency and fairness in private-public partnerships.

The private sector has been an important actor from the beginning of eGovernment development in Slovenia. The first actor to offer legal information in digital form was **IUS-software** (http://www.ius-software.si/) that started to operate as a Bulletin Board System (BBS) in 1989. **IUS-INFO** is now the largest online legal and business information system in Slovenia, which contains up-to-date legislation and case law in its original form, catalogued and fully searchable. In addition, IUS-INFO provides access to the Official Gazette indexes. IUS-INFO is quickly becoming the de-facto standard in the Slovenian legal information market and has the potential to achieve the same status in the region and beyond. This is illustrated by the fact that all the major state institutions, government agencies, the highest courts and multinational companies already rely on IUS-INFO on a daily basis.

Other companies providing legal information and forms over the Internet are DZS d.d. (http://alea.dzs.si/) INform, pretok znanja d.o.o. (http://www.informiran.si/).

From the technical aspect of eGovernment development and support it may be said that private institutions have held and still hold a very important role as outsourced technical implementers of services. The most prominent companies are SRS.SI (http://src.si/en/solutions/eGovernment/), which developed a complete support system for the parliament and government, and Hermes softlab

(http://www.hermes-softlab.com/), which developed e-davki (e-taxes) and other advanced services of eGovernment.

In 2000 Slovenia adopted the act on Electronic Commerce and Electronic Signature. It allows the operation of certification service providers without previous permission and also does not imply special conditions for their operation, but enables the operation of certification service providers under very different conditions for providing various services of verification, giving them a different legal effect as regards their reliability. In accordance with this act several private certificate authorities have emerged.

Another form of nongovernmental involvement is the public initiative of the Institute of Ecology with the portal eParticipacija (http://www.e-participacija.si/), which offers a lot of structured information and links on citizens' participation in decision-making.

The assurance of essential funds is one of the key challenges of exercising the new governmental strategy on eGovernment. Traditionally, government ICT was centralised in the Government Centre for Informatics, which was later relocated to the Ministry of Public Administration. The centralisation enabled the effective funding of ICT infrastructure.

II.1.2. eHealth structures

Major institutional structures providing eHealth services

There is a basic deficiency in the quantity and quality of eHealth services in both business and household sectors in Slovenia.

In this chapter, with the term eHealth Services we basically understand ICT-supported health services for users as well as back office administrative support services.

With respect to eHealth services for users, the majority of online services are provided by the private-commercial sector while the public sector mainly only offers online information regarding health topics in general.

A list of the major private and public institutions providing (at least some kind of) eHealth services is attached below (see points A and B). While the nature of these institutions is diverse, in most cases the eHealth services they offer are quite limited.

The public institutions listed below are assigned by the government to conduct the government's development plan for eHealth. The central government started to prepare the eHealth policy, strategy and action plan in 2005, though some activities in this field were conducted before (see point 2, Chapter II). Local governments are responsible for the development and informatisation of the primary level of healthcare. They are responsible for development of the health information systems in healthcare centres at the primary level (GPs). On average, local governments have been quite active in performing their tasks. As the tasks and action plan is not fully rethought and prepared yet, the institutions have begun to offer some eHealth services on their own initiative.

Private institutions and companies, on the other hand, are developing eHealth services either on the initiative of the government or, more commonly, without the state's aid. The eHealth services they offer are limited to websites with less official and more user-friendly information about medical services. Some of them also try to enhance the online communication between patients and GPs and specialists by offering online consultancy via e-mail.

A) PUBLIC INSTITUTIONS

1. The Ministry of Health
Besides being the main initiator and co-ordinator of Slovenian eHealth policy, the Ministry of Health

also provides general information about the healthcare system in Slovenia. The information is available in digital form and can be accessed via the Ministry's official website. The website provides basic information about the Ministry and its work in Slovenian and English languages. The website provides information on various health-related projects in Slovenia, tenders, health-related legislation and other health-related topics. It also offers facilities such as links to other sites, a search tool and a list of frequently asked questions that all help users find the information they are interested in.

2. The Health Insurance Institute

The Health Insurance Institute (HIIS) issues the compulsory health insurance card to every citizen. The insurance card contains information regarding a person's general and voluntary health insurance. The card has to be confirmed up to four times a year in special computer stations (around 300), which are usually found in the lobbies of GPs' practices, hospitals and health insurance companies.

The Health Insurance Institute's website provides information and publications for downloading regarding compulsory health insurance (rights and duties of insured persons), information about the health insurance card and medicines, information regarding healthcare providers (a list of healthcare providers with information about their working time and waiting periods), information regarding regional units and branch offices, and information for EU citizens. The information is offered in the Slovenian language, some basic information is also offered in English. The website offers facilities such as a search tool and possibility to send questions to an e-mail address to help users find information they are interested in.

3. The Institute for Public Health of the Republic of Slovenia

The Institute for Public Health of the Republic of Slovenia is another official institution offering a website with general and promotional information about health. The information includes publications regarding health, press releases, press conferences etc. It is not strictly user-oriented.

To summarise, despite the online information, the official websites of health institutions do not provide many relevant eHealth services. Even if specific official documents and forms for filling in can be downloaded or printed, in most cases users have to bring them in in person in order to be manually confirmed (signed, stamped, sealed). The companies and other organisations involved also have a very elementary options for processing insurance data to the compulsory national health insurance HIIS. On the other hand, however, **the implementation of the digital health insurance card to all citizens – which was completely finished already in 2000 – is no doubt a remarkable achievement in the eHealth area**.

B) PRIVATE AND SEMI-PRIVATE INSTITUTIONS

4. Ordinacija.net

Ordinacija.net is an eHealth portal, which enjoys support of the Slovenian Ministry of Health. It is designed for all healthcare protection and service users. The portal is intended for the general public and allows access to information in a guided and a simple way. Users' security and privacy are protected. It is meant to provide help in finding and offering medical information, healthcare service and additional information concerning health. It is designed to answer all questions about where and how the user can attain medical treatment, medical information, healthcare service and providers. The vision of the Ordinacija.net communication system is to raise common awareness regarding health by weaving a web of information connections using contemporary communication technologies. The information is offered in several languages: Slovenian, German, English, Croatian, Italian, Spanish, Serbian and French. The portal provides facilities such as a search tool that help users find information they are interested in.

5. Med.over.net

Med.over.net is easily the most extensive private health-related web portal in the Slovenian language which is dedicated to users' needs. It has been running already for a decade and initially arose from a forum structure where citizens discussed health issues; private doctors were also involved. The portal

is thus intended for the general public, allowing access to information in a guided and simple way. The portal offers facilities that help users find information easily such as a search tool, links to other relevant sites and reference materials. The portal provides the following information:

- various information about health (about healthy living, healthy diet) and health hazards (alcohol, smoking, drug abuse) for general public/patients;
- general and specialised information on diseases and medical treatment, first aid advice; health advice by specialists from different disciplines;
- visitors can ask for online advice and consultancy regarding health problems and get answers free of charge;
- communication between users (forums);
- a special section for experts; and
- books, leaflets and magazines.

6. POP's Doctors

The Slovenian broadcasting company POP TV launched an Internet website related to health advice (POP's doctors) that enables contacts with doctors from different disciplines by e-mail. Visitors can ask for advice and consultancy regarding health problems and get answers by e-mail free of charge. The service provides anonymity. At present, over 30 doctors provide consultancy and advice. The archives of questions and answers can also be accessed through the website. An inquiry revealed that the biggest advantage of contacts with doctors via e-mail as perceived by the users of these services is the simple way of communication with doctors (39%), anonymity (20%) and access to the advice of doctors from different disciplines (18%). The short time needed to get an answer is also well appreciated by the service's users.

C) OTHER INSTITUTIONS

Pharmacies

Slovenia has public, private and semi-private pharmaceutical institutions. They all must have a licence to sell or give away medication prescribed by doctors. The pharmacists in Slovenia are well aware of the importance of the Internet. Some pharmacies have already designed their own websites and e-mail addresses to provide information on medicines, but only limited data since the law prohibits advertising and informing about medicines, which can only be obtained on prescription.

As the sale of medications requires official prescriptions, which are not available in digital form, online sales are still prohibited by law.

The sale of non-prescription medicines in Slovenia used to be limited to verified pharmacies, which had to have a valid licence for selling in Slovenia. The online sales of non-prescription drugs was never directly forbidden but also not directly allowed. This situation caused several misunderstandings, problems and even court action (see the box below).

In 2001, the first online pharmacy store for non-prescription drugs named 'www.lekarna.net' was opened. After six months, the Slovenian Chamber of Pharmacy demanded the instant termination of its online sales, stating that such sales are illegal. The Chamber also filed a legal action against this private pharmacy. The suit is still pending. The private pharmacy representative and manager of the e-Pharmacy, Mag. Sonja Hrobat, explained she is prepared to bring the proceedings as far as to the European Court for Human Rights. In December 2004, the same pharmacy re-opened an online store with a different URL address and under a different brand (www.lekarnar.com).

In March 2006 the law regarding medicines was adopted. The new law changed the practice regarding non-prescription medicines. These drugs can now be sold in pharmacies and in specialised stores which have a licence for selling such dugs. Online sales of non-prescription medicines are allowed, but these stores have to ensure expert support and consulting at the same level as at a pharmacy.

Healthcare delivery institutions

At the primary level, in some local healthcare centres and in private treatment centres patients can arrange a meeting with their doctor online. Also, most GPs use electronic medical records but these records are not unified and interconnected.

The same eHealth services are usually offered *at the secondary level,* which is organised in regional general hospitals, hospitals covering specific specialties and specialist outpatient practice organised within hospitals or healthcare centres or as independent practices (private specialist practices – see the above).

At the tertiary level, the online arrangement of meetings with doctors is not possible. Only a few national hospitals and institutes use electronic health records.

eHealth funding

Until recently only a few special national eHealth projects were funded directly from the budget. The m**ajority of investments in health informatics, equipment and software came from the budget for healthcare provision**. In practice, this means that hospitals, GPs and specialists also had to redistribute their annual budget to the development of eHealth in their institution. Also, these investments were not planned and monitored on the national level. In general, healthcare providers had to decide how much and in what kind of ICT infrastructure they would invest.

Some nationwide projects were funded with investments that came from the budget of the Health Insurance Institute and the Institute for Public Health. In these cases, electronic equipment and software was bought for all healthcare providers in order to assure basic ICT platforms for certain services. A good example of this practice was the electronic health insurance card when the Health Insurance Institute bought computers, special electronic terminals for the digital confirmation of insurance and other equipment.

The new strategy[18] envisages for the first time-increased investments in eHealth (an investment of EUR 2.33 million in 2006 and an increase of 50% at the annual level to be provided for following years) at the national level. The funds for the regular upgrading and maintenance of information equipment are to be provided by the founders of healthcare institutions. This type of investment plan is new in terms of the funding of the eHealth directly from the budget. However, the equipment, software and costs of running eHealth services are still to be funded from the healthcare provision budget.

The new strategy also suggests an increase in PPP projects. In recent years, the level of co-operation with the business sector has slightly increased. Most of the national eHealth projects mentioned above were partially conducted with the help of the private sector. The business sector was involved in the development of eHealth software. The software development was either fully financed from the budget of the public institutions which ordered the project, or the business sector contributed with an investment of up to 20 per cent. If the contribution of the private sector was involved, the intellectual property rights were not fully transferred to the buyer and companies had plans to sell it in the market.[19] The practice is that Infonet applies to governmental calls for the development of such health information systems. A financing structure is frequently prescribed in advance in such a way that a company has to invest some money in the project. Other ICT companies which have invested in the

[18] According to the public document 'eHealth 2010, Information Technology Implementation Strategy in the Healthcare System of Slovenia', published by the Ministry of Health in December 2005, annual expenditure on eHealth by the public sector ranges from 0.8% to 1% of the investments made in health in general. In 2004, Slovenia spent EUR 2,225 million on healthcare and EUR 17.8 million on eHealth. The investment level in Slovenian eHealth is quite low in comparison with the other European countries, especially the old EU members, which invest 3% to 5% of their health budgets in health ICT.

[19] Ms. Smiljana Slavec, General Manager of the company Infonet, which was involved in the majority of such projects stated that its investment in such projects is usually around 20% to 30%.

development of eHealth software and sometimes co-operate with the Ministry or other stakeholders are: Marand, Nova Vizija and List.

Up till now Slovenian eHealth projects have not been funded by the EU. According to the Ministry of Health, one project was partially financed by the World Bank. The project named 'The Health Sector Management Project' was the central project related to the development of healthcare informatics in the period 2002-2004. Another exception is introduction of the health insurance card, which was partially funded by the 4th EU framework programme. A few other projects were conducted with the help of EU funds at the Inštitut Jožef Štefan and at Infonet, a private company for medical informatics.

On the other hand, the major portal Med.over. net and the POP's doctors portal are entirely privately funded. The founder of the Med.Over.Net company, Primož Cimerman, explained he was unable to obtain any considerable contribution from governmental or EU sources.

The development and monitoring of eHealth

The responsibility for performing the tasks needed to develop and monitor the eHealth solution is fully in the hands of the Ministry of Health. Until the end of 2005, Slovenia did not have any formal body to perform such tasks. Only indirectly and partially this was monitored by the Ministry of the Information Society (which changed to the Directorate for the Information Society in 2004), which had, however, almost no operative power.

The strategy for the development of eHealth was introduced in October 2005 in the document named eHealth^{2010} (eZdravje^{2010}): Information Technology Implementation Strategy in the Healthcare System of Slovenia. The strategy proposes the establishment of three official bodies for developing and monitoring eHealth Services (see Diagram 2 in the Annex):

1. Council for Healthcare Informatics (the Council);
2. Centre for Healthcare Informatics (CIZ); and
3. Committee for Healthcare Informatics Standards (OZIS).

All of these bodies will be organised and managed within the Ministry of Health.

1. *The Council for Healthcare Informatics* is planned to be a national strategic body for the development of healthcare informatics. It will operate within the Ministry of Health and carry out the following tasks:

- to form the development strategy for an integrated healthcare informatics system;
- to co-ordinate the development of new projects and continue with those already in place;
- to plan and co-ordinate the introduction of common information and communication infrastructure;
- to co-ordinate the formation and adoption of standards;
- to determine the criteria and standards for safeguarding and ensuring the quality of information in healthcare information systems;
- to plan and co-ordinate pilot projects;
- to monitor, promote and disseminate best practices; and
- to form the standards of e-Health for health service providers and to ensure realisation of the strategy.

2. The Centre for Healthcare Informatics is also to be established at the Ministry of Health. It will deal with the practical issues of the suggested strategy.

3. *The Committee for Healthcare Informatics Standards* was planned to be established by the end of 2006 and will deal with informatics standards for safeguarding and ensuring the quality of information

in healthcare information systems.

Description of the relevant actors, including the degree of participation of the private sector

Public Institutions Involved in the Provision of eHealth Services
The only public institution involved in providing services for eHealth is the Ministry for Health. Besides strategic eHealth planning, its duties involve:

- purchases of the proper infrastructure;
- outsourcing tasks to private companies; and
- the preparation of research and development calls (state aid) in the eHealth field.

The government intends to outsource the majority of the provisional tasks to private companies.

Private Sector Involved in the Provision, Control and Financing of eHealth Services
e-health services on the national level are mainly planned, financed and monitored by the central government. However, in the past some solutions involving the private sector were developed.

When major national eHealth policies and laws are being prepared, the government or parliament invites different experts and other interested parties to present their opinions on the matter. Although these presentations can be beneficial to the founders of the law or strategy, it is not necessary that the planned strategy or policy be changed according to the presented opinions.

The business sector is far better involved in the development of specific eHealth technologies. These ICT development projects are usually distributed on the basis of a governmental tender call and mostly conducted by the private sector. Also, private companies are partially financing (20 to 30%) the development of eHealth ICT, depending on the intellectual property agreement involved. The control of such investments is fully in government hands.

However, private GPs, specialists and clinics do not follow this financing scheme. It is their own responsibility to be properly equipped with health ICT.

The role of PPP in developing eHealth services

Public Private Partnerships are slowly gaining in importance. Private companies are usually involved in the process of the development of eHealth software. But the demand, financing and control are still fully in government hands. The companies are responsible for development of the product, part of the investment (according to the agreement) and later for production of the product. The companies involved in PPP are a few Slovenian and foreign companies with strong health-related R&D departments. Companies are usually selected on the basis of a public tender call in the field of research and development (science) or health.

In addition, a vast step forward regarding the PPP legislation was recently taken. The government proposed a new law on public private partnerships, which follows the EU objectives of the Green Paper on Services of Public Interest. The Private Public Partnership Act is expected to encourage private investments (and private building, maintenance and management) of the public infrastructure and to ensure transparency in the field of private-public co-operation. In future, public institutions will have to justify their choice if private institutions are not involved in the accomplishment of a project.

Another proposed act is new Public Procurement Act. This act was proposed to simplify the procedures regarding public procurement. Its objectives are to ensure transparent and faster procedures. The Ministry and representatives of other stakeholders agree that the old procedure slowed down the process of public procurement, including in the field of eHealth.

An example of good PPP practice

One very successful and long-term public-private partnership began in 1993 when the Institute of Health Insurance of the Republic of Slovenia bought 2,750 IBM personal computers and distributed them to public health institutions, as well as to the first private ones. In addition to hardware, the healthcare institutions received a computer programme for accounting and invoicing healthcare services (reimbursement) free of charge. The programme was developed entirely by the private company Infonet. During the following months, over 5,000 users(mainly administrative staff and nurses) were trained to work with the computers. Since then, the company has carried out several PPP projects, including with other institutions (including the Institute for Public Health). The most relevant PPP projects were: preparation of a proposal for uniform definitions for the field of hospital and non-hospital activities; data collection, processing and transfer in inpatient and outpatient statistics; development of software for the collection, aggregation and analysis of data on sick leave; development and maintenance of a prenatal information system at the national level and development and maintenance of the information system for collecting and analysing hospital data related to DRG (diagnostic-related groups).

Other intermediaries in eHealth

Another important actor in the Slovenian eHealth field not yet mentioned in this report are the universities. All Slovenian universities (University of Ljubljana, University of Maribor and University of Primorska) have research units (departments) which also focus on ICT projects. R&D companies often hire or work with those researchers to develop a selected product or services that the companies want to manufacture.

Another player in the Slovenian eHealth field not yet described is the Society for Medical Informatics. This is a civil society movement, which involves all key players in the eHealth field, including politicians, economists, academics, technology experts and health workers.

Members of the movement occasionally organise national conferences and working groups at which they discuss the current situation in the eHealth field. Subsequently, a proposition for future development (strategies and action plans) is prepared and sent to the Ministry of Health for the purpose to encourage public debate and to accelerate the acceptance of important decisions.

Another segment is becoming increasingly important, namely ICT-supported healthcare for older citizens. Within this context, HelpLine telephones have already been tested and there are some proposals to participate in EU research on ambient living technologies.

II.2. Current strategies, policies, action plans and projects

II.2.1 eGovernment policies and strategies

Policy development

Historically, the development of eGovernment in Slovenia can be divided into two phases. The early period began with the considerable formal involvement of the government in the provision of information society infrastructure in the early 1990s. The promising penetration of ICT infrastructure and usage at individual, business and governmental levels was soon confronted with a decline (in comparison to the EU-15) caused by several factors common to all transition countries. The second period began in 2001 when the government established the Ministry of the Information Society and adopted the first national strategy on e-government. Since then the Slovenian public administration has encountered several organisational changes.

Policy development in Slovenia is strongly connected to and influenced by several strategy and programme documents issued at the national and European levels. The Strategy on Economic Development from 2001 focused on the transition to a knowledge-based economy (information/service society) via the expanded use of information-communication technologies (ICTs). The analysis of the international economic environment showed the positive impact of the diffusion of ICT in the corporate sector on economic growth. Therefore, the catching-up process of Slovenia's corporate sector and its technological restructuring was based on the active promotion of

the diffusion and uptake of ICT-related applications. Overall, the information society concept was viewed primarily through the lenses of economic growth and competitiveness. In the same year the government introduced the 'Strategy for E-Commerce in the Public Administration for the Period 2001-2004'. The strategy covered from the institutional aspect all the state organs and certain institutions of the public administration. This strategy is seen as the key element of implementation of the e-government concept. It contained detailed suggestions and a time frame for its implementation in the field of e-commerce of the public administration through specific mechanisms like procedures of planning, installation, implementation, supervision as well as the responsible bodies.

The Information Society Strategy (2003) is a derivative of one segment of the Strategy of Economic Development (2001). It focuses more on the provision of high quality IS services and infrastructure for the daily needs of all citizens in the Slovenian language and the languages of minorities. Adoption and implementation of the Strategy has to ensure comparability with EU member states while at the same time strengthening the role of Slovenia in the Central and Eastern European region. The strategy was partly based on inter-ministerial co-ordination within the framework of the National Development Plan of the Republic of Slovenia and on the preparation of the Single Programming Document (prepared for obtaining EU Structural Funds) in 2003 as part of preparations for Slovenia's integration with European Commission structural policies. Many objectives and targets closely follow the eEurope+ programme, which Slovenia has decided to pursue.

At the end of 2003 the government introduced the 'Policy for the development, introduction and use of open-source software and solutions'. The policy was designed to provide clear strategic guidance on the use of open source software (OSS) to government institutions and bodies, but also the wider public sector and other sectors of society (private and voluntary sectors). The main principle of the Slovenian policy was the adoption of an harmonised stance on open source and proprietary software. The document called for public sector bodies to develop and adopt a rational and technologically neutral attitude to developing or acquiring software and systems. The policy supported open-source initiatives, the use of open standards and protocols, higher transparency and confidence in the security and privacy of bought-in or developed IT solutions.

In April 2006 the Slovenian government adopted a new 'e-Administration Strategy'. It presents a strategic vision of the development of e-Administration in Slovenia and outlines the main actions to be taken in the period 2006-2010. The e-Administration Strategy provides an overview of the situation to date in Slovenia with regard to the development of eGovernment solutions and presents strategic orientations for the coming four-year period. A number of specific goals are set for the 2010 target date. The Strategy also outlines the necessary conditions that need to be implemented if these goals are to be met. The Strategy's main emphasis is on consumer satisfaction, rationalisation of the public administration and the delivery of up-to-date e-Services for citizens and businesses. The aim is to achieve a better quality of life and improved relations with public sector departments and agencies. The key actions of the Strategy are:

- focus the operation of the public administration on user needs;
- increase the quality and efficiency of the functioning of the public administration;
- increase user satisfaction;
- reduce administrative burdens;
- increase the transparency of operations of the public administration;
- achieve synergetic effects at all levels of the public administration through the use of e-Government;
- include the widest circle of users in the decision-making process;
- optimise the consumption of funds in the field of eGovernment (the best possible use of funds for eGovernment will be achieved through joint procurement in the fields of informatics, the optimisation of operations and the creation of generic solutions which can be used repeatedly);
- reduce the burden on human resources in administrative procedures; and

- maintain the level of development of e-Government.

The strategy was influenced directly and indirectly by several strategy and programme documents, e.g.: the Development Strategy of Slovenia, the Reform Programme for Achieving the Lisbon Strategy Goals in Slovenia, the Programme of the Government of the RS and the Programme of the Ministry of Public Administration, and the Framework of Social and Economic Reforms for Increasing Welfare in Slovenia. Guidelines, studies and initiatives at the EU level have also contributed: i2010 – A European Information Society for Growth and Employment, Programme IDAbc, eGovernment beyond 2005, eGovernment in the EU in the Next Decade, eGovernment Studies 2005 – Helping to Light the Way for eGovernment in Europe towards 2010.

Various good practices and guidelines were also taken from past projects and experiences, e.g. the Strategy of the Republic of Slovenia in the Information Society, the National Development Plan of the Republic of Slovenia 2001-2006, the e-Business Strategy for Local Communities, the Strategy for the Functioning and Development of the Administration in the Republic of Slovenia on the Internet and other strategic documents.

The new strategy on eGovernment proposes several operations to achieve the optimisation of the administration:

- **Optimisation and reengineering of business processes:** this is one of the key tasks for the successful implementation of eGovernment and for the best possible results. These will not occur through the introduction of e-services without the optimisation and reengineering of processes which can be categorised in a certain area with respect to their contents (e.g. finance), in a certain organisation (e.g. a ministry) or simply at the level of individual processes. The optimisation and reengineering of business processes is also frequently connected with further reorganisation, human resources, the preparation or adaptation of legal and formal bases, training and funding.
- **Upgrading of back-office systems:** this is closely connected with the revision of business processes, but at the same time it is necessary to provide a connection of back-office information systems with the entire range of e-services. Within the framework of the revision of back-office information systems it is necessary to strive for their standardisation and the provision of linked information systems for joint functions or processes in the administration.
- **Horizontal connections:** when optimisation and reengineering of business processes are involved attention must be paid to so-called horizontal connections at the levels of information systems, e-services, and uniform information architecture and databases, as well as the organisation level (interdepartmental co-operation in the implementation of eGovernment). The first steps have already been taken and have to be continued (e.g. linking of joint administrative registers and applicative equipment i.e. individual administrative information systems).
- **Measuring the effects of e-services and user satisfaction** with respect to the constant improvement of eGovernment and the processes which are carried out within it, it will be necessary to introduce the regular checking of the effects of e-services and user satisfaction (at least every six months). The findings will serve as the basis for further development of eGovernment and a further revision of the processes.

In addition, all points of the new strategy present the local, regional, national and EU dimensions when relevant. They will be especially focused on describing the national and regional dimensions of the issues and the interactions between the different levels of the general government. The nature of the issues discussed differs in the case of individual points and therefore the length provided to various levels of the general government will also vary point by point.

Further on, the European influence remains the driving force of future developments in view of achieving the EU's recommendations and orientations with regard to introducing eServices in priority areas and the European Interoperability Framework (EIF) for eGovernment services, consolidating and

optimising financial and other resources expenditures for the computerisation of public administration functions.

Chronological framework of policy adoptions and milestones regarding eGovernment in Slovenia since 1993 (Source IDAbc: http://ec.europa.eu/idabc/):

January 1993
Establishment of the Government Centre for Informatics. The body was in charge of developing the infrastructure for ICT in the public administration. It supported government departments' ICT projects.

17 January 2001
The Slovenian Governmental Certification Authority SIGOV-CA starts to operate. Public administration employees use SIGOV-CA certificates.

19 January 2001
The Ministry of the Information Society is established to provide increased leadership for Information Society policies.

07 February 2001
The Slovenian government adopts an e-government strategy document entitled 'Strategy for E-Commerce in the Public Administration for the Period 2001-2004'. The document serves as a foundation for all efforts, projects, activities and tasks for the development of electronic government by the end of 2004.

09 July 2001
The **Slovenian General Certification Authority** SIGEN-CA starts to operate. SIGEN-CA is the issuer of qualified digital certificates for legal and natural persons in the Republic of Slovenia.

15 June 2001
The eEurope+ Action Plan is published by the European Commission. This plan is designed to foster the development of the Information Society in Central and Eastern European accession countries, including Slovenia.

04 October 2002
The Government adopts the Action Plan for e-Government up to 2004

E-government Action Plan up to 2004: The main purposes of the Action Plan are assuring conditions for the accelerated development of eGovernment in the administration; enabling the continuous removal of obstacles which occur in the development of new e-services; enabling the government of the Republic of Slovenia, based on European and global comparable indicators, to monitor progress and to take certain measures if necessary. The additional purpose of the plan is to stimulate the development of e-services which are based on common EU initiatives and on internal operations of the administration which will have, in addition to the more effective development and operation of e-services, positive affects on the speed and efficiency of implementation of classical services through classical communication channels.

13 February 2003
The government adopts 'Republic of Slovenia in the Information Society', a strategy paper for the development of the Information Society in the country.

16 October 2003
The Slovenian government adopts a 'Policy for the development, introduction and use of open-source software and solutions'.

10 November 2003
The **Slovenian Time Stamping Authority** SI-TSA starts to operate. It is an issuing authority for trusted electronic time stamps, intended mostly for applications used by public administration institutions.

November 2004
Adoption of the Action Plan of Electronic Commerce of Local Communities.

03 December 2004
As a result of the appointment of a new government, responsibility for e-government is transferred from the Ministry of the Information Society, which ceases to exist, to a new Ministry of Public Administration. The new Ministry also takes over the duties of the Government Centre for Informatics (GCI), which was in charge of developing the country's e-government infrastructure and of supporting, controlling and co-ordinating departmental ICT projects.

April 2006
The government accepts a new strategy on eGovernment up to 2010 which defines the objectives, e-services and tasks for establishing e-government up to the end of 2010.

PROJECTS:

- Project VEM ('one-stop-shop' project): the e-VEM project follows the strategic goals of the Ministry for Public Administration and the Government of the Republic of Slovenia. The project follows those public administration's goals that focus on users and the creation of a friendly environment for the development of entrepreneurship. The project started on 1 July 2005 and the product of the project is a State Portal for Legal Persons, e-VEM, http://evem.gov.si. The project covers two types of activities and relationships: state – legal persons (G2B) and state – state (G2G). The basic purpose of the e-VEM project is to provide suitable information support for the future entrepreneur and to enable them to start with business operations in the shortest time possible.
- Project 'Home Computer Initiative' – to increase the use of ICT in households and thereby to boost the use of e-Government services. The project developer is the Ministry for Higher Education, Science and Technology.

Policy execution

By adopting the Action Plan in October 2002, activities for the development of eGovernment started to progress more actively. After adoption of the Action Plan, the Government Centre for Informatics RS (GCI) prepared Instructions for Operationalisation of the Action Plan which were published on the GCI's web pages and contained basic information on the preparation of projects from the Action Plan and on the reporting of projects, respectively. After the Action Plan was adopted, state bodies immediately started working on projects for the realisation of e-services. While the Action Plan was being adopted some projects were already being implemented. The Programme Project Support Office of the GCI (hereinafter referred to as the PPSO GCI) in the period from October 2002 until March 2003 organised training on the preparation of project documentation. In accordance with the provisions of the Action Plan, most actors involved in e-services, applications for working with clients, and data infrastructure in the Action Plan regularly reported in written form once a month on their progress. Based on the written monthly reports of the state bodies on projects and services, the GCI prepared a summary report on realisation of the Action Plan which served as material for the monthly meetings of the harmonising group and bimonthly sessions of the Commission of the Government of the Republic of Slovenia for Informatics for the Area of Public Administration.

The results of the policy executions have to be viewed from various aspects and not just according to EU benchmarks. The established EU methodology for determining the level of development of eGovernment services for instance does not take into account G2G e-services (e-services within the public administration) in which Slovenia is highly active due to its comparative advantages (central registers, central eGovernment modules, standardised identifiers etc.). G2G e-services have been implemented in Slovenia in the past, which enabled the rationalisation of the public administration in individual areas. The first noticeable savings in the field of eGovernment were achieved with these services (e.g. a reduction of the number of certificates issued by over 30% per year).

Monitoring of development

The course of projects on eGovernment that undertook eServices and solutions was at the time of the eGovernment strategy 2001-2004 monitored centrally. Monitoring of the assessment of strategy goals was dictated through the eGovernment action plan. Co-ordination of the preparation and execution of the Action Plan was carried out by the former Government Centre for Informatics.

The GCI monitored the number and state of projects and eServices. The latest data on the Action Plan are available for November 2004, when 146 projects were controlled. In comparison with November 2002 the number of projects had grown by 72 (almost 50%). A similar system of monitoring with some adjustments shall be used in future monitoring of such developments.

Realisation of e-Commerce in Public Administration of the Republic of Slovenia:
http://e-uprava.gov.si/e-uprava/en/portalPage.euprava?pageid=705

At the same time as the governmental monitoring of the Action Plan's goals, several independent researches were made on the state of eGovernment in Slovenia. The best known are the annual

Eurostat survey on ICT among households and enterprises, which has been carried out since 2004, and the IDABC eGovernment Observatory. Other researches on the national level have been made by the project RIS (www.ris.org) that has been monitoring the ICT development of Slovenia since 1999. The online and telephone surveys among individuals, households and enterprises have included modules on the development of eGovernment, user satisfaction and the use of online services. Another active player in ICT research in Slovenia is the Institute for Informatisation of the Administration (http://www.fu.uni-lj.si/iiu/index.html.)

II.2.2 eHealth policies and strategies

Major governmental policies that affect eHealth developments

A) EVOLUTION OF POLICIES

eHealth was initially included in strategies and initiatives regarding development of the Slovenian information society. One of the main characteristics of Slovenia's health system related to ICT was the poor information and documentation system, especially for hospitals and patients. The problem was first addressed by the Ministry of Health in the document 'Strategic Directives for the Period 2001-2004'. It was stressed in the document that one of the priorities of health sector development is to set up an adequate information system.

In 2003, the Ministry of Health accepted the White Paper on Health Reform where an important emphasis was again given to development of an information database in the health system. The White Paper envisages the establishment of a special department for health information science within the Institute for Health Protection with the following tasks: elaboration and implementation of health information policy, enforcement of information standards, data collection and data processing.

In the period 2002-2004 the project named 'The Health Sector Management Project' was the central project related to the development of healthcare informatics. Since informatics significantly affects the achievement of the goals of the healthcare system, two (out of four) components of the project were dedicated to the development and implementation of the single information system and to the establishment of appropriate national institutions for healthcare informatics. The main result of those components was a defined and implemented system of reporting data on inpatient treatments for DRGs, which, among other things, supports the goals of an accurate and transparent calculation of costs for hospitals.

From the point of view of informatics, the system of reporting data on inpatient treatments involved several positive steps forward in the field of healthcare informatics in Slovenia:

- the same definitions of data from the set of DRGs are used by both the Institute of Public Health of the Republic of Slovenia for compiling hospital statistics and by the Health Insurance Institute of Slovenia for calculating the costs of services;
- all acute hospitals in Slovenia were given web confirmation and access to the secure and fast communication network of the Government Centre for Informatics for the reporting needs ; and
- modern technology for formatting or describing the XML data was introduced.

With the exception of e-DRGs, up till the end of 2005 the products of the project had not been dealt with and adopted by the professional public or applied in practice nor had the proposed organisational scheme been introduced.

B) RECENT eHEALTH POLICIES & MAJOR POLICY MEASURES

In 2005, the Ministry of Health introduced a new strategic plan for implementing IT in the healthcare system in Slovenia for the period 2005–2010 named eHealth^{2010} (eZdravje^{2010}): Information Technology Implementation Strategy in the Healthcare System of Slovenia. Following expert deliberation, the document now serves as the basis for adoption of the action plan to accelerate the implementation of e-tools in the Slovenian healthcare sector. (The term 'eHealth' in this Strategy is defined as 'the combined use of information society technologies in the health sector'. The definition is the same as that one used by the IPTS.)

The document e-Health^{2010} is also the national e-Health plan, which was submitted to the European Commission at the end of 2005. The focus of the national plan or strategy is on e-Health and covers information systems and services in healthcare. The Ministry of Health is confident that this plan, when combined with organisational changes and the development of new skills, can contribute to the development of the healthcare sector, especially in terms of improvements in access to care and the quality of services, efficiency and productivity.

The policy was adopted in order to encourage and ensure:

- that e-health solutions or technologies would support progress in medical research;
- better management and the diffusion of knowledge in the medical field; and
- evidence-based medicine.

The solutions (technologies) are intended for all stakeholders in healthcare, which means that:

- they provide patients with the right information in the appropriate form;
- they provide access for medical professionals to patients' medical records in electronic form (which are integrated in terms of time and health system levels); and
- they provide organisational and business data.

The role of other policies which have influenced eHealth developments

In October 2004, the newly elected government announced new or changed economic reforms in several fields, including changes in healthcare. While the healthcare reforms of previous governments will be partly carried on, the new government forecasts that the overall environment will be more favourable for private provision and for market-oriented reforms in both economics and social affairs.

Several policy documents announce the changes: a more favourable environment for the private provision of care, instituting the concept of a 'free specialist', the introduction of the right to be excluded from co-payments on social status grounds, restructuring of the private insurance market, incentives for more efficient and effective healthcare. The reform will be marked by initial changes to the basic healthcare legislation dating from 1992 and later by a process of continued changes in the financing and organisation of healthcare.

Some of the main objectives of the health policy changes are summarised in the Programme of the Government of Slovenia for 2005. The eHealth policy was recognised as the third most important objective, following changes to the existing legislation and the increased efficiency of the healthcare system.

The reforms also deal with further development of the information society. The eHealth policy is an essential part of the different strategies regarding the development of ICT. The government envisions that the eHealth development will also be influenced by reforms indirectly, by increased investments in medical innovations, especially ICT technology.

Even before this, the eHealth policy was strongly influenced by the national ICT development plan named 'The Strategy of the Republic of Slovenia for the Information Society' (2003). It was recognised that the government should guarantee high quality IS services and infrastructure for the daily needs of all citizens. These services should be provided in the Slovenian language and the languages of minorities. According to the Action Plan up to 2004, access to administrative services such as application forms (either for downloading or online completion) and interactive ordering for medical treatment should be developed. However, these Action Plans are still not developed and they have therefore become part of the eHealth^{2010} strategy, which was already mentioned.

eHealth is also included in several documents and local policies dealing with the development of different online services, including standardised security services.

Implementation of international best practices in eHealth

The Slovenian strategic plan eHealth^{2010} follows the EU guidelines laid down in the document 'Communication on e-Health - making healthcare better for European citizens: An action plan for a European e-Health Area'. The plan follows the EU policy in three target areas:

1. development of common components and an appropriate framework for e-Health;
2. selection and support of pilot projects to accelerate the implementation of e-Health; and
3. exchange of best practices and monitoring progress.

The eHealth^{2010} plan builds on the previous achievements and existing conditions in the field of information systems in the Slovenian healthcare sector and proposes possible solutions to rectify the deficiencies noted over time.

Since it takes Slovenian specifics into consideration the plan is not a mere copy of the EU policy. In particular, the general insurance card and highly computerised and centralised governmental informatics infrastructure structures are two of its important components.

The i2010 programme particularly, although indirectly, influenced the Slovenian eHealth^{2010} plan. The plan is thus part of the i2010 policy and is directed at the same goal as i2010, of course, in a narrower (health) field.

Action plans related to eHealth projects

As already explained, Slovenia has recently adopted its eHealth strategy. It is the basis for the preparation and adoption of policies, action plans and projects.

The Council for Informatics, which will soon be constituted, will start to perform the following tasks:

- form the development strategy for an integrated healthcare informatics system;
- co-ordinate the development of new projects and continue with those already in place;
- plan and co-ordinate the introduction of common information and communication infrastructure;
- co-ordinate the formation and adoption of standards;
- determine the criteria and standards for safeguarding and ensuring the quality of information in healthcare information systems;
- plan and co-ordinate pilot projects;
- monitor, promote and disseminate best practices; and form the standards of e-Health for health service providers and to ensure realisation of the strategy.

However, in recent years Slovenia has successfully accomplished certain eHealth projects, which were

not based on a pre-planned strategy. The most important projects were:

- implementing the first steps of information technology in the healthcare system by introducing the basic computer technology and computer exchange of information, where Slovenia has achieved considerable progress;
- defining the standards (e.g. DRG);
- establishing databases; and
- implementing the health insurance card system: with this project Slovenia has achieved high recognition in Europe; Slovenian experiences are being examined by many other countries that are about to engage themselves in similar card projects.

One of the latest achievements worth highlighting is the definition and introduction of the system of reporting data on inpatients on the basis of Diagnosis Related Groups (DRGs).

Audits by the state audit, impact assessments by the governments and authorities, ex post surveys, assessments of eHealth policies

In order to monitor development of the eHealth strategy, the Ministry of Health will put mechanisms in place to enable the periodical evaluation of developments in the field of eHealth at different levels, from individual healthcare service providers through to implementation of the strategy as a whole. Moreover, developments in the field of e-Health in Slovenia will be monitored in comparison with other EU states. Finally, end-user satisfaction regarding information solutions in the field of e-Health will be evaluated.

Appropriate procedures and ways of informing and reporting on the achieved results and comparisons will be provided for all the areas subject to monitoring. Monitoring and control will be carried out by the Ministry of Health and the SIZ (Slovenian Health Informatics Council).

II.3. The legal framework supporting eGovernment and eHealth applications

In recent years Slovenia has built an overall firm legal background for the development of e-services. While in the eGovernment domain such legal documents provide an environment for further development, the eHealth domain is faced with a few specific legal problems, which in many ways are slowing down the development process. Overall, the eHealth legal background lacks simplicity and is far too formal. According to the expert opinions stated in the text below, Slovenia has adopted such a procedural regulation whereby each new electronic database containing sensitive health data should have a basis in a legal act, which can only be adopted by the parliament. As a result, the regulatory problems are slowing several business initiatives down.

II.3.1 eGovernment legislation

There is currently no overall eGovernment legislation in Slovenia. However, the legal framework[20] supports the development and implementation of eGovernment services and considers several European directives. The described framework manages the most important matters in the field of eGovernment and excludes administrative laws that take care of separate services provided by the public administration.

The current legislation in Slovenia seems to provide a good and prospective environment for the development of eGovernment services.

The Act on Access to Information of a Public Character provides that 'everyone' has the right to information of a public character held by national bodies, local government agencies, public agencies,

[20] Additional information on the presented acts is found in the annex to the report.

public contractors and other entities of public law. The Act established an independent body – **the Commissioner for access to public sector information** – competent for deciding on an appeal against a decision whereby a body dismissed or refused a request for access to public information. By adopting this Act the government implemented the EC Directives on the re-use of public sector information.

Personal Data Protection Act – The main goal of the Act is to prevent any illegal and unwarranted violations of personal privacy in the course of data processing, and to ensure the security of personal databases and of their use. The Information Commissioner is in charge of overseeing the application of the Act.

The aim of the **Electronic Communications Act** is to establish effective competition in the electronic communications market, to maintain effective use of the radio frequency spectrum and of the number space, to ensure universal services and to protect users' rights.

The **Act on Electronic Commerce and Electronic Signature** provides the legal basis for using e-signatures and developing e-services in Slovenia. The Act, among other things, more precisely defines the responsibilities of the providers of information society services and sets out the conditions for realisation of the electronic identity card project.

The government proposed a new law on **Public Private Partnerships**, which follows the EU objectives of the Green Paper on Services of Public Interests. The Private Public Partnership Act is expected to encourage private investments (and private building, maintenance and management) of the public infrastructure and to ensure transparency in the field of private-public co-operation. In the future, public institutions will have to justify their choice if private institutions are not involved in the accomplishment of a project.

The current version of the **Public Procurement Act** aims to remove administrative barriers by streamlining public contracting procedures, introducing e-operations and the option of centralising procurement and public contracting procedures. It takes the EC directives on public procurement into account, including their provisions related to e-procurement that are expected to be implemented in Slovenia. One of the key amendments of the Act involves the introduction of an e-procurement system, including the establishment of an information portal.

II.3.2 eHealth legislation

Laws and Acts adopted in the area of eHealth

Besides 'The Strategy of the Republic of Slovenia for the Information Society', adopted by a previous government in 2003 and the Action Plan in eHealth which derives from this strategy, Slovenia has not adopted any important legislation related specifically to eHealth. The most recent law is the already mentioned eHealth^{2010} Strategy (eZdravje^{2010}): Information Technology Implementation Strategy in the Healthcare System of Slovenia. This law, however, does not have an obligatory legislative nature but is rather a plan for the further development of eHealth.

The eHealth^{2010} Strategy proposes the adoption of the Operational Plan by the Council for Healthcare Informatics by the end of 2006 and an update of the 2000 Healthcare Databases Act to take account of the introduction of e-Health. Amendments were to be prepared by the Ministry of Health in co-operation with the Institute of Public Health of the Republic of Slovenia by June 2006.

The legislation that directly influences the development of eHealth is:

• **The Healthcare Databases Act** (adopted in 2000)

This act regulates databases (including electronic databases) in the field of healthcare. It contains the procedure for the use, management and exchange of information databases.

Legislation that indirectly or partly influences the development of eHealth:

• **The Personal Data Protection Act** (adopted in 1999)

This makes it compulsory to unconditionally protect personal data as much as possible. This applies, of course, in particular to sensitive health-related data. This means that in Slovenia test results, prescription renewals and online appointment scheduling should not be available through e-mail or other online means. However, Mr. Drago Kodele from the Ministry of Health stated that the Ministry will do whatever it takes to encourage the development of these eHealth services, including proposing an exception to the Personal Data Protection Act. In Slovenia, such changes of the law have to be proposed by the government and adopted by the parliament.

• **The Health Services Act** (adopted in 1992)

This Act ensures everyone the right of access to health documentation relating to the state of their health, except where the physician assesses this would have a harmful influence on the patient's state of health.

• **The Act on Retail Medicine** (adopted in March 2006) and **The Pharmacies Act** (adopted in 1992)

These two acts allow the sale of non-prescription medicines in pharmacies and in specialist stores. Prior to adoption of the Act on Retail Medicine such medicines used to be sold only in pharmacies. The Act also allows such medicines to be sold online, but e-stores have to ensure expert support and consulting at the same level as in pharmacies.

• **The Act on Public Private Partnership** (proposed in 2006)

The government proposed a new law on public private partnerships, which follows the EU objectives of the Green Paper on Services of Public Interest. The Private Public Partnership Act is expected to encourage private investments (and private building, maintenance and management) of the public infrastructure and to ensure transparency in the field of private-public co-operation. In the future, public institutions will have to justify their choice if private institutions are not involved in the accomplishment of a project.

• **Public Procurement Act** (proposed new version)

The New Public Procurement Act is supposed to simplify the procedures regarding public procurement. Its objectives are to ensure transparent and faster procedures. The Ministry and representatives of other stakeholders agree that the old procedure slowed down the process of public procurement, including in the field of eHealth.

Alignment of national legislation with the EU's requirements and the Acquis

The Slovenian strategic plan eHealth^{2010} follows the EU guidelines laid down in the document 'Communication on e-Health - making healthcare better for European citizens: An action plan for a European e-Health Area'. The plan follows the EU's policy in three target areas:

1. *development of common components and an appropriate framework for e-Health*

The main goals of this target area by the end of 2009 are to:

- Set a baseline for a standardised European qualification for e-Health services in clinical and administrative settings.
- Provide a framework for the greater legal certainty of e-Health products and services liability within the context of the existing product liability legislation.
- Improve information for patients, health insurance schemes and healthcare providers regarding the rules applying to the covering of the costs of e-Health services.

- Promote e-Health with a view to reducing occupational accidents and illness as well as supporting preventive actions in the face of the emergence of new workplace risks.

2. selection and support of pilot projects to accelerate the implementation of e-Health
The chief goals of this target area are to:

- Set up a national information portal to enable medical professionals and users access to patient data.
- Develop information and communication technologies tools, which will assure the strengthening or early warning, detection and surveillance of health threats and workplace health risks.
- Provide online health services such as teleconsultations (e.g. a second medical opinion), e-prescription, e-referral, e-documents, e-forms, telecare, by the end of 2008.

3. exchange of best practices and monitoring progresses
The primary goals of this target area are to:

- Establish the European e-Health forum to follow up the various national roadmaps and inform the Commission thereof.
- Organise special events such as conferences in order to disseminate best practices.
- Establish an effective way of disseminating best practices.
- Prepare a study on the state of the art in deployment, examples of best practices, and the associated benefits of e-Health.
- Agree on a common approach to benchmarking in order to assess the quantitative (including economic) and qualitative impacts of e-Health.

Major legal issues affecting the development of eHealth

Preliminary interviews with experts in the eHealth field demonstrated that legal issues are playing an important role in the development of Slovenian eHealth. The majority of interviewed stakeholders expressed opinions regarding the Slovenian regulation of eHealth. The main problem stems from the regulation of personal data and the regulation regarding health-related databases. Another set of problems derives from the regulation regarding public procurement and private-public partnerships.

Slovenia has implemented relatively strict data protection rules in comparison with other EU member states. This has resulted in legislation, which demands that legislative power is involved in the establishment of every new health-related database. Many private companies have expressed the need for more regulations. This needs to be understood from the perspective of such rules. If the stakeholders want to establish new databases consisting of personal data, they need to set up a relatively slow legislative machine to initiate the necessary law. If private companies want to develop related software they also need such law to be proceeded with.

These rules, however, relate to solutions not yet available in non-digital (paper) forms. Databases, which exist in paper versions, can be transferred to a digital form with some additional security measures and for this process no legal justification is needed.

The public procurement system is causing problems because of the very strict procedure and vast amounts of formal complaints that follow almost every procedure. This results in a terribly slow procedure and vast delays in the eHealth sector. The new laws were proposed to deal with these issues.

II.4. Dedicated specific information and communication technologies infrastructures

II.4.1 eGovernment infrastructures

Awareness of the significance of ICT for the efficiency of the public administration in Slovenia has been at a very high level since the 1990s. Given this, the government established the Government Centre for Informatics (1993) to be in charge of developing ICT infrastructure in the public administration. Centralisation of this task gave a strong impetus to development so, according to the Economist (October 20, 2001), Slovenia was the pioneering electronic government by holding most if its cabinet meetings online. Research on the use of ICT in the public administration (Berce, 2004) revealed that the Slovenian public administration is quite well equipped with ICT (PCs and Internet access). At beginning of 2003, 94% of workplaces in the public administration had Internet access, while 87.7% of public administration bodies had a web presentation.

A) The most important eGovernment infrastructure
(Source: IDAbc http://ec.europa.eu/idabc/)

Common eGovernment portal
In 2001 the e-Government launched the national PA portal *eUprava*. The enhanced portal supports G2C, G2B and G2G interactions and offers various services to citizens, legal persons and public employees. The portal provides access to the Electronic Administrative Affairs application which supports the full electronic handling of administrative forms registered in a centrally maintained registry of procedures. The application can be used by all residents equipped with qualified digital certificates valid in Slovenia.

HKOM (Fast Communications Network)
Most government bodies have Internet/intranet facilities and are linked to a government-wide network HKOM (Fast Communications Network) that connects more than 1,600 local computer networks.

Central data centre
The central data centre is managed by the Ministry of Public Administration.

The most important data registers
The most important registers of eGovernment such as the Central Register of Residents (CRP), the Central Business Register (PRS) and the Land Register (RPE) are part of the central ICT infrastructure of eGovernment. Management of these registers is divided among ministries and other bodies. The future idea is to provide a central overview of the access rights to them (central security scheme, unified identification), ways of their use and to make them available for use and inter-operability.

Central environmental infrastructure
Central environmental infrastructure is the basis for the realisation of complex environmental eServices. Part of this infrastructure includes registers of environmental data (RPE, land cadastre, cadastre of buildings, other registers of the Environmental Agency, the Ministry of the Environment and Spatial Planning).

Common information solutions
A common centre for receiving applications, handling and notifying, a central information system for procurement, a common e-mail system... Some common information solutions are already operating and some are still in the process of being formed.

Services and solutions for public administration authorities (G2G)
Several G2G projects were carried out in order to establish **connections between state authorities, other institutions and their records, and solutions** e.g.: a link between the information solution of the Pension and Disability Insurance Fund, the Government Centre for Informatics and the Central

Population Register – ZPIZ-CVI-CRP; a link between the records of the Ministry of Labour, Family and Social Affairs, the Government Informatics Centre and the Central Population Register – MDDSZ-CVI-CRP; a link between the land cadastre and the CRP, a link between the CRP, AJPES and the Statistical Office of the RS, and the Ministry of Finance and the Ministry of Agriculture, Forestry and Food with the Register of Spatial Units (RPE).

These and related projects have brought about numerous benefits: more than 900 000 searches in the CRP per year, the linking of an increased number of users with RPE and the land cadastre, a reduction of requirements for certificates – by more than 30% per year, the electronic sessions of the government are available to employees in the public administration.

Common modules of eServices for the public administration
Central modules for monetary transactions, numbering, interfaces to registers, etc. Some common modules are already in use. Guidelines for their future development are being prepared.

eIdentification infrastructure
A Public Key Infrastructure (PKI) has been deployed in Slovenia and four certification authorities have been accredited: the Ministry of Public Administration (SIGOV-CA for government communications and SIGEN-CA for the general public), HALCOM-CA, AC NLB, and POŠTA CA. Slovenia has also launched an electronic ID card project.

eProcurement infrastructure
There is currently no central e-procurement infrastructure in Slovenia. However, the new Public Procurement Act adopted in January 2004 provides for the establishment of an e-procurement portal that will enable contracting authorities to publish public procurement notices and suppliers to submit tenders electronically.

Development of well-managed and growing Broadband access
Broadband Internet access saw a true breakthrough in Slovenia in 2005 since the number of broadband connections was three times higher in the January-October period over the year before according to information from the Agency for Post and Electronic Communications. According to the Agency, the rise in broadband connections in Slovenia was much faster than the EU average, which only doubled in the same period.

The Agency reported that Slovenia has a number of possibilities for broadband Internet connections to expand, which is why operators have quite ambitious plans in this field. This is especially important for the health sector, which has a slight delay in broadband development in comparison with the business, household and other public sectors. However, a connection is nowadays available in almost all healthcare institutions. Most connections are ADSL.

II.4.2 eHealth infrastructures

Technical background to providing eHealth services

The specifics of the technical background to providing eHealth services in Slovenia are that the level of technological development varies according to the territory involved. While at the local level (A) the technical background is quite well-developed, Slovenia lacks a unified and integrated information system at the national level (B).

A) *On the local level*, the main achievements in the past few years were the applications in Slovenian hospitals and outpatient services, which now already have the form of electronic medical records on patients. Health data that are collected and processed include: working and final diagnoses, inpatient procedures, used drugs (medicines) according to the common Slovenian code system of registered drugs, databases of insured persons covered by compulsory and voluntary health insurance, databases

of persons liable to pay compulsory insurance contributions, a database of healthcare service providers, registers of selected general practitioners, national codes related to the calculation of the costs of healthcare services.

Moreover, all hospitals collect data on anamnesis and clinical status and prepare a summary of treatment usually in the form of free text or sometimes in structured (formatted) records. In addition to basic health data (diagnosis, medicinal products), hospitals also collect data for outpatient services in a uniform way; these data include risk factors for cardiovascular diseases, preventive gynaecological screening and examinations. An increasing number of applications support the monitoring of patients with chronic diseases. Many providers already use electronic waiting lists. Data for hip surgeries is also collected at the national level.

Information technology support is in place in most laboratories that exchange data with the information systems in hospitals or outpatient services so that the results of laboratory tests are incorporated in electronic medical records.

The project of the exchange of discharge letters carried out by Prorec Slovenia (a Slovenian member of Prorec, http://www.sdmi.si/projekti/) in collaboration with three major software houses resulted in developing a solution that enables the exchange of electronic discharge letters written in accordance with the HL7 standard.

The solution for microbiological laboratories enables practitioners ordering examinations to access their patients' test results via the Internet. There are also several other cases of good practices in the field of healthcare informatics.

B) *On the national level*, the development of eHealth used to be relatively slow and poorly co-ordinated. This resulted in a lack of unified information systems at the national level, which would lay stress on the establishment of a single healthcare information portal. The portal would enable the safe and reliable exchange of information for all stakeholders in the healthcare system and provide electronic services and informing in a single (standardised) and transparent manner.

Still, there have been a few successful nationwide eHealth projects. In the 1992-2002 period, under the leadership and sponsorship of the National Health Insurance Institute, Slovenia successfully implemented the first steps of information technology implementation in the healthcare system with the introduction of basic computer technology and computer exchange of information, the definition of standards, setting up of databases and introduction of the health insurance card system. Although the infrastructure was introduced for the entire healthcare sector, its applications were developed mainly to satisfy the needs of the health insurance and partly also for the needs of those involved in healthcare statistics. The health insurance card system has provided reliable patient and medical professional identification at all levels of the health system and simplified the procedures related to health insurance. Within this system, the 250 largest healthcare locations are connected to the self-service terminal network. This enabled us to achieve a high level of recognition in Europe and our experiences are being used by other states in similar card projects.

Although appropriate conditions were provided, relatively few applications have been made in the health professionals' work. This field demands the collaboration of different professions in which the Ministry of Health should act as the main co-ordinator.

Technological parameters of the health insurance card system

The health insurance card system consists of health insurance cards, health professional cards, a self-service terminal network, a central computer and data collections of the compulsory health insurance and the servers and data collections of the voluntary health insurance companies. Along with the Institute and the voluntary health insurance companies, the system partners include the healthcare service providers, their software houses and card holders. The health insurance card is a

microprocessor card with a 16 kB memory capacity. Reading and modification of data on the card is subject to strict protection, requiring the health professional card and dedicated hardware and software. The card carries a copy of data from the central databases. At the time of updating through a self-service terminal the current data are transferred from the central database to the card.

Reading and recording of the health insurance card data is only possible with a card reader, in the presence of a health professional card, with the personal identification number (PIN) being entered by the card holder. The health professional card allows its holder access to that data required for his/her work and within the domain of his/her competencies. The card is issued to doctors, medical nurses, administrative officers in the reception offices, pharmacists, physiotherapists and other healthcare workers and authorised officers of the health insurance companies.

Three different card reader types are applied in the card system: desktop, keyboard integrated and portable. The annual failure rate of the card readers is 3% of the total volume in application. 295 self-service terminals are in operation, with the primary function of updating cards. They are installed at public locations across Slovenia. The terminals are linked through a network to the central node in Ljubljana, with the central transaction-communication server, which transmits the relevant card and insurance data to the card drawing from the Institute's data servers and data servers of the Vzajemna, Adriatic and Triglav voluntary health insurance companies.

Market forecasts, projections by public and private suppliers on eHealth services

The Ministry of Health's forecast for the implementation of information technology in the healthcare system as laid out in the eHealth strategic plan involves:

- efficient, flexible and modern healthcare informatics that support the achieving of the strategic goals of the Slovenian healthcare system and thus meet the needs and interests of the citizens, health experts, management of healthcare organisations and healthcare system authorities; and
- the integration of local information systems that enables citizens and medical experts to overcome administrative and organisational limitations in accessing information and to achieve direct communication without time or organisational barriers.

Apart from a few comments on the eHealth Strategy no official forecasts were made by the private sector.

II.5. Services provided to citizens, businesses and other stakeholders

II.5.1. eGovernment services[21]

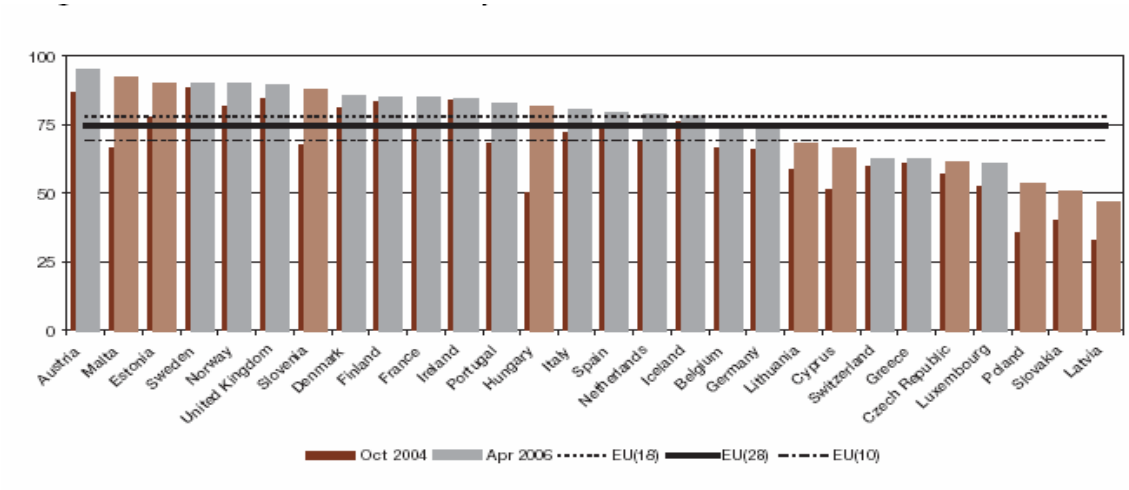
The sophistication[22] and number of public services available on the Internet in Slovenia is at quite a respectable level. Online sophistication shows the online sophistication of public services in the different countries measured by Cap Gemini in April 2006. Besides the country value in the 2006 measurement, it also provides information on growth compared to the fifth measurement in 2004. The comparison shows that the Sophistication growth in Slovenia is one of the highest in Europe so the country took 7th place (87%) among the participating countries. The 75% level exceeded by two-thirds of all countries means services with a two-way interaction.

[21] A full list of services is available in the annex of the report.

[22] *For each service, the sophistication stage reached is indicated, with reference to the maximum stage possible for the service (according to* eGovernment indicators for benchmarking eEurope*).*

- *Stage 1 - Information: online information about public services*
- *Stage 2 - Interaction: downloading of forms*
- *Stage 3: Two-way interaction: processing of forms, including authentication*
- *Stage 4: Transaction: full case handling, decision and delivery (payment)*

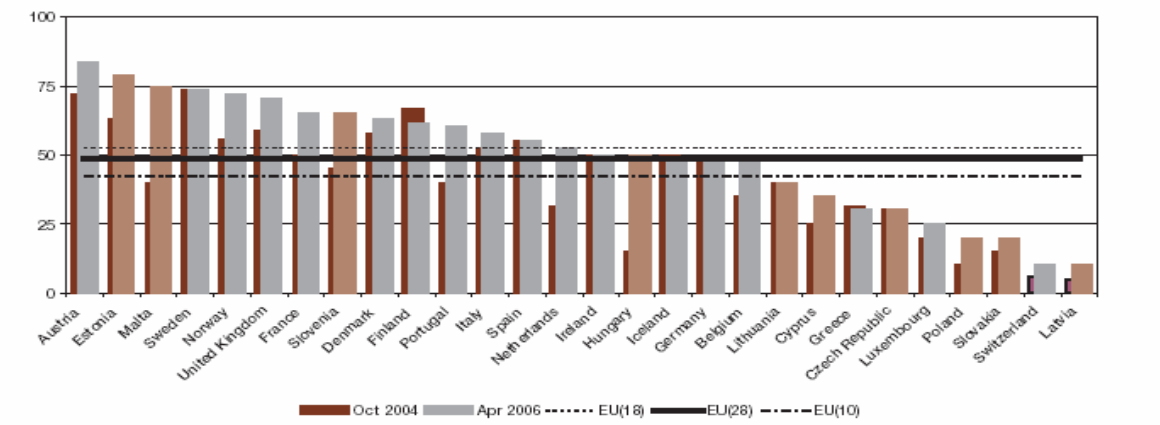
Figure 9: Online sophistication



Source: Cap Gemini 2006

In addition, if we compare Slovenia with other European countries regarding the percentage of fully available online services, Slovenia holds 8th position with 65% of fully available services.

Figure 10: Full availability online



Source: Cap Gemini 2006

Practically all eGovernment services are included in the national public administration portal *e-uprava* (http://e-uprava.gov.si/), which is an access point for public administration information and services, which lists information in groups of 'life events'. The portal provides easy access to information offered by the state and user-friendly services, which the citizen needs when dealing with the state. The modernised portal includes a more comprehensive list of civil servants to whom a citizen can submit an application and enables the citizen to communicate with public administration bodies, which ensures a quick and user-friendly response.

The portal was launched in March 2001 and re-launched in December 2003. The enhanced portal supports G2C, G2B and G2G interactions and offers services to citizens, legal persons and public employees. The portal provides access to the Electronic Administrative Affairs application (EAA or *Elektronske upravne zadeve* - EUZ), which supports the full electronic handling of administrative forms registered in a centrally maintained registry of procedures. The application can be used by all residents equipped with qualified digital certificates valid in Slovenia.

The electronic online services currently available to citizens are: the land register, access to one's own personal data on the basis of a personal digital certificate, the land cadastre, the building cadastre, RPE, the court register, the data information service (ISPO), information of a public character, the Klasje classification server, an interactive atlas, the register of regulations.

In the period up to 2006 the informatisation of the central registers was carried out, while the register of the permanent population was also revised. Both of these achievements form an excellent basis for further services.

In addition to e-taxes for natural persons, electronic services for citizens include 36 eServices, which are processed using the central information system (CIS) for receiving applications, serving and notification.

The electronic services available for **businesses** are the land register, the land cadastre, the buildings cadastre, RPE, records from the real estate market, the register of companies, e-customs, an interactive atlas, the register of regulations, e-taxes for businesses, the e-annual report of AJPES, the e-employment for businesses, electronic services for public notaries, 13 e-applications which are processed using the central information system (CIS) for receiving applications, serving and notification. One especially notable project is e-OSS (e-VEM), which enabled the one-stop registration of individual sole traders in the middle of 2005. The first results were followed by various upgrades of the e-OSS, while further additions are planned for the coming period.

Detailed list of available eServices
Source IDAbc (http://ec.europa.eu/idabc/servlets/Doc?id=27213)

E-SERVICES FOR CITIZENS
1. Income taxes (declaration, notification of assessment)

Responsibility: Central Government, Tax Administration
Website: http://edavki.durs.si/
Sophistication stage: 4/4
Description:
The eDavki (eTaxes) portal enables all legal and natural persons to conduct business with the Tax Office electronically.

2. Job search services by labour offices

Responsibility: Central Government, Employment Service
Website: http://www.ess.gov.si/
Sophistication stage: 4/4
Description:
It is possible to consult databases with job offerings and to subscribe to a weekly electronic supply of pre-selected jobs related to the given profile of the job searcher. Persons can register as job seekers. It is also possible for employers to consult databases of candidates.

3. Social security benefits

a. Unemployment Benefits

Responsibility: Central Government, Employment Service
Website: http://www.ess.gov.si/
Sophistication stage: 2/4
Description:
Information about unemployment benefits (conditions, terms, duration, stagnation, cessation) and forms to download.

b. Family allowances

Responsibility: Central Government, Ministry of Labour, Family and Social Affairs, Centres for Social Work
Website: http://www.mddsz.gov.si/; http://www.gov.si/csd/
Sophistication stage: 2/4
Description:
There are 62 Centres for Social Work operating in Slovenia. It is possible to obtain information and to download forms from the websites of the Ministry or of individual Centres for Social Work.

c. Medical costs (reimbursement or direct settlement)

Responsibility: Central Government, Institute of Health Insurance
Website: http://www.zzzs.si/
Sophistication stage: 4/4
Description:
In the field of compulsory health insurance, the Institute of Health Insurance's principal task is to provide effective collection (mobilisation) and distribution(allocation) of public funds in order to provide insured persons quality rights arising from the said funds. The rights arising from compulsory health insurance, furnished by the funds collected by means of compulsory insurance contributions, comprise the rights to healthcare services and rights to several financial benefits. The Institute comprises 10 regional units and 45 branch offices distributed around Slovenia. The functional unit, the Information Centre and the Directorate comprise the Institute's structure.

d. Student grants

Responsibility: Central Government, Ministry of Education, Science and Sport
Website: http://www.mszs.si/
Sophistication stage: 2/4
Description:
The Ministry of Education and Sport offers information and forms to download on the education of pre-school children, basic education, music schools, secondary education and adult education institutions, higher vocational education and sport.

4. Personal Documents (passport and driving licence)

a. Passport

Responsibility: Central Government, Ministry of the Interior
Website: http://www.mnz.si/
Sophistication stage: 1/3
Description:
Passports are issued by administrative units (in urgent cases they can also be issued directly by the Ministry of the Interior). Information about the application process is available at the Administrative Units Portal and at the website of the Ministry of the Interior.

b. Driving License

Responsibility: Central Government, Ministry of the Interior
Website: http://upravneenote.gov.si/
Sophistication stage: 2/3
Description:
Driving licenses are issued by administrative units. Information about the application process and downloadable forms are available at the Administrative Units Portal and at the website of the Ministry of the Interior.

5. Car registration (new, used and imported cars)

Responsibility: Central Government, Ministry of the Interior, Administrative Units
Website: http://upravneenote.gov.si/;
http://e-uprava.gov.si/e-uprava/dogodkiPrebivalci.euprava?zdid=452&sid=640
(renewal of registration certificates).
Sophistication stage: 3/4
Description:
Information and forms to download. All citizens of Slovenia need to renew their vehicle registration every year. The Ministry of Public Administration launched a new eService offering the possibility to extend one's vehicle registration certificate online. This renewal service takes advantage of eBusiness and uses eApplications, ePayments and eSignatures. To extend the validity of a vehicle registration certificate through the web, one only needs the vehicle registration certificate number, the valid mandatory insurance policy number and a method of payment (e.g. credit card). The new certificate is sent to a specified mailing address. While the whole applications process can be completed online, the actual registration certificate can either be sent directly to the applicant by registered mail or be picked up from the nearest administrative office.

6. Application for building/planning permission

Responsibility: Central Government, Ministry of the Environment and Spatial Planning, Administrative Units
Website: http://upravneenote.gov.si/
Sophistication stage: 4/4
Description:
Planning/building permissions are issued by administrative units. The Administrative Units Portal provides information about the process and forms to download. The service also enables the extension of building permits online.

7. Declaration to the police (e.g. in the case of theft)

Responsibility: Central Government, Slovenian Police
Website: http://e-uprava.gov.si/, http://www.policija.si/
Sophistication stage: 3/3
Description:
Since June 2004 citizens have been able to report crimes to the police electronically via the e-Government - State Portal.

8. Public libraries (availability of catalogues and search tools)

Responsibility: Central Government, Institute of Information Science (IZUM)
Website: http://cobiss.izum.si/
Sophistication stage: 3/3
Description:
Central search and booking system.

9. Certificates (birth, marriage): request and delivery

Responsibility: Central Government, Ministry of the Interior, Administrative Units
Website: http://e-uprava.gov.si, http://euz.gov.si/, http://upravneenote.gov.si/

Sophistication stage: 3/3
Description:
Birth or marriage certificates can be requested and obtained online through the Electronic Administrative Affairs application (EAA or *Elektronske upravne zadeve* - EUZ), which supports the full electronic handling of administrative forms registered in a centrally maintained register of procedures. The application can be used by all residents equipped with qualified digital certificates valid in Slovenia.

10. Enrolment in higher education/university

Responsibility: Central Government, Central Application Office
Website: http://www.vpis.uni-lj.si/
Sophistication stage: 4/4
Description:
Online application for enrolments in higher education.

11. Announcement of moving (change of address)

Responsibility: Central Government, Ministry of the Interior, Administrative Units
Website: http://www.mnz.si/
Sophistication stage: 1/3
Description:
Information only.

12. Health-related services (interactive advice on the availability of services in different hospitals; appointments for hospitals)

Responsibility: Central Government, Ministry of Health
Website: http://www.gov.si/mz/
Sophistication stage: 1/4
Description:
Information only.

E-SERVICES FOR BUSINESS

1. Social contribution for employees

Responsibility: Central Government, Ministry of Finance, Tax Administration
Website: http://www.durs.gov.si/; http://edavki.durs.si/

Sophistication stage: 4/4
Description: N/A

2. Corporation tax: declaration, notification

Responsibility: Central Government, Tax Administration
Website: http://edavki.durs.si/
Sophistication stage: 4/4
Description:
The eDavki (eTaxes) portal enables all legal and natural persons to conduct business with the Tax Office electronically. Since 2004 corporate taxpayers have been able to use it to submit their corporate tax returns online.

3. VAT: declaration, notification

Responsibility: Central Government, Tax Administration
Website: http://edavki.durs.si/
Sophistication stage: 4/4
Description:
The eDavki (eTaxes) portal enables all legal and natural persons to conduct business with the Tax Office electronically. Since 2004 taxpayers have been able to use it to submit their VAT returns online.

4. Registration of a new company

Responsibility: Central Government, Ministry of the Economy, Chamber of Commerce and Industry of Slovenia
Website: http://evem.gov.si/
Sophistication stage: 4/4
Description:

The Ministry of Public Administration sponsors a state portal for businesses called e-VEM (http://evem.gov.si), which was introduced July 2005. The portal provides user-friendly, simple, attainable and safe services, which can be accessed via the Internet at anytime and in anyplace. It enables the prospective sole trader to register in the Slovenian Business Register and forward the information to the Tax Administration, apply himself/herself and other family members for compulsory health insurance at the Health Insurance Institute of Slovenia, change data or delete one's own activity from the Slovenian Business Register, or request information about another sole trader. All of these services can be accessed from home by using digital certificates provided by one of the certification authorities in the Republic of Slovenia or in person at any of more than 200 VEM access points in Slovenia.
As a result of the success in 2006, the government is planning to expand the e-VEM system to facilitate the registration of other types of companies (limited liability, unlimited liability). This will enable future entrepreneurs to complete all formalities required for establishing a company in the one place.

5. Submission of data to statistical offices

Responsibility: Central Government, Statistical Office
Website: http://www.stat.si/
Sophistication stage: 3/3
Description:
Enterprises can submit statistical data online.

Responsibility: Agency of the Republic of Slovenia for Public Legal Records and Related Services
Website: http://www.ajpes.si/
Sophistication stage: 3/3
Description:
Enterprises can submit statistical data online – some of the AJPES' most important tasks are collecting, processing, publishing and distributing data from business entities' annual reports.

6. Customs declarations

Responsibility: Central Government, Ministry of Finance, Customs Administration
Website: http://carina.gov.si/
Sophistication stage: 3/4
Description:
The customs administration is part of the European custom network so it uses common EU systems involving the use of TARIC and NCTS applications. With the Statistical Office of Slovenia the CA launched intrastate applications.

7. Environment-related permits (incl. reporting)

Responsibility: Central Government, Ministry of the Environment and Spatial Planning, Environmental Agency
Website: http://www.arso.gov.si/
Sophistication stage: 3/4
Description:
Information and forms to download.

8. Public procurement

Responsibility: Central Government, Ministry of Finance, Public Procurement Sector
Website: http://www.gov.si/mf/slov/javnar/javnar.htm
Sophistication stage: 4/4
Description:
Information and forms to download. The Public Procurement Office portal was launched in 2005 with the objective of enabling contracting authorities to publish public procurement notices and suppliers to submit tenders electronically.

9. Employment service

Responsibility: Central Government, Employment Service
Website: http://www.ess.gov.si/
Sophistication stage: 4/4
Description:
It is possible to consult databases with job offerings and to subscribe to a weekly electronic supply of pre-selected jobs related to the given profile of the job searcher. Persons can register as job seekers. It is also possible for employers to consult the databases of candidates. Employers can also submit reports on author's contracts, monthly reports on public work (and employees) and annual reports on programmes of employment and notices on scholarships.

10. Insurance service

Responsibility: Pension and Disability Insurance Institute (ZPIZ)
Website: http://www.zpiz.si
Sophistication stage: 2/4
Description:
The ZPIZ exercises compulsory health insurance for all employees. The Institutes' web page offers information and forms to download.

II.5.2. eHealth services

Detailed, contextual description of the major services provided within eHealth

eHealth services in Slovenia are still underdeveloped. Besides two examples of good practice, namely the rich offer of health-related information on the Internet and the successful project of the electronic health insurance card in 1992, all other services are lagging far behind. They need a much firmer technological framework, constant financial support, professional management and effective promotional activities.

• **Health-related information on the Internet – simple information provision services** (services for citizens/businesses)
URL: www.med.over.net**,** www.ordinacija.net**,** http://24ur.com/zdravniki/esection_1.php
The amount of health-related information in the Slovenian language part of the Internet is extensive.

There is also an increasing number of citizens who are searching for health information via the Internet (see the Annex, *Diagram 5* and *Diagram 6* for a comparison of Internet use when searching for health information in the EU). However, there appears to be a lack of online health information of proven quality and reliability. The official supply from state sources of such information is the least developed among all online public services. The majority of online health services are provided by the private-commercial sector. Examples include Med.over.net, the most extensive health-related web portal in the Slovenian language, Ordinacija.net and Pop TV (24ur.com) (see Point 1, Chapter II for detailed descriptions).

• **Electronic health insurance cards** (services for citizens /other stakeholders)
URL: http://www.zzzs.si/
In the 1992-2002 period, under the leadership and sponsorship of the National Health Insurance Institute Slovenia successfully implemented the health insurance card system. Although the infrastructure was introduced for the entire healthcare sector, its applications were developed mainly to satisfy the needs of the health insurance and partly also for the needs of those involved in healthcare statistics.

Despite the very good experience with insurance cards, Slovenia did not upgrade cards with added functionalities such as medical emergency data and secure access to personal health information, as was planned at the beginning of the project.

• **Electronic health records**
Electronic health records are implemented in the local databases of different health providers (private and public GPs, specialists and hospitals). However, they are not available at the national level. The data cannot be transferred in electronic form.

• **Electronic equipment in healthcare**
Alongside the establishment of the inpatient reporting data system, various other applications were developed in healthcare such as an electronic discharge letter, a data monitoring system on risk factors for cardiovascular diseases, implementation of the pilot project on digitalised radiology by introducing PACS, connecting health service providers with laboratories, applications for covering emergency medical services in the control centre and on site etc. While developing these tools, a substantial knowledge pool was accumulated and is mainly concentrated at the Health Insurance Institute of Slovenia and at the suppliers' site, which has developed information services for health service providers.

• **Online consultancy and Tele-consultation** (services for citizens)
URL: www.med.over.net**,** http://24ur.com/zdravniki/esection_1.php**,** http://www.drmed.org/forum/
While a tele-consultation is still unavailable in Slovenia, online consultancy is offered by a few health websites. Site users of *Med.over.net*, the biggest private sector health website, can ask for online advice on health problems and receive answers free of charge. A discussion forum for communication between users is also included.

The Slovenian broadcasting company POP TV has launched an Internet website related to health advice (*POP's doctors*) that enables contact with doctors from different disciplines via e-mail. Personal advice and consultancy is given free of charge. The service provides anonymity. At present, over 30 doctors provide consultancy and advice. The archives of questions and answers can also be accessed through the website. An inquiry revealed that the biggest advantage of contacts with doctors via e-mail as perceived by the users of these services is the simple way of communication with the doctors (39%), anonymity (20%) and access to the advice of doctors from different disciplines (18%). The short time needed to get an answer is also well appreciated by the users of the service.

A similar service is offered by the *Slovenian Family Medicine Society's Counselling eForum*. Here, a team of doctors answers questions regarding family and general medicine. The service provides

anonymity. Archives of forums can also be accessed through the website. However, this website tends to be unknown to the general public. The next limitation is that the website is not suitable for persons with disabilities, especially the blind or partly sighted.

• Making appointments and registering online
Making appointments and registering online for treatment is only available in some health centres and hospitals. The institutions, which offer these services report that the usage of these services is quite low.

• Online interaction with a family doctor (services for citizens)
Online interaction with a family doctor, specialist or primary healthcare clinic is a very sensitive issue in Slovenia, which needs to be addressed in the future. The Medical Chamber of Slovenia argues that such online interaction is hardly feasible because of the provisions of the Slovenian Personal Data Protection Act. This legislation makes it compulsory to unconditionally protect personal data as much as possible. This applies, of course, in particular to sensitive health-related data. This means that test results, prescription renewals and online appointment scheduling are unavailable through e-mail or other online means.

• Consultations via phone (services for citizens)
In general, the same as for online interactions with GPs applies to consultations via phone, although in practice doctors may use the telephone to give information and prescription renewals to well-known patients.

• ePrescription
There are some initiatives regarding ePrescription, which seek to enable patients who are chronically ill to make their prescription renewals through the Internet, although no particular project has been conducted.

• After-hours services
There is as yet no structured telephone-based (triage) system allowing patients to have access to medical advice after hours, except in emergencies.

• Second opinions (services for citizens)
Patients wanting to receive a second opinion in Slovenia need to contact the largest healthcare centre in Slovenia, the Clinical Centre in Ljubljana, which houses the Slovenian Second Opinion Committee. There is no second opinion online service in Slovenia.

• Administrative transaction & E-reimbursement (services for citizens)
URL: http://www.zzzs.si/
The only health-related administrative transaction that can be carried out online (or, alternatively, through self-help terminals) is the ordering of a convention certificate for emergency medical assistance abroad. Since 1 June 2004 the service of ordering the European Health Insurance Card has been offered online. The certificates ordered arrive through regular mail within three working days.
Most public and private health institutions are equipped with a computer programme for accounting and invoicing healthcare services (reimbursement).

• Online sales of over-the-counter medicines (services for citizens)
URL: www.lekarnar.com
Online sales of over-the-counter medicines are only offered by one private pharmacy located in Ljubljana. Mag. Sonja Hrobat, the manager of the online pharmacy reported that during one and a half years of their service they have had around 1,300 customers. She explained that the online pharmacy in Slovenia could not operate well without the support of a traditional pharmacy as the main service because the market is still too small and the added value of the online pharmacy is quite low. However, she is positive that ePrescriptions will bring about a better future for Internet sales of medicines.

Differences in terms of the services provided to the households, business, the civil sector and within the government

There are no crucial differences between the services provided to households and business; therefore there is also no divide in terms of the access to these services by households. On the other hand, numerous healthcare information systems were developed internally or for the needs of public health institutions and were mainly intended to satisfy their own local requirements and are thus not interoperable.

There are no services especially dedicated to participation, decision-making and governance regarding eHealth in Slovenia.

The majority of services described in the first question of this point are one-way. The only exception is online consultancy.

As mentioned, before the eHealth^{2010} Strategy Slovenia did not have any relevant national plan for eHealth ICT development. This resulted in various organisations (hospitals, insurances, governmental bodies) preparing their own internal action plans, which were neither institutionally nor technically connected.

II.6. The systems and solutions in place, as well as the unsolved problems

II.6.1. eGovernment

The legal framework of eGovernment provides a good and stable environment for the development of eGovernment services, although the question of an effective public administration remains open. An insight into operation of the administration shows that the realisation of separate services in back-offices on bureaucratic grounds remains restricted by internal decrees that do not give a chance for the rationalisation of the administration.

Major problems that concern the employees of the involved institutions are the consequences of the incomplete adoption of back-office work for the new channel of communication with clients. Some services double the work of administrative staff instead of reducing it.

For example, in the case of prolonging the validity of a driver's license the customer fills in a form reachable via the Internet. After, that paper form needs to be physically carried to the administrative unit where a new form has to be filled in by the employee. The reason for this lies in the incompatibility between the web form and the form prescribed by the administrative unit.

However, there have been made some important back-office changes like:

- adjustment in legislation (the data already kept in various registers should be assured by public bodies and not by citizens. This means an important shift of responsibility for accessing data from citizens towards public employees in assuring data).
- digitising (applications for computer-to-computer communication have been prepared, physical and old media (magnetic tapes) have been replaced by new information and communication technologies).
- a platform for linking registers was created (two-way asynchronous communication between registers and other important data resources has been set up).

II.6.2. eHealth

eHealth services should be designed to answer all questions about where and how citizens can attain medical treatment and about the available healthcare services and providers. Although the supply of such information has improved much in recent years, potential and actual users tend to be unaware of this. They are also concerned about security issues regarding data privacy and confidentiality. Both

problems need to be addressed by increasing the visibility and fundability of online services, and by promoting data privacy guidelines and their evaluation by independent controllers.

It is clear that more needs to be done with regard to the accessibility of online information for people with disabilities, as well as for members of ethnic minorities who do not speak Slovenian fluently. Access to websites for groups of people with special needs should be safeguarded.

Another problem is that health websites are often not updated regularly, which diminishes their value for users. Patients are interested in online communication with their doctors, not just for dealing with administrative issues but also for consultations and the transmission of test results. The implementation of such services will require the establishment of interoperable standardised security services by means of an infrastructure allowing user authentication via a digital signature.

Other major problems are connected with the high costs of modern healthcare services and the lack of efficient technological solutions, which would make online communication among patients and doctors quick and easy. Healthcare institutions in Slovenia tend to be equipped with modern information technology but general practitioners are much less equipped in this sense. How to reduce costs while ensuring high quality services remains a challenge.

Access to information, privacy and confidentiality has also become increasingly important in Slovenia in recent years. While information access to medical staff and patients is being improved, data security, privacy and confidentiality should be simultaneously ensured.

We should also add that, although the health card is a remarkable achievement, it is not being fully exploited. For example, it is not integrated with personal ID, it lacks biometric identification and the data recorded on it are quite limited. In addition, if we treat the information support for compulsory health insurance also as a specific eHealth aspect, there is much to be done to integrate this infrastructure, particularly to establish a friendly interaction with the companies, which provide this data.

Solution to the problems, front office and back office reforms, an option for an integrated approach to simultaneously manage the reshaping of front and back offices of public units

The main stakeholders agree that the solution to the described problem is to prepare a common strategy for the development of eHealth. The Ministry of Health was the first initiator of this idea and later on accepted the leading role in the preparation of such a strategy. Even if everyone involved agrees that a common eHealth development plan has to be prepared and realised, not all the major stakeholders have the same idea of how and when this should be done. One of the problems Slovenia faces at the moment is that the planning of eHealth development is mainly in the hands of the Ministry while other stakeholders do not have much influence.

The extent of the suggested reforms is vast. In the Strategic Guidelines for eHealth2010 Strategy the Ministry states that healthcare informatics will:

- increase the active role and responsibility of citizens to preserve their health, and so to better inform them and provide them with the best possible care;
- enable health professionals safe and reliable access to key information in electronic medical records and other databases needed in their daily work through efficient electronic communication, improved health process, training and knowledge management;
- facilitate the planning and management of healthcare organisations and the healthcare system as a whole on the basis of quality and trustworthy data whether it is economic, administrative or clinical;
- improve the accessibility of healthcare services to those groups of patients who would otherwise be excluded for different reasons, such as disability, old age etc.;

- increase the active role and responsibility of citizens to preserve their health, better informing processes and faster access to the best possible medical care;
- extend equal access to medical services to the elderly and disabled persons;
- enable health experts secure and reliable access to key information in electronic medical records and other databases which they need in daily work through efficient electronic communication; and
- facilitate healthcare managers and healthcare authorities to effectively plan and manage their institutions and/or the healthcare system as a whole on the basis of quality and trustworthy business and professional data practices.

Due to the relatively large-scale development plan, the Ministry will undoubtedly need the support of all parties involved. Therefore, an integrated approach is essential.

II.7. The acceptance and usage of technologies and services by the different actors

II.7.1. Usage of eGovernment services

Penetration of ICT

In the first quarter of 2005 87% of households had at least one mobile phone, 61% had a personal computer and 48% had access to the Internet. Of these, 40% had a broadband connection (e.g. ADSL, cable, UMTS). The percentage of households with Internet access in Slovenia was equal to the EU-25 average.

In the same period, 50% of the population aged 10 to 74 regularly (in the last three months) used the Internet, while 12% of the population had already bought some goods over the Internet.

In the first quarter of 2005, 96% of enterprises employing 10 or more persons had Internet access, which is five percentage points more than the EU-25 average. 65% of enterprises in Slovenia had an ADSL connection, 59% had a homepage, 87% of the enterprises used electronic financial services and 72% used e-government.

The factors slowing down the development of eGovernment can be seen in the digital divide. Some information about the digital divide in Slovenia can be found in the RIS report (The digital divide 2001, Vasja Vehovar, Katja Vukčevič):

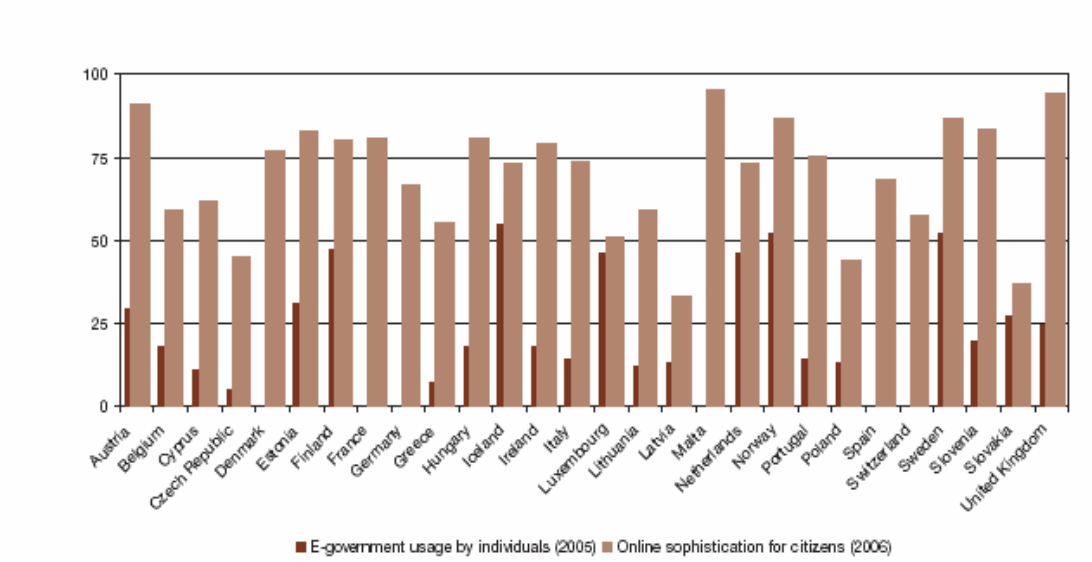
- Around 10% of people with a primary and vocational education use the Internet, 30% with a secondary education, 45% with a high school education and 70% with a higher education. There are also differences due to religion and gender.
- Differences in Internet usage from home are important for the digital divide. The main reasons for Internet non-usage seem to be the costs (especially equipment costs), the lack of e-content and prejudices.
- The penetration of a certain technology above 50% causes a reduction of the digital divide. Thus differences are biggest in the field of the Internet (used by a quarter of the population), smaller in the usage of PCs (used by half the population) and the smallest with use of mobile telephones (used by three-quarters of the population). It is important to stress the importance of Internet access from home. Active users can be found especially in households with Internet access from home.
- The connection between the possession of a PC/access to the Internet and the level of one's education is evident. On one side, 20% of households with a primary education possess a PC. On the other, in the group of persons with a high or higher education 70% of households possess a PC.

- The share of Internet users among men is 5% higher than among women. The digital divide is most evident among elderly people who rarely possess a PC and thus also rarely use the Internet.

Use of eServices

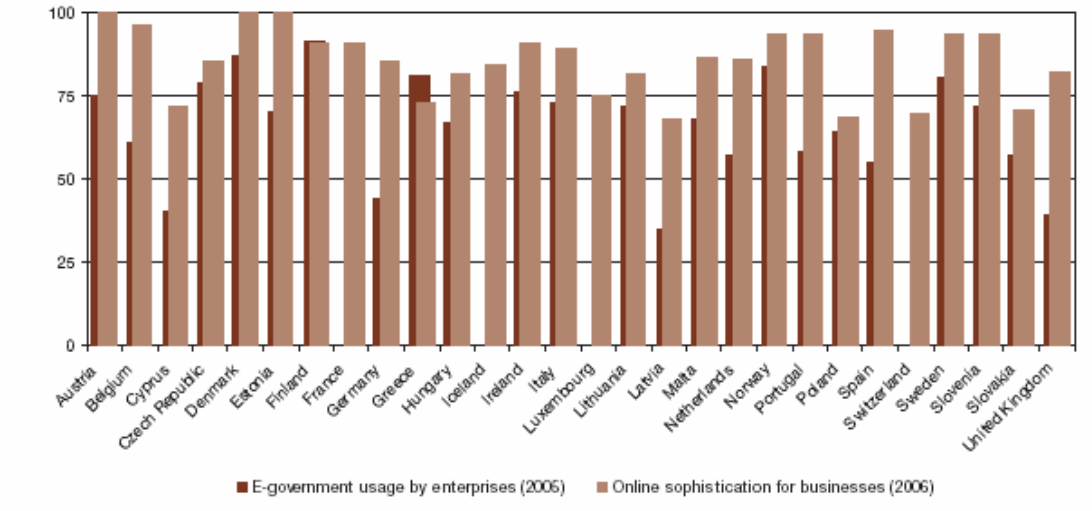
The demand side of eGovernment services in Slovenia faces some irregularities that can be seen as being a consequence of the undeveloped market of e-services. On one hand, the users of services are satisfied (maybe over-satisfied) with the supply while, on the other, the number of users is rising quite slowly.

Figure 11: Comparison between the Supply and Use of Online Public Services for Citizens



Source: Cap Gemini 2006

Figure 12: Comparison between the Supply and Use of Online Public Services for Businesses



Source: Cap Gemini 2006

Although general data from Eurostat and Cap Gemini show a significant increase in the use of services in the last year the example of *eDavki* (eTaxes) as a very important service shows that the level of use is less than 10% of all taxpayers. Since 2004, taxpayers have been able to use eTaxes to submit their tax returns online and in 2005 23,792 taxpayers submitted their income tax returns online, which is 42% more than 2004.

Percentage of individuals using the Internet to interact with public authorities, broken down by purpose (purposes: obtaining information, obtaining forms, returning filled in forms)

	2004	2005
European Union (25 countries)	21.2%	20.7%
Slovenia	11.7%	17.6%

Source: Eurostat

Percentage of enterprises using the Internet to interact with public authorities – for full electronic case handling

	2004	2005
European Union (25 countries)	16%	19%
Slovenia	34%	35%

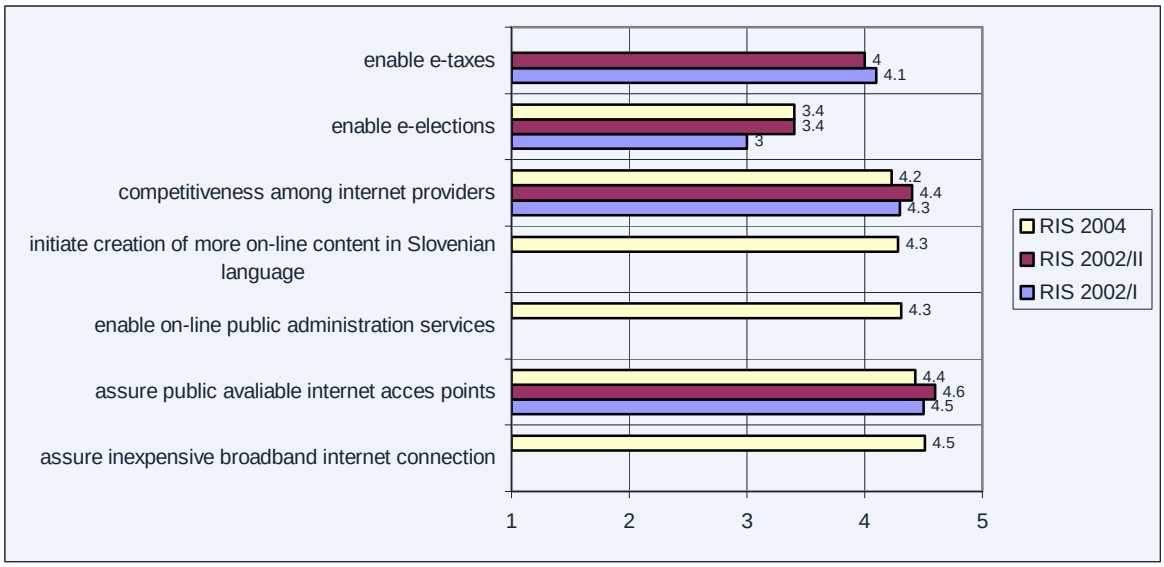
Source: Eurostat

Statement 'The Slovenian government has taken good care of the optimal development of the Internet in Slovenia', had five possible answers, ranging from 1 'totally disagree' to 5 'totally agree'.

Table 5: Role of the Slovenian government in development of the Internet (comparison of telephone surveys: RIS 1998, RIS 2001, RIS 2002/I, RIS 2002/II, RIS 2004, RIS 2005)

	1998	**2001**	**2002/I**	**2002/II**	**2004**	**2005**
	% (n)	**% (n)**	**% (n)**	**% (n)**	**% (n)**	**% (n)**
1 – totally disagree	7	9	6 (14)	7 (12)	4 (12)	6 (17)
2 – disagree	13	16	12 (27)	6 (11)	14 (39)	7 (21)
3 – neither disagree nor agree	41	40	47 (108)	36 (65)	44 (126)	35 (104)
4 – agree	29	24	25 (58)	35 (63)	24 (67)	39 (117)
5 – totally agree	9	12	9 (21)	16 (29)	14 (40)	14 (41)
TOTAL	**100 (300)**	**100 (391)**	**100 (234)**	**100 (180)**	**100 (284)**	**100 (300)**
Average	3.2	3.1	3.2	3.5	3.3	3.5

Figure 13: Estimate of the importance of specific governmental tasks among Internet users - from 1 'totally unimportant' to 5 'very important'



Source: RIS 2002/I, RIS 2002/II

The biggest problems concerning employees of the institutions involved are the consequences of the incomplete adaptation of back-office work to the new channel of communication with clients. Some services double the work of administrative staff instead of reducing it.

II.7.2. Usage of eHealth services

Technical or Social Factors that Slowed Down the Use of eHealth by Corporate and Household Sectors and Major Penetration, Usage Indicators Relevant to Assess the Use of eHealth by the Main Actors

Rather than an obvious shift in demand for eHealth there has been a continuously growing number of people who are interested in online eHealth, at both household and business levels.

The only social factor that has slowed down some eHealth development was legislation. This is especially obvious at the level of online sales of medicines, which used to be forbidden. The corporate and household sectors are actually those, which strongly support the development of eHealth. The only problem that flows from these two sectors is that sometimes they are unaware of the eHealth services because of their insufficient promotion.

The RIS survey (Research on the Internet in Slovenia – 'RIS') is a project within the Centre for Methodology and Informatics at the Faculty of Social Sciences, University of Ljubljana) which studies all aspects of the information society in Slovenia. Within this context, two specialised surveys on eHealth and ePharmacy were conducted in 1998 and 2001. Subsequently this area has only been covered within a general overview of eHealth issues. Within this context it is worth mentioning that the RIS 2001 survey found the following:

- more than 60% of the total Slovenian population (15-65 years) was interested in receiving health advice or help in interpreting a diagnosis through online means;
- around 58% of Internet users also expressed an explicit interest in using eHealth services. Interest was strongest in finding information on the use and properties of medicines; and
- around 16% of the respondents (Internet users) were interested in buying medicines online. Similar findings apply for businesses.

We should also note that these numbers were significantly above the EU-15 average from the

corresponding Eurobarometer study. This observation is in line with the generally high interest in ICT services in Slovenia, as has been observed in the various RIS studies including the SIBIS+ EU framework project which benchmarked ICT usage in Europe.

As mentioned, the number of Slovenian citizens seeking health information online is relatively high.

In the public sector another relevant usage indicator is the percentage of general practitioners with Internet access in the consulting room. In December 2003, 48% of general practitioners in Slovenia had Internet access in the consulting room. This figure puts Slovenia in third place among the new EU members. See Diagram 4 in the Annex for detailed data.

Effect of the spread of eHealth on employees of the institutions influenced by the technological changes

Hospitals report that due to new technologies they have to educate their employees on how to use the new equipment. Though there have been several courses conducted for such purposes, not many new experts were employed. The staff in hospitals also reported the serious growth of the administration. Especially in the first period of implementing the new technology the number of administrative tasks doubled, although later on it decreased.

II.8. The impacts of eGovernment/eHealth developments

II.8.1 eGovernment

It is generally assumed that the use of ICT and the accompanying organisational changes can contribute to an improvement of public services and democratic processes. In Slovenia we can already talk about the important impacts of eGovernment such as:

- improved quality of information and information supply: the interconnection of registers and other data collections improves the quality of data and therefore the quality of administrative work. Institutions retrieve data directly from the Register of Spatial Units, which is the basic source of addresses and their geo-locations. The Central Register of the Population daily receives all online updates of addresses from the Register of Spatial Units. The CRP also receives daily changes as regards deaths, migration, name changes, tax numbers etc.
- increased efficiency: because civil servants have improved access to registers and because administrative procedures are now shorter, this saves time and costs. For example, the time needed for an administrative procedure can be reduced by a factor of 20 and one of the ministries expected to save 1,000 workdays a year. Naturally this saves many costs.
- increased customer satisfaction: The Ministry of the Interior carries out citizens' surveys regarding administrative units. The latest survey shows an increase in citizens' approval of the service delivery they provide. Generally, citizens are satisfied with the level of service local public bodies are providing.
- accessing online registers reduces the process time of administrative procedures and reduces personnel costs

The establishment of the *e-uprava* portal in 2003 included the idea of electronic democracy. Citizens obtained an insight into the decision processes of executive authorities, a chance to comment on governmental materials in proceedings, co-operation in discussions on the future of Slovenia and co-operation in preparation procedures of new regulations by e-mail. At the same place the government enabled access to the complete database of public information (current legislation, acts and laws of parliament, data on elections and referendums) and the e-mail addresses of all elected representatives.

Everything mentioned was a big step towards implementation of the Strategy for E-Commerce in the Public Administration for the Period 2001-2004, and with all that is included Slovenia should become one of the most developed countries that, in the context of the intensive adoption of advanced eGovernance, involves its citizens in democratic processes.

The *E-Participation Index* assesses the quality and usefulness of the information and services provided by a country for the purpose of engaging its citizens in public policy-making through the use of e-government programmes. As such, it is indicative of both the capacity and willingness of the state to encouraging the citizens to promote deliberative, participatory decision-making in public policy and of the reach of its own socially-inclusive governance programme.

E-participation, as defined in this report, aims to achieve these objectives through:

- increasing e-information to citizens for decision-making;
- enhancing e-consultation for deliberative and participatory processes; and
- supporting e-decision making by increasing the input of citizens in decision-making.

In total, 21 citizens' informative and participatory services and facilities were assessed across 179 countries which were online and where data was available. Questions were grouped within three categories of eInformation; eConsultation; and eDecision-making. Each country was assessed on a scale from 0-4. The index was constructed by standardising the scores.

The new adopted strategy merely updates the ideas of the old strategy, which, according to the UN report on e-participation, remain unrealised. However, public initiative on the web is active and is practiced through the portal *e-participacija* (http://www.e-participacija.si/).

As mentioned in previous chapters, the PPP (Public Private Partnership) was taken into consideration in the new governmental strategy on eGovernment. The PPP is founded on long-term co-operation. In this case, long-term co-operation was established for the execution of information projects and eServices, which are primarily carried out by the public administration. The purpose of co-operation is the more effective and successful operation of government and business subjects, which demands a new model of operation founded on a clear and formally correct partnership.

II.8.2. eHealth

The effect of eHealth developments on public sector reform and within that the public administration and healthcare, the net benefits of the expansion of the eHealth, the effect of the service on the public procurement and PPP solutions

Since the implementation of ICT and eHealth in the public sector has just started, the effects and net benefits from the expansion of the eHealth are yet not known. However, a few studies conducted on eHealth from previous years showed that the new technology implementation resulted in:

- the slightly increased employment of highly educated workers with knowledge of ICT;
- a higher amount of work for the employed in the short term;
- additional training for employees;
- greater transparency in the public sector; and
- the growth of competitiveness.

On the other hand, it could be said that each eHealth project enforced PPP solutions and public procurement. eHealth projects are most commonly planned and supervised by the public sector and performed by the private sector (for more, see Chapter II, Point 3).

The Impact of eHealth services on the users themselves, the impact on growth and competitiveness and the Lisbon Objectives, the impact on the spread of the use of information and communication technologies

As mentioned, Slovenian users are highly interested in ICT services, including in the health area. eHealth services have enabled users to get relevant information online. However, the impact would be much higher if eHealth could offer also two-way communication.

The eHealth service which has had a noticeable affect on growth and competitiveness in Slovenia is the provision of online health-related information. This service is the most developed one and, as stated previously in this report, widely used by citizens and the business sector. Even though the service only offers one-way communication, it enables the user to compare and contrast the availability, cost and quality of the online presentation of health services by different providers. In this way, a particular eHealth service successfully contributed to the spread and use of ICT. It is expected that something similar will happen with online pharmacies and other eHealth services when implemented.

Employment and composition of the labour force in eHealth

Since the development of eHealth has only just commenced in Slovenia it has just a minor effect on employment. The biggest employers in the health informatics field are in the public sector: the Institute for Public Health, the Health Insurance Institute, the informatics department of the Central Clinical Hospital and informatics departments in institutions providing healthcare. eHealth personnel are also employed by a few private ICT companies (Marand, Infonet, Nova Vizija and List).

The profile of the labour force is strongly oriented to informatics and social informatics and less to health in general. Most experts were previously employed either by ICT companies or the public administration.

The public sector, especially the ministry, has difficulties keeping personnel especially because the private sector offers better work conditions and salaries.

III. ASSESSMENT OF CURRENT DEVELOPMENTS AND TRENDS

III.1. Summary of the current state and trends of eGovernment and eHealth

III.1.1. eGovernment

Major achievements in the development of eGovernment in the last decade include:

- the development of the eGovernment portal with services and information for citizens and businesses and for internal administration operations;
- the establishment of a central mechanism for monitoring eGovernment projects and the eGovernment Action Plan;
- the introduction of a reliable information and telecommunications infrastructure for the national administration;
- the implementation of complex interdepartmental projects (briefly described in the remainder of the chapter);
- the establishment and functioning of infrastructural elements of eGovernment (a fast public administration communications network – FCOM, Data Centre – PDC, joint information solutions, central modules, central information solutions – CIS, central registers etc.);
- noticeable savings in the public administration due to the effects of modern e-services (e.g. reduction of the number of certificates issued) and interdepartmental information projects; and
- the inclusion of all competent authorities in a unified eGovernment group in order to increase the level of information and ensure the more uniform development of eGovernment.

The main achievements in the development of eGovernment up to 2007 must be viewed from various aspects and not just according to the EU benchmarks. For instance, the established EU methodology for determining the level of development of eGovernment services does not take into account G2G e-services (e-services within the public administration) in which Slovenia, due to its comparative advantages (central registers, central eGovernment modules, standardised identifiers etc.), is highly active. In recent years the national government has carried out several G2G projects in order to establish connections between national authorities, other institutions and their records and solutions e.g.: a link between the information solution of the Pension and Disability Insurance Fund, the Government Centre for Informatics and the Central Population Register – ZPIZ-CVI-CRP; a link between the records of the Ministry of Labour, Family and Social Affairs, the Government Informatics Centre and the Central Population Register – MDDSZ-CVI-CRP; a link between the land cadastre and the CRP, a link between the CRP, AJPES and the Statistical Office of the RS, and the Ministry of Finance and the Ministry of Agriculture, Forestry and Food with the Register of Spatial Units (RPE).

The e-services that were implemented have enabled the rationalisation of the public administration in individual areas and the first noticeable savings in the field of eGovernment have been achieved with these services which brought many other benefits: more than 900,000 searches in the CRP per year, the linking of an increased number of users with RPE and the land cadastre, a reduction of requirements for certificates – by more than 30% per year, and the availability of electronic sessions of the government to employees in the public administration.

Further on, the government established the national eGovernment portal which supports 16 life events for citizens and five life events for businesses, as well as nine larger informational and service portals. In the future it will be necessary to provide the co-ordination of their contents, linking and standardisation. The currently available range of services for citizens includes more than 14 solutions (described in Chapter 2.5). In addition to e-taxes for natural persons, electronic services for citizens also include 36 e-services, which are processed using the central information system (CIS) for receiving applications, serving and notification.

One notable project on G2B is e-OSS, which enabled the one-stop registration of individual sole traders in the middle of 2005. The first results were followed by various upgrades of the e-OSS and further additions are planned for the coming period.

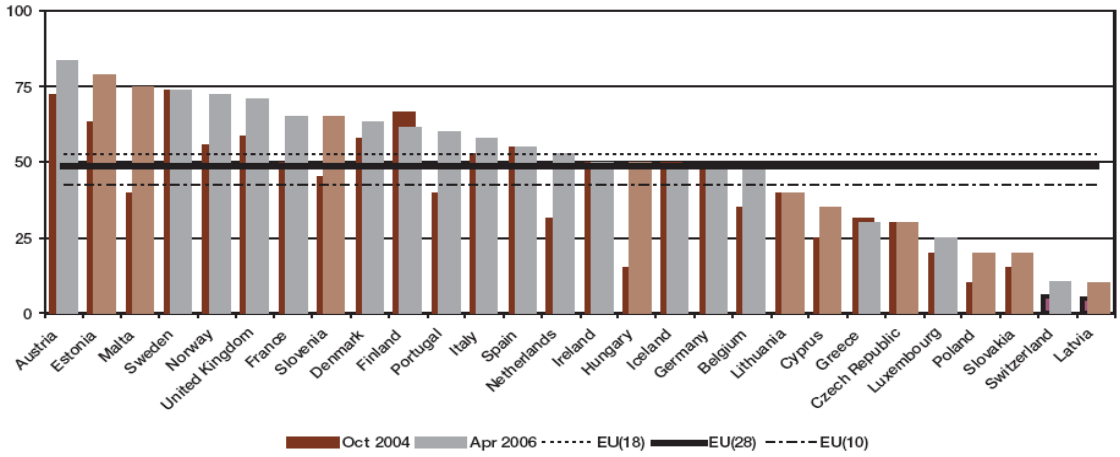
In the period up to 2006 the informatisation of the central registers was carried out, while the register of the permanent population was also revised. Both of these achievements form an excellent basis for further services.

With numerous highlights, several fields, activities and experiences of eGovernment offer opportunities for improvement:

- a lack of mechanisms for taking measures in response to the poor responsiveness of participants in eGovernment projects and unclear competencies.
- business process optimisation and re-engineering has not run parallel to the development of eGovernment;
- discrepancies in communication among stakeholders;
- insufficient promotion of eGovernment and consequently the insufficient level of the use of e-services;
- decision-making on the priority of projects has not always occurred in line with the strategy but has depended on momentary conditions, possibilities and situations;
- difficulties with harmonisation in interdepartmental eGovernment projects;
- the lack of a uniform eGovernment architecture, interoperability framework and open standards for eGovernment projects;
- the lack of organisational, semantic and technical standards for linking databases, applications and information systems – the interoperability of frameworks;
- the different technical platforms for eGovernment solutions;
- delays at the beginning of implementing eGovernment projects due to complications in public procurement procedures and the overdue adoption of the legal bases which are a precondition for modern e-services;
- the effects of eGovernment solutions and services are not monitored regularly;
- problems with project implementations due to excessive dependence on the national budget and two-year budget planning; and
- the need for the implementation and promotion of e-participation mechanisms for the citizens within the eGovernment portal.

Any comment on development trends must involve a comparison with other European countries. In the field of implementing eGovernment, Slovenia has made great progress relative to other European countries. The latest assessments published by Cap Gemini in June 2006 showed the results of research in 28 countries, which indicated that Austria (83%) has the highest percentage of fully available online services. Slovenia is ranked in 7th place with 65%, and among the new member states it is placed behind Estonia and Malta. In comparison to the 2004 data, when Slovenia held 14th position with 45% of fully available services, the country gained seven places. In 2006, within the EU-25 Slovenia was in 6th place and was above the EU-25 average.

Figure 14: Full availability of services, in percent



Source: Cap Gemini 2006

According to the existing EU methodology and taking the recent development and growth trends in this field into account we can expect Slovenia will remain ranked among the top 10 countries of the EU-25 in the next few years. With the expected changes in methodology, since one at present does not take into account all aspects of eGovernment (e.g. G2G services and there is no standardised package of e-services for all countries), measurements in Slovenia will be adjusted in accordance with changes in the methodology.

Monitoring only the number or level of development of eGovernment services is insufficient to establish the actual state of eGovernment; its use also has to be monitored. Measurements of use have been carried out in the EU, which could be reasonably compared with the level of use of eGovernment and the up-to-date and comparative data described in Chapter 2.7.

III.1.2 eHealth

eHealth in Slovenia is ever gaining in importance. While a few years ago Slovenia managed to conduct some successful eHealth projects without having a clear vision of future eHealth development, today the expansion of eHealth is being planned at the national level. eHealth is recognised as one of the major priorities in the health policy sector. The results for this can be found in the eHealth Strategy and in the recent **Resolution on national development programmes for 2007-2023** (which is part of the overall reform policy in Slovenia and was issued in October 2006), which largely focuses on eHealth projects of bigger importance. The strong political involvement in eHealth planning can be identified as a significant achievement, which is nowadays visible in various areas.

First, all activities connected with the development of eHealth policy are planned at the national level and monitored by the European Union. As a result, the development of eHealth services is much more homogeneous than other ICT services, especially eBusiness solutions.

To improve the efficiency and quality of eHealth services the government is paying much more attention to upgrading the structures and processes based on the introduction of advanced ICT. This can be concluded from the findings and reports of Health Informatics Council meetings, where these subjects are addressed.

The figures introduced in the previous chapter reveal that the health sector used to lag behind other public services in terms of the dynamics of investment in IT. However, the law on the national budget for 2006 and 2007 is planning to bring this trend to an end. The law clearly indicates that the government is planning to invest in equipment and (above all) in additional training and improvement of the skills of healthcare workers, which can be identified as a major achievement.

There are still moderate to serious deficiencies of basic eHealth services in Slovenia such as the lack of proper electronic health records, ePrescriptions, telemedicine, online consultancy with a family doctor, regular practice of making appointments online, etc. However, the achievement is that key eHealth services are currently being upgraded and new services are being introduced. At present the central eHealth service – the health insurance card – was advanced in May when its new functions were introduced.

Another serious shortcoming of eHealth services seems to be the lack of a central information system to make locally archived information interoperable. Further, there is poor back-office management of the information. Electronically collected data is not properly analysed and procedures still involve a lot of human effort.

III.2. Analysis of the main factors affecting the evolution of eGovernment and eHealth

III.2.1 Economic factors: macro- and microeconomic environments

Both domains

- The overall macro and micro economic situation in Slovenia has been constantly changing since 1991 when Slovenia gained its political and economical independence from Yugoslavia. Since then, Slovenia has undergone a strong liberalisation of trade and (a few years after its independence) foreign investment, mainly from neighbouring EU countries (Austria, Germany, Italy). The liberalisation process changed the ownership structure in all sectors, especially in ICT. Several new, private companies in the field of ICT were established and many public companies were privatised. However, at the beginning, old state-owned companies (for example, Telekom and its subsidiary Siol) had a monopoly over the market. In the last five years, there has been a serious influx of competitive companies and the power and market share of the state-owned companies has decreased.
- Consequently, the state's share of economic life has been decreasing significantly. The transition period was marked by a radical change from a planned to a market economy, which resulted in large-scale privatisation. The economic situation has finally started to stabilise in recent times when broadband access has become much less expensive and several new services have been offered at a reasonable price.
- The rapid economic growth had a positive impact on the Slovenian information society's development. When in 2001 the 'Strategy for the Economic Development of Slovenia' and 'The Strategy on the Information Society' were introduced, the economic climate was recognised as one of the drivers of the development of the knowledge-based economy. Economic factors such as low unemployment, the fiscal and external balance, trade liberalisation, privatisation of the enterprise sector, tax reform, pension reform etc. have contributed to an increase in demand for eSolutions from the state, business and private sectors.
- eHealth and eGovernment applications are mostly financed by the public sector, while the research and development (R&D) of infrastructure is usually co-financed by the private sector. The idea is to enhance R&D in ICT companies and help them produce products, which would be appropriate for e-services infrastructure. The volume of private spending in eHealth R&D is generally up to 30% of the public spending on a particular project, which results in an increased level of private-public partnerships.

eGovernment domain

- The financing model of eGovernment is a so-called horizontal one where resources from the different ministerial budgets are pooled together and invested under the authority of the Ministry of Public Administration. However, the exact total amount invested in eGovernment is imprecise due to data shortages and the dispersion of relevant information among the many actors.
- Such a dispersion of funds among several institutions and the dependency of the national budget has also been mentioned as a barrier to the long-term planning and execution of broader common projects.
- Slovenia is currently planning the sale of state-owned IT and TLC companies or assets with the aim of collecting one-off resources to be reinvested in eGovernment cornerstone projects (source: Ministry of the Information Society (2003), Slovenia in the Information Society).

eHealth domain

- A gradual increase in the funding of healthcare informatics is envisaged at the national level.
- The investment level in Slovenian eHealth was and still is quite low, especially in comparison with eGovernment.
- The annual expenditure on eHealth by the public sector is 0.8% to 1% of the investments made in health in general. On the contrary, the health budget is increasing each year mainly due to the quite generous health insurance basket of rights and extensive progress in the production of new drugs and treatments, which are very expensive.

III.2.2 Legal factor: regulation at national and EU levels, the relevant regulatory elements

Both domains

- While general documents and key legislative acts in the field of ICT were introduced in Slovenia soon after the country's independence, for several years Slovenia lacked specific legislation related to eGovernment and especially eHealth. After 2000 there was a dramatic increase in the production of legislative acts, mainly in order to reach the EU standards.
- The legislation introduced in 2000–2004 followed EU initiatives and was in many ways not adjusted to the local specifics. This resulted in many amendments to eHealth and eGovernment legislation.
- Nowadays, Slovenia faces a new wave of modern legislation focused on private/public partnerships. Two important regulatory documents (related to public procurement and private/public partnerships) were accepted in governmental and parliamentary proceedings in late July 2006.

eGovernment domain

- Slovenia does not have a single body of legislation that deals solely with eGovernment. Since 2000 several legal documents concerning eBusiness and electronic public administration have been introduced. When Slovenia joined the EU, the country's legislation was harmonised with that of the EU. From a broader regulatory view the county suffers from a chronic disease of the implementation of control over the realisation of acts where simple technical questions easily become political ones.
- Developers of eGovernment services, especially those working with databases, reported serious legal difficulties in connection with the country's over-protected personal data.

eHealth domain

- The private sector, especially the managers of health ICT companies, reported they face severe difficulties related to insufficient regulation of the eHealth field, especially the regulation concerning specific health databases. If, for example, a company wants to use such data as part of its e-application there should be a strong legal background for such usage. Since such a background can only be a law and not a subsidiary act or a regulation of lesser importance,

these acts are processed very slowly. Due to these legal barriers, they are continuously failing to launch some eHealth related projects. In some cases the development of these projects was even co-financed by the state.

- Public officials from the Ministry of Health are clearly unaware of this problem. They stated that the law on eHealth-related databases will be adopted as soon as the eHealth technology infrastructure is developed. While the private sector wishes it would be less dependent on the state administration, the state administration refuses to see any drawbacks of this arrangement.
- However, the adoption of the applicable law does not seem to be directly related to technology. It appears that the insufficient legislation is more a result of the slow and turbulent process of the health reform.

III.2.3. Policy factor: policies at national, regional and local levels

Both domains

- The first activities and initiatives in the field of the information society were proposed during the 1990s. These were a matter of informal organisations as the 'Informatika' Society, professional associations and interest groups such as those in the Slovenian Chamber of Commerce and Industry or research institutions like the Faculty of Organisational Sciences at the University of Maribor.
- The first common governmental initiative on fostering development of the information society was the Strategy for the Economic Development of Slovenia. Preparations for the strategy began in 1999. Its orientation was the re-establishment of a knowledge-based economy. It acknowledged that the pace of the transition to a knowledge-based information society depends on the level of advancement in information and communication infrastructure and the capacity to apply the related new technologies (SEDS, 2001).

eGovernment domain

- Although the country does not have a tradition in policy formation on ICT a relatively strong policy basis has been established in recent years. The development of the field began with the already mentioned SEDS, continued with the strategy on the information society, and with one on the development of eGovernment. All the strategies were strongly supported by action plans. The implementation of these had some weak points but was generally well performed.
- The EU has had a strong impact on policy developments from its beginning so there have been no fundamental changes in the conditions and methods for achieving its national development.
- A special issue in Slovenia is the state of local and regional eGovernment development. In view of eGovernment these two administrative layers are practically non-existent. The most important policy in the field was Strategy on Electronic Commerce in Local Communities (e-municipalities) adopted in 2003. With the institutional and political changes after its adoption the implications of this strategy have somehow been diluted.

eHealth domain

- In the field of e-health, after gaining independence in 1991 Slovenia was facing constant changes to its healthcare system, especially in the financing and organisation of healthcare. In 2005, the government proposed future changes in order to create a more favourable environment for the private provision of care. Among others, these changes are very favourable to the development of eHealth services.
- In the period before EU membership, there were a few initiatives to make the national policy on the eHealth in Slovenia. The majority of these suggestions were closely connected to a few successful projects (for instance, the electronic health insurance card) in the eHealth field. These projects were not nationally co-ordinated but were more a consequence of the endeavours of smaller, politically independent (business or scientific) groups. Consequently, the enthusiasm to make such a policy soon disappeared after the conclusion of the projects.

The experience from this period clearly indicated that the initiative for eHealth policy should come from the governmental or sub-national level.

- Another important factor connected with the history of the health reform is the constant collision between political statements and the actual policy planning and implementation.
- In 2005, the Ministry of Health introduced a new strategic plan for implementing IT in the healthcare system in Slovenia for the 2005-2010 period, The document named eHealth2010 was prepared on the EU's proposition and now serves as the basis for adopting the action plan to accelerate the implementation of e-tools in the Slovenian healthcare sector. E-Health2010 is also the national eHealth plan, which was submitted to the European Commission at the end of 2005.

III.2.4. Technological factors

Both domains

- A high level of investment on infrastructure and the exact outline of developments in the early phase set up a very strong basis for the development of e-services in Slovenia.
- The business sector is very motivated and well-educated. However, due to the fast growing ICT industry Slovenia is nowadays facing a shortage of ICT specialists.
- The telecommunication market is growing rapidly; however, it has not yet been entirely privatised.

eGovernment domain

- The most visible infrastructure of eGovernment is the national portal of the public administration.
- Slovenia traditionally held a vast collection of data in different registers. This was very convenient for the development of e-services. Maybe there are even too many registers, technically implemented according to different standards, so connectivity is nowadays one of the main tasks. Another problem of connectivity is the very strong level of the protection of personal data.

Another diluted area is the promotion of open source solutions about which the Slovenian government adopted a policy paper in 2003. The document was proposed and prepared by the Ministry of the Information Society and was designed to provide clear strategic guidance on the use of open source software (OSS) to government institutions and bodies, but also the wider public sector and other sectors of society (private and voluntary sectors). In recent years, the government has discontinued the well stated support of the Open Source community citing the excuse of insufficient economic revenues (Banović, Moj mikro - http://www.mojmikro.si/articles/mi02_37-39.pdf).

eHealth domain

- The specificity of the technical background to providing eHealth services in Slovenia is that the level of technological development varies according to the territory involved. While at the local level the technical background is quite well-developed, Slovenia lacks a unified and integrated information system at the national level. The portal would enable the safe and reliable exchange of information for all stakeholders in the healthcare system and provide electronic services and informing in a single (standardised) and transparent manner.
- ICT companies are ready to provide technology and services to make such a portal possible. The main barrier to establishing such a portal is financial.

III.2.5. Demographic, ethical and regional specificities and regional factors

Both domains

- In contrast to other countries, governance in Slovenia is divided into only two levels of government - central and local (municipal). Until recently, this had no serious implications for the state's activities. However, with accession to the EU a third (regional) level is becoming ever more important, especially in terms of the full use of European funds.
- The ICT equipment of the local – municipal level is very dispersed since its development is a local responsibility.
- The central Slovenian region (Ljubljana and its surroundings) is better equipped with ICT and has better access to healthcare at the secondary and tertiary levels. Daily migration to the central Slovenian region is quite high, especially among more qualified workers.
- Younger generations are more skilful and adaptable to ICT. They accept and use eHealth technologies very quickly. However, the most frequent users of healthcare are older people, who often need assistance with eGovernment and eHealth technologies.

eGovernment

- There has been practically no eGovernment development at the local level.. Due to the circumstances of European funding legislation, these days the idea of as third level of governance is very strong in political discussions.
- Slovenian users are highly interested in ICT services, although the Eurostat data show that online interactions with the government are below the EU average.

eHealth

- Data on virtual interaction in the eHealth area paint a completely different picture to that for eGovernment. The percentage of people seeking health information online is the highest among the new EU member states and far above the EU average.

III.2.6. Socio-cultural factors

Both domains

- There is a lack of an in-depth analysis of cultural and societal patterns in Slovenia. It is therefore not possible to assess their impact on the evolution of the information society or eGovernment. However, the data from several surveys (RIS 1996-2006) show that Slovenians are keen to use new technologies.
- There is a serious shortage of specialised ICT labour in Slovenia. This is mainly due to slow education reform and the constantly changing education politics, which have resulted in fewer ICT graduates than needed in the market. Also, Slovenia suffers from the exodus of highly specialised workers who find better conditions when working abroad, especially in EU countries.

eGovernment domain

- An important factor in this field seems to be the relatively low level of awareness of eGovernment services among PA employees.

eHealth domain

- There are several ICT companies in Slovenia, which can offer the production of hardware, software and client support for eHealth services. The majority of workers in the ICT sector are highly flexible.
- Some eHealth projects conducted in previous years have shown that the implementation of new technology has resulted in: slightly increased employment of highly educated workers with ICT knowledge, a greater amount of work for the employed in the short term, additional

training for the employed, greater transparency in the public sector and the growth of competitiveness.

III.3. Multifactor analysis of the driving forces of and barriers to eGovernment and eHealth developments

Driving forces:

The overall climate in the field of the information society in Slovenia is at a relatively high level. This can be seen as an outcome of several factors. Clearly one of the most important of these is the successful accomplishment of the EU accession project and the adoption of the euro. The new impetus of the open market is expected to accelerate economic growth, which should be supported by well set up legislation, modern regulation of the field of public/private partnerships, procurement and further deregulation of the market.

From the policy development and execution perspective, one of the major drivers is the continuous development of eGovernment and eHealth policies, which started after 2000 in eGovernment and last year in the eHealth field. The 2001 action plan for the well-accepted strategy on eGovernment was revised in April 2006 in order to recapture past highlights and weak areas of development and focus on new tasks. The complete policy field is strongly based on common development through the European Directives and Recommendations. The elaboration of the first strategy for eHealth in 2006 has meant a step towards integrated development in this field.

Slovenia has a well-developed and highly adaptable ICT business sector. There are 2,271 companies in NACE field numbers 64, 30, 31, 32, 33 and 72[23] (Kmet-Zupančič, 2006). Most of the multinational computer and telecommunication companies are present (e.g.: Microsoft, Oracle, Hewlett Packard, 3M, and DELL). There are many small and medium sized computer (e.g.: SRC.si, HERMES SoftLab, HOUSING ComputerS, IDenticus Slovenia, Marand, Perftech etc.) and telecommunication companies (e.g.: IskraTel is the biggest domestic developer and exporter of the telecommunication equipment, Infotel, NIL etc.).

When discussing information society drivers, we must mention R&D ICT and other areas connected to IS. **Slovenia has a highly motivated, innovative and educated ICT business sector, which has played very strong role in the development of IS infrastructure. The general acceptance of technological innovations by users, especially among the younger generations, has to be regarded as important future capital.**

Barriers:

Barriers to further developments of eGovernment and eHealth are quite difficult to assess due to the wide range of subjective opinions of different stakeholders or individuals. However, the monetary aspect that could be seen as a barrier to future developments of eGovernment and eHealth is the vagueness of development costs and revenues of developing online services development. Another barrier is the over-restricted two-year planning of national budgetary expenses, which sometimes makes the planning and implementation of bigger long-term projects very difficult. Again the system of financing of eGovernmental projects is dispersed among different partners (governmental institutions), which occasionally represents a burden on the co-ordinators of development.

One of the major barriers in the policy area may have implications for the future implementation of new eGovernment and eHealth strategy. The eGovernment strategy was prepared by the Ministry of

[23] NACE codes represent the statistical classification of economic activities within the European Union, which serves as a basis for compiling statistics on the production, factors of production (labour, raw materials, energy, etc.), fixed capital formation operations and financial operations of firms and other entities. The NACE code assigns a unique 5 or 6 digit code to each industry sector (number 64 service providers, number 72 internet companies etc.)

Public Administration with the relatively small involvement of other stakeholders. The document was reviewed later and should be executed by the same ministry. This raises a possible question of consensus among all stakeholders on the goals of the strategies. The result of such a disagreement could lead to inconsistencies with the adopted plans in the execution of policies and programmes. The biggest threat to the eHealth strategy at the moment is the increasing time gap between the launch of the strategy and the presentation of relevant action plans.

The following table summarises the major driving forces and barriers, which were also mentioned in the second chapter. It further explains these drivers and barriers. The categories follow the factors, but summarises them in a different way and exposes the biggest overall driving forces across different factors.

FACTORS	DRIVERS	BARRIERS
Economic	• favourable general macro and micro economic environment • rapid economic growth • fast privatisation, rise of competitiveness in the telecom sector • the investment level in eHealth is planned to increase significantly • changes in the field of the financial structure (especially with the pursuing of PPP) • opportunities for new, innovative approaches to R&D challenges of eHealth development • advantage of having fewer legacy issues with old analogue data than the EU-15	• a limited amount of resources and funding available for eHealth • the private sector's financial contribution is constrained • a low level of the sub-contracting nature of the economy • no sustainable financial model for eHealth development • the use of Structural Funds is questionable and the efficiency of utilisation is weak • a low level of investment in R&D and innovation in eHealth in the public sector and an even lower one in the private sector • a low level of auditing, monitoring and assessing of the financial sustainability of eHealth development • a lack of business models to support innovation in eHealth and other fields • problems with changing management systems (in terms of both organisation and people) which would be innovation-supportive • a lack of the long-term promotion of eHealth services by the private and public sectors
Policy	• currently an extremely reform-oriented political environment, also in the healthcare sector • eHealth development is a factor of the healthcare reforms • planning eHealth development at the national level (attempts at the co-ordinated development of eHealth) • the strategy is tailored to the characteristics and needs of the country • direct policies are supportive • inclusion of EU initiative, use of best practices • establishment of new governmental bodies to implement the eHealth Strategy, however very strong institutional centralisation remains	• bad past experiences with the collision between political specifying and actual policy implementation, including in the eHealth field • well-prepared action plans are still missing, slow implementation of the eHealth Strategy • still a lack of political awareness about the impact of eHealth services • indirect policies are causing problems (data protection, PPP etc) • weak policy convergence in regulation in the field of eHealth • the introduction of specific eHealth projects which only partially follow the strategy • bureaucratic government structures, policy-makers have a fragmentary look at services automation processes • inherited structural and institutional distortion • a lack of participation of NGOs and other interested parties in eHealth development planning • a lack of well-planned, forward-looking R&D and education policies in the field of eHealth (in public and private sectors)

Legal	• well-planned national strategy for general and local development • the major legal documents have been developed • harmonisation with European legislation • the proposal to establish a solid legal background for the increased use of PPP	• slow process of introducing and approving ICT development laws • the tendency towards the minor adoption of old laws for the digital environment, which results in several problems • inappropriate security-related regulation (personal data, patient information) • no legal framework for the reimbursement of eHealth services • execution of legislation • legal background for auditing, monitoring and assessing the eHealth project is not in place
Technological	• good ICT infrastructure at the local level • a very motivated, innovative and well-educated ICT business sector • continuously growing telecommunication market • increasing level of ICT-related R&D in the public sector (but only short-term projects, without a clear focus on eHealth and without a forward-looking eHealth R&D strategy) • significant improvements in front offices (user-friendly, transparent services) • use of best practices and successful foreign eHealth and eGovernment applications • low IT skills in the healthcare and administrative sectors • early introduction of the health insurance card	• lack of interoperability (technical and organisational levels) • investments needed, ICT spending is relatively low • a lack of user assessments • ICT is used less for interactions between patients and doctors • eHealth developments are oriented more to the administration purposes of healthcare institutions (rather than to users' needs) • very slow process of the development of electronic health records • only very partial use of the electronic health card (only for data related to health insurance)
Socio-Cultural	• wide acceptance of technological innovations related to eHealth among users, especially in younger generations, narrower acceptance of eGovernment • very high demand for health-related information on the Internet • a few good examples of supporting and promoting ICT access • enthusiastic response to the introduction of new ICT technologies by the users and by the workforce • ICT-related knowledge is needed, appreciated, its value is relatively high • ongoing debate concerning data protection in the eHealth and eGovernment fields	• centralisation in the central Slovenian region • the growing digital divide (especially regional- and age-based) • a lack of motivation among healthcare providers to implement eHealth services • a lack of communication among stakeholders and the very low interest of various public stakeholders to work together and share data and knowledge • a lack of promotion of eGovernment and eHealth services (public and private) • a lack of ICT specialists • a high level of public employment and a low level of private employment of ICT specialists • a lack of proper education programmes for ICT specialists in eGovernment and eHealth • younger specialists migrate and work abroad

III.3.1. Investments in eGovernment and eHealth

eGovernment

In Slovenia the eGovernment implementation life cycle is at an early stage and e-Government projects do not yet have a consolidated 'budget home'. Resources from different ministerial budgets are pooled together and invested under the authority of the Ministry of Public Administration. The funding mechanism can ensure resources for projects with a low return on investment. That is why Slovenia is

currently planning the sale of state-owned IT and TLC companies or assets with the aim of collecting on-time resources to be reinvested in e-Government cornerstone projects. However, the amount of investment in eGovernment is at a decent level even though there is no common investment policy in the area; this fact can be recognised more as a threat than a barrier.

eHealth

The investment level in eHealth in Slovenia is quite low and can therefore be recognised as a main barrier, although the recent trends suggest this barrier may be less problematic in the future.
First, the government is determined to raise the level of investment in the next few years. Second, the financial barriers have enhanced the private public partnership (PPP), which has resulted in a greater amount of research and development projects in the health ICT sector. It is also expected that the future investments will be better planned and more efficient because the results of these research and novel products will be put into mass production.

III.3.2. Legislation

eGovernment

In the field of eGovernment, the majority of the relevant legislation has already been adopted and synchronised with that of the EU. A current barrier in the field is the Data Protection Act as developers claim that the law overprotects citizens and does not support the idea of merging registers. The future challenge is to adjust these pieces of legislation to support the future development of specific e-services.

eHealth

In the eHealth domain, however, the insufficient or too strict regulatory framework is currently a major barrier. The analysis suggested that the current state is the result of the very turbulent process of the health reform, which was not focused specifically on the development of eHealth. This has resulted in very strict, EU-oriented legislation, which made it compulsory to take care of specific eHealth issues (for instance, every database which contains sensitive personal data) at the level of a law. Such a procedure is very slow and in many ways too limiting so rethinking these procedural regulations poses a great challenge for the future.

The co-operation with EU in legislative field is currently a very strong driver for eHealth as for eGovernment. New legislation concerning specific problems in eHealth field in Slovenia is expected, as soon as policy and action plans are prepared.

However, if the Ministry of Health fails to include the industry, healthcare sector and patients in this process, the process might result in inappropriate regulatory framework. This could be a major barrier to eHealth.

III.3.3. Policy and effective long-term action plans

eGovernment

From the early years of IS development the government offered strong support for eGovernment development strategies and action plans. The entanglement with the realisation of the ideas and plans listed in these documents can be stated as one of main barriers in the field. For the recent strategy these could be a result of an uncommon situation whereby the institution that proposed and prepared the strategy actually implements its goals. Therefore, it seems the policy does not have the unconditional support of all stakeholders.

eHealth

In recent years there has been serious progress in bringing the elements of eHealth policy together. An ongoing public debate and well-prepared eHealth strategy could be a strong driver for eHealth. But this can only happen if these documents are put into practice extremely effectively. Also, the action plans should be long-term and should not constantly change.

The first indication of a possible future threat was the introduction of a resolution on the national development programmes for 2007-2023, which promotes some major eHealth projects but is not fully consistent with the Strategy. The resolution promotes some aspects eHealth development and future challenges while others are left aside. Also, the resolution was not prepared on the basis of the same principles as the strategy and was also prepared by a different governmental body (the sector for the development).

III.3.4. Business sector

eGovernment and eHealth

A well-developed and highly adaptable ICT business sector makes the process of building infrastructure and services less difficult. It is also a driver in the sense that it is prepared to invest private money into promising research projects. However, the managers of such companies are dissatisfied with the slow process of legalising the products and services developed in their companies on the initiative of the government. The co-operation on both (governmental and business) sides is needed and currently this is a major barrier to the development of eHealth and eGovernment. Another aspect of this situation is the offer of companies to support the government with their experience in the marketing eGovernment and eHealth services, an offer which has been regularly rejected.

III.3.5. Users of services

eGovernment and eHealth

Slovenians tend to be very interested in the use of new technologies. Although the fact that the use of available eGovernment services remains at a very low level points to a major barrier of the poor recognisability of services. One of the most frustrating findings is the very low recognisability and usage of eGovernment services among public administration employees.

On the other hand, interest in online health information is very high. Other eHealth services, for instance the electronic health insurance card and special computer stations for the confirmation of health insurance, are also quite well accepted. The age and regional differences do not significantly affect this trend, which suggests that relatively enthusiastic users are one of the drivers of eHealth.

III.3.6. Regional factors and migration

eGovernment and eHealth

The better economic situation, especially the much greater demand for qualified labour, in the central Slovenian region results in vast levels of daily and permanent immigration to the city and its suburbs. This enhances the differences between the regions, which are slowly becoming a barrier to eHealth infrastructure and services. Even now, the main centre for tertiary healthcare treatment is Ljubljana (especially the Central Clinical Hospital). This also means the majority of eHealth infrastructure and services at the secondary level are concentrated in Ljubljana.

Even though Slovenia is a small country, a lack of the third – middle – level of governance can be detected. The barrier here is the wide dispersion of IS development priorities among municipalities which are responsible for the development of local infrastructure. The establishment of the middle level of governance will be a big change in the provision of eServices at the local level.

IV ANALYSIS OF POSSIBLE EGOVERNMENT AND EHEALTH POLICY OPTIONS

IV.1. eGovernment

IV.1.1. Policy measures concerning institutional challenges

The policy measures concerning efficiency and effectiveness due to organisational issues are to be implemented first. Optimisation of business processes in the sense of a back-office systems upgrade is one of the key tasks of the successful implementation of eGovernment. These will not occur through the introduction of e-services without the optimisation and re-engineering of processes which can be categorised in a certain area with respect to their content (e.g. finance), in a certain organisation (e.g. a ministry) or simply at the level of individual processes. **The optimisation and re-engineering of business processes is also frequently connected with further reorganisation, human resources, the preparation or adaptation of legal and formal bases, training and funding.** At the same time, it is necessary to provide the connection of back-office information systems with the entire range of eServices. Within the framework of the revision of back-office information systems it is necessary to strive for their standardisation and the provision of linked information systems for joint functions or processes in the administration.

To begin with such an optimisation of the PA it **will be necessary to introduce more efficient mechanisms to encourage co-operation among public administration authorities in the development of eGovernment and as well towards the citizens** to achieve satisfactory results in the field of eGovernment, which concern user satisfaction**.**

Policies are to be prepared to bring the key authorities to a higher level of acceptance of the responsibility that is connected to informatisation of the administration, the revision of their status, or acknowledgement of the profession of informatics. Very important issues are PPP where the implementation of policies to support a higher level of involvement of the private sector and new models of co-operation between the administration and business would bring about the faster deployment of current technology.

As an institutional policy option in future it will be necessary to introduce new methods to attract professionals who will recognise in eGovernment challenges for their own professional development and therefore help in the implementation of eGovernment to improve the quality of life of users. A policy oriented to the better and appropriate managing of innovative ideas, along with their evaluation and implementation, is necessary. A crucial role in development should not only be played by bureaucrats and politicians but by external managers who adopt decisions, support the entire process and provide the right conditions in various areas. In eGovernment they have to make decisions which promote accelerated development, monitor its progress and any deviations, monitor measures for the elimination of obstacles, have suitable backgrounds and experience and last but not least have the ability to see the wider picture of eGovernment, which is actually providing an opportunity for a modern administration. All levels of management (upper, middle and lower) will have to support and encourage the development of all types of e-services and understand the concept of modern business models.

Further on, to ensure the optimal flow of projects and tasks it will be necessary to provide appropriately qualified personnel at the management level and the level of individual professional fields. The provision of professionals is also connected with ensuring conditions and environments in which it is possible to train and retain key employees. Therefore, **policy measures concerning of the use of certified project managers** and other professionals in the field of ICT should be envisioned.

IV.1.2. Policy measures concerning legal and regulatory challenges

The recently adopted strategy and its corresponding action plan give a abroad overview of the current state of eGovernment and list a wide range of policy measures to follow. The strategy's developers considered recommendations and ideas from different national and foreign up-to-date sources. **Although the prepared document covers a wide range of policies, it still leaves some space for alternative ideas and additional recommendations in various fields such as the development of eParticipation,[24] open source solutions and other policy measures that would see Slovenia join the group of those countries with the most developed eGovernment.**

It is also necessary to prepare a proper policy to revitalise the eMunicipalities strategy. The government adopted the eGovernment Strategy for Local Self-Government in 2003 (hereinafter: the ESLS) and the strategy's main projects include upgrading the business processes of the public administration and the provision of organisational, legal and technical means for the implementation of eGovernment in local communities. Its major disadvantages that any new policy should embrace have previously been detected as insufficient political support, informal organisation and a lack of financial and human resources. The government mentioned the ideas of the ESLS and mentioned the ESLS itself in a new strategy document as a separate building block of eGovernment. Given past experiences with local eGovernment development, this strategy should be clearly defined as policy support with an action plan, which should be executed in a better regulated environment.

IV.1.3. Policy measures concerning technical and security challenges

In order to complete the development of the e-services and solutions for eGovernment, it will be **necessary to establish ways to provide more complete e-services and eGovernment solutions. A policy should be conceived that aims at better and more complete e-services especially in the sense that public administration authorities will use uniform standards and recommendations for eGovernment solutions, uniform eGovernment architecture, uniform infrastructural elements and an interoperability framework**. Uniform solutions can be re-applied in the implementation of numerous e-services. The actual implementation of these services will be possible in the infrastructure of the public administration or through the providers of ICT services and solutions.

There should be further expansion and development of a policy that addresses a uniform information system that enables the receiving of applications, serving and electronic notification of clients about the progress and conclusion of procedures in accordance with the Act amending the General Administrative Procedure Act (ZUP-C).

At the same time, a policy that will adopt the task of defining the basic records of the public administration should be prepared. Connections between different records at different locations and between different public authorities have to be defined in order to provide further informatisation, along with the increased transparency and accessibility of data. The definition of organisational, semantic and technical standards for linking records will also enable normative organisation. An already formed project group for creating links between official records should discuss the problems and present solutions. The result of this group's work will be a meta-register of records in the public administration.

[24] Past developments of policies on eDemocracy and eParticipation in Slovenia favoured limited eDemocracy based on online access to public information and 'e-mail communication' with public authorities. Such priorities placed Slovenia amongst the least developed eParticipation countries in Europe. The conceptual orientation of the current policy on the development of eParticipation (which is part of the recently adopted strategy on eGovernment) neglects practically all opportunities for two-way communication offered by the Internet, and hold the position of eDemocracy as being a supplement to the provision of public information to citizens. The strategy actually neglects even those small steps that were accepted and at least predicted in past policy documents (Delakorda, 2006, Delakorda 2005).

It will be necessary to draw up policy recommendations for using modern open standards and open codes for the development of eGovernment and to continue to actively monitor solutions in this field. In this regard, many challenges are foreseen in the upcoming period.

IV.1.4. Policy measures concerning social challenges

Providers must provide the appropriate promotion of e-services and the technologies on which they are based (e.g. digital certificates, which are the precondition for using many e-services). The advantages of e-services must be presented to users in a pleasant and unambiguous way. **Such promotion could occur through a policy that enforces the education and acceptance of knowledge about eServices for all groups of users, starting with PA employees who should be the leading promoters of eGovernment services**. It would be necessary, in a short period of time, to achieve as many knowledgeable users as possible to support a systematic approach to those areas and life events which are the most common, and which would bring the greatest benefits to eGovernment users and the biggest savings in the administration (high-impact services).

IV.1.5. Policy measures concerning fiscal and financial challenges

The provision of funding is one of the fundamental challenges to the further implementation of development. Various mechanisms for providing funding are currently very well-established and tested but, according to professional assessments, they will be unable to withstand any further burdening. Funding for informatisation is planned and received from the national budget, and the majority is allocated for eGovernment development projects, purchases of equipment, and external contractors and their services. The inclusion of external contractors in projects and procurement is conducted through public calls for tenders, with selected contractors then signing contracts which represent the main mechanism for managing them. **In order to provide more stable funding of eGovernment, it will be necessary to ensure support with policies to develop and use new approaches and models such as:**

A) Public Private Partnership (PPP), based on long-term co-operation, in this case on information projects or services which are primarily carried out by the public administration. The purpose of co-operation is the more efficient and successful functioning of the administration and businesses, which requires a new model of operation based on a transparent and formally correct partnership.

B) Improved opportunities for public and private organisations to obtain funding for various ICT projects. Funding or co-financing is available within the following EU programmes: eTen, eContent, Seventh Framework Programme (IST), IDAbc, Safer Internet and Structural Funds. The joining together of several partners and appearing as a combination of forces is recommended. In order to receive funding from various EU programmes it will be necessary to be appropriately organised and amalgamated. Inappropriate combinations of partners or similar combinations of partners for the same purposes can lead to partial information solutions, overlapping solutions and the non-optimal use of funds (e.g. carrying out two similar projects which receive funding from different programmes is unreasonable – combining them would be more efficient). To this end, it will be necessary to establish a system for the efficient notification of all interested parties and encouraging joint projects for uniform solutions, which have the possibility of success including outside of Slovenian borders.

C) Use and promotion of savings created by e-services. The implementation of e-services is usually fundamentally less expensive than implementation involving classical communications channels (e.g. service windows at administrative units), which means savings and at the same time a reduction of the burden on employees, and can be directed to higher-impact services for users. By establishing mechanisms for determining savings they will be clearly visible and could be a source of funding for the development of new and improved e-services. In order to obtain a complete picture of the savings it is also necessary to take into account savings from e-business within the administration (G2G), which in certain cases could even be higher than those obtained through the performance of eServices for final users.

The public sector can offer citizens and businesses additional high-impact services (the PPP model is also applicable here) which citizens and businesses are prepared to pay for. Funds obtained in this way

could be an additional source for the further development of eGovernment and consequent increased satisfaction of citizens.

IV.2. eHealth

IV.2.1. Policy measures concerning institutional challenges

A solid starting point in carrying out the eHealth institutional reform (the initial targeted tasks in the Strategy) has to be defined to take these factors into account:

- ***the infrastructure already in place***

  In the first stage, this mainly means gathering together inventories of developed solutions and ongoing projects from various places and institutions. In addition, it involves rethinking and re-evaluating the existing bodies and systems. Partially this was already conducted by the newly formed Council, which has selected around 20 prospective projects.

- ***the advantages and disadvantages of previous practices and developments***

  This factor strongly relates to the previous one. Previous practices were in many ways implemented in the Strategy and are being revised in the process of preparing action plans.

- ***the available resources and needs of the citizen and the healthcare system***

  A swift glance at the practice of Slovenian hospitals and GPs is already very informative when considering this factor. Many hospitals have decided to take their own actions in building eHealth services, mainly on the demand of their patients or GPs. When thinking about national implantations the experience of these hospitals could prove to be very valuable.

- ***the EU's directives in the field of healthcare informatics***

  It has already been stressed several times that the EU is in many ways an accelerating factor for Slovenian eHealth. However, the Ministry states that the value of supranational bodies and organisations is foremost when it comes to overviews, comparisons and the sharing of experience and opinions. This is far more proactive than the urgent implantations of legislative rules.

The above factors have to be looked at again several times when establishing the new bodies outlined in the Slovenian eHealth Strategy 2010. Several stakeholders have expressed a need for a prior revision regarding the roles, functions and responsibilities of these bodies. Further, these bodies have to be effectively managed by experts. Also, concrete measurable goals, provisional goals, milestones and methods of reporting have to be well-rethought and defined.

IV.2.2. Policy measures concerning legal and regulatory challenges

The main problem of the Slovenian eHealth legislation is the regulation of personal data. Slovenia decided to implement a stricter version of data protection according to the EU options. This has resulted in legislation, which demands a separate piece of legislation for newly established electronic databases which include personal data.

A key future challenge is to reduce this problem by simplifying procedural laws so that the procedure does not involve the highest regulatory authorities. Alternatively, if that is not the case these authorities should be allowed and forced to speed up such procedures.

Another legislative weakness is that **no legislative act regulates the reimbursement of eHealth services. In the future, it will be required to reconsider which sorts of regulatory solutions are in place and which would be the most appropriate to meet the characteristics and needs of the country**.

IV.2.3. Policy measures concerning technical and security challenges

The key technological and security challenges at present are the **integration and standardisation of eHealth services. Both are crucial in terms of avoiding the ambiguous registration and exchange of data between healthcare service providers and healthcare institutions**. These norms and

standards refer both to data as such and to the exchange of data between users and, at the same time, provide the basis for further information technology implementation in the healthcare sector.

In order to achieve these goals, the following tasks have to be carried out:

1. introduction of the basic information infrastructure and a definition of the basic range of data for the establishment and storage of electronic health records on patients and the introduction of the collection of basic data for electronic health records at the national level, including the introduction of safe and standardised communication with the unambiguous identification, authentication and authorisation of persons entering the system;
2. unification of information systems in an integrated information system at the national level laying stress on the establishment of a single healthcare information portal which would enable the safe and reliable exchange of information regarding all stakeholders in the healthcare system;
3. provision of electronic services and reporting in a single (standardised) and transparent manner and to achieve interoperability with comparable EU systems; and
4. introduction of e-business as a common practice in the Slovenian healthcare sector.

IV.2.4. Policy measures concerning social challenges

In terms of social challenges**, eHealth services should initially increase the active role and responsibility of citizens in preserving their own health. These solutions have to contribute to the regular informing of citizens through all accessible digital media**. eHealth services should be established as a regular practice in order to provide citizens (patients) with the best possible care.

Second, services should **enable health professionals safe and reliable access to key information in electronic health records and other databases needed in their daily work**. This can be achieved through efficient electronic communication, improved training and knowledge management.

Further, the implementation of eHealth services should **improve the facilitation of the planning and management of healthcare organisations and the healthcare system as a whole.** eHealth services can contribute to this goal by being the basis of quality and trustworthy data, whether it is economic, administrative or clinical. eHealth services should make it possible for healthcare managers and healthcare authorities to effectively plan and manage their institutions and/or healthcare system as a whole on the basis of quality and trustworthy business and professional data practices.

EHealth services can also improve the accessibility of healthcare services to those groups of patients who would otherwise be excluded for different reasons such as disability, old age etc. They could increase the active role and responsibility of citizens in preserving their own health, better informing processes and faster access to the best possible medical care.

Healthcare experts should acquire secure and reliable access to key information in electronic medical records and other databases, which they need in daily work through efficient electronic communication.

IV.2.5. Policy measures concerning fiscal and financial challenges

In the past, no special national investments in eHealth were planned. **The investments came from the budget for healthcare provision, which meant that hospitals, GPs and specialists also had to redistribute their annual budget for the development of eHealth.** This kind of investment plan resulted in a vast divide in the electronic equipment and services available at smaller and larger healthcare institutions and in institutions of the primary, secondary and tertiary levels. Bigger institutions at the secondary and tertiary levels were far better equipped than the other institutions. For example, the biggest national Central Hospital was the best-equipped healthcare centre in Slovenia.

This system was also problematic for small and medium-sized private healthcare providers because they had to buy their own equipment in order to keep up with public institutions. However, private GPs and small secondary level specialist institutions have on average taken eHealth development seriously and are at many levels better equipped and offered more e-services than public institutions.

In order to implement some nationwide projects, some stakeholders invested in the electronic equipment and software and supplied all users with it. A good example of this practice was the electronic health insurance card when the Health Insurance Institute for Public Health bought computers, special electronic terminals for the digital confirmation of insurance and other equipment.

The new Strategy envisages for the first time-increased investments in eHealth (an investment of EUR 2.33 million in 2006 and an increase of 50% per year to be provided in the following years) at the national level. **The funds for the regular upgrading and maintenance of information equipment are to be provided by the investors of healthcare institutions. This type of investment plan is new in terms of funding eHealth directly from the budget**. However, the equipment, software and the costs of running eHealth services are still to be funded from the healthcare provision budget.

IV.3: Summary

The development of eGovernment in Slovenia has, from its beginnings, been strongly connected to European policies, directives and recommendations. This arrangement only allows a small space for policy alternatives which in most cases involve a questioning of the priorities of policy goals and the inadequate implementation of already adopted policy measures.

Most alternatives correspond to measures in different areas, which have been on the agenda for a longer period. As such, we have to take into consideration the change in the political map in Slovenia that occurred in 2004 and the restructured organisation and responsibility structure for the development of eGovernment. In addition, the alternatives have to be seen as criticism of the recently adopted strategy on eGovernment's development.

The evolution of eHealth in Slovenia in its pioneering years was less influenced and guided by policy. The introduction of the first eHealth services was either a result of national- or EU-funded research and development projects or the specific need of one major stakeholder in the health system, which was at the time well-positioned and had enough political and informal power to conduct such an implementation of eHealth.

However, to reach further stages of development policy application became a necessary step in the process. In this case, 'the need for policy' needs to be further explained. Almost all specialists or representatives of diverse stakeholders indicated that the further development of eHealth needs to be carefully deliberated and that it would be in the best interests of all stakeholders if one expert group were to lead the process at the national level. This group should consist of all major stakeholders in the eHealth field. Only in this environment can a constructive and well-planned policy be rethought, written and implemented.

The Council is functioning within the Ministry and on behalf of the Ministry and, due to this fact, many stakeholders expressed some disbelief since in the past ministry officials held a continuous debate which led to fewer results than expected. Also, the Ministry only has a few health informatics experts (since it is hard for the public administration to pay them as much as they can get in the private sector) who can put policy into action. Further, stakeholders have expressed a fear that an expert body might not have enough political power to put forward the best possible solution. Another articulated concern was that stakeholders with a strong political background might disregard the Council's decisions and take their own actions.[25]

[25] However, the project manager of the Council, Drago Kodele, is well aware of all these threats. Realising that the experience from the past few years is not very positive, he is still trying to attract stakeholders by asking for their opinions and co-operation. He sees the Council as being an opportunity to correct past mistakes and to finally move on. Since there is a growing need for a unified, interconnected national eHealth platform, he calls for support from all sides: from the political authorities, healthcare providers, business sector and citizens. He is optimistic that the Council, which consists of several health informatics experts, (independent and representatives of the stakeholders) can perform its tasks well.

Considering all the arguments expressed, the development of Slovenian eGovernment and eHealth is at the point where policies, strategies and action plans have to be put into action. The institutional infrastructure is either being built or is already in place. The funds for the development are planned in the budget and much higher investments are intended. The trust of the stakeholders is building up gradually. Some policies have been prepared with a consideration of past (good and bad) experience and examples. New policy measures have to be prepared to embrace the new situation.

V. THE MAIN FUTURE TECHNICAL AND NON-TECHNICAL R&D CHALLENGES

V.1. eGovernment

V.1.1 Technical research challenges

One of the basic priority R&D tasks of implementing eGovernment in the next few years is to increase the simplicity and utility of e-services for citizens, businesses and public employees. All three groups of users have certain common requirements which must serve as the starting points for the planning and implementation of e-services. The services must be accessible through the eGovernment portal and listed in appropriate categories, which are understandable to users and located in a visible place. They will have to follow certain logic and design regulations, which will ensure the homogeneity of comparable e-services. If any problems appear, users must have other non-electronic and, if necessary, personal assistance available at all times.

Development projects for e-services and other eGovernment solutions will have to take into account **uniform interoperable standards and recommendations for uniform architecture** in this field, which will be harmonised with EU standards and recommendations (e.g. the IDABC programme). To this end, it will be necessary to continue the ongoing task of preparing standards and recommendations and to insert them in the plans and development of e-services. This task includes the preparation of uniform standards and recommendations for the procurement of information technology as well as the giving of opinions in procurement processes in accordance with them.

A number of groups are excluded from eServices because of their specific needs (inhabitants in rural areas, older people, disabled, illiterate users etc.). It is very important that the third part of single **portal developments should run in the direction of 'accessibility for all'**. A very important R&D challenge is to answer the question of how to upgrade the present eGovernment so as to be more accessible for people with special accessibility needs. Moreover, a model should be studied to ensure future development in such a way that citizens with specific needs will benefit from them.

Another R&D challenge could be the further **harmonisation of eGovernment procedures, applications and underlying infrastructural support** that have to be carefully rethought in Slovenia since the systems and technologies in place took primary national priorities into consideration and are not yet prepared for local level connectivity and for harmonisation with international approaches.

R&D challenges that are, due to the current situation of the coverage of Slovenian e-services, also foreseen as being needed, have yet to be developed or further developed. The general aim of such further development is to make more services available on-line with respect to areas that have been neglected in the past year of development such as eProcurement, eJurisdiction and eParticipation. Of course, the simple informatisation of PA services is a matter of the past. In future, the well-started project of linking registers and developing more sophisticated services should be continued.

V.1.2. Social research challenges

The lack of understanding of specific individual user needs has proven to be one of the biggest barriers to the development of eGovernment. Researchers have to identify different target user groups and their particular needs for an electronic public service tool. Solutions must be prepared so that they will be appropriate for the specific profiles of the users taking into account the motivational factors of users as well as their individual and social behaviour patterns.

The problem of misunderstanding users is also present on the side of public administrators. In Slovenia, 12% of employees in the public administration currently have no knowledge of the use of the governmental portal e-uprava even though they should be the greatest promoters of these services.

The challenge for the development of eGovernment is to develop special education programmes also targeted at public administration employees.

V.1.3. Legal and policy challenges

One of the key challenges in establishing active co-operation among the holders of eGovernment development (the public administration) and the business sector is to establish a supporting legislative framework for PPP projects. So far the private sector's role has been reduced to the level of a subcontractor, with no power over decisions on technical, managerial and organisational issues connected with the technological solutions. The legal challenge is to establish co-operation that uses the overall potential and experiences of the private sector in various fields. This would be also beneficial since the public sector lacks skills and resources when it comes to eGovernment.

V.1.4. Security issues and challenges

In the area of eGovernment the security-related R&D challenges are of great significance. There is identifiable security risk in terms of protecting networks, stations and servers from different types of security attacks. Developing solutions to these problems, based on international knowledge and experience, represents an important research challenge.

The development of applications requires input from private contractors who often require at least temporary access to sensitive data. This area is receiving growing public attention and there are realistic possibilities of security breaches, which could compromise the reputation of eGovernment services. At the same time, the solutions have to be presented in such a way that citizens and the business sector can trust the security of the newly available eServices.

V.2. eHealth

Investments in health informatics offer greater possibilities for the successful treatment of several diseases. While investments in such technological advances (new drugs and treatments) are relatively well-researched, especially in terms of their cost-effectiveness, Slovenia lacks research on the cost-effectiveness of eHealth solutions (services) in general. This results in a lack of evidence about the true benefits of such solutions. At the same time, the more intensive use of ICT is often justified by arguments of cost restraint and increased efficiency. It would be beneficial if in the future such statements were supported by substantial research.

A: Future organisational R&D challenges

The many barriers to eHealth's development listed in Chapter III derive from the poor organisational infrastructure, especially at the level of co-operation, management systems in the institutions and distribution of the resources. More co-ordination and better public management can be achieved through different models. The public administration will benefit from research on these models and concrete suggestions, something which could be achieved through comparative research. Another research challenge is to propose the reorganisation of the public management systems in a way that encourages innovation in eHealth and in other fields.

B: Most important future security and monitoring aspects and challenges (R&D and policy)

The initiative for monitoring the development of eHealth in Slovenia was first introduced in the new eHealth strategy. In order to supervise its realisation, the Strategy proposes several mechanisms be put in place, which should enable the periodical evaluation of developments. Yet it needs to be further researched which mechanisms are the most appropriate for such an evaluation. Known predispositions for the research are that these mechanisms should be placed in the field of e-Health at different levels, from individual healthcare service providers through to implementing the strategy as a whole.

Moreover, developments in the field of e-Health in Slovenia should be monitored in comparison with other EU states. Finally, end-user satisfaction regarding information solutions in the e-Health field should be evaluated.

The Strategy also envisages procedures and ways of informing and reporting on the achieved results and comparisons should be provided for all areas subject to monitoring. Whether the proposed institutional structure for monitoring and control is appropriate needs to be further researched. A comparative institutional study with examples of good practice from abroad would be beneficial for deciding on the structure and organisation of the monitoring institution.

Further security challenges relate to legislation. The current legislative framework has proved to be a barrier to the development of eHealth solutions and services. A research challenge is to precisely identify those parts of the legislation, which are causing hold-ups in development and to analyse how they could be amended.

Another element with a monitoring and supervision effect which has not yet been mentioned is active participation in European activities in the field of e-Health. This involves systematic participation at important European events and harmonisation projects in the field of e-Health (Health eEurope, Health ERA, European Health Forum, EHTEL HCA Group, EPIST, eTEN, e-Health Impact, 2006 e-Health Ministerial Conference). A national co-ordinator of those activities should be appointed, along with representatives in the European bodies.

C: Most important future financial issues and challenges (R&D and policy)

The new eHealth investment plan challenges many old and problematic solutions. In order to resolve these issues, the plan is to pool part of the funds allocated to informatics from the present funds for healthcare services. These funds can then be invested in joint projects and in the co-financing of the systematic upgrading of the basic information infrastructure. The Ministry of Health is expected, in co-operation with some partners, to formalise the programme of financing joint projects unified in the form of an action plan.

Further, the plan is to provide budgetary funds for the systematic upgrading of the basic information infrastructure in healthcare institutions. Another challenge is to actively acquire additional development funds for promoting information technology implementation in healthcare from other national and European resources (structural funds, appropriated funds for broadband networks, cohesion fund).

The permanent task of the Ministry of Health and partners in the healthcare system is to co-ordinate activities in the field of obtaining European funds within the framework of the inter-ministerial working group on e-Health. Within two years, the amount of funds for healthcare informatics (together with the funds referred to above) should be provided at levels comparable to those prevalent in the EU.

D: Technological and social R&D challenges

There are several priorities in the field of the technological development of eHealth applications according to the criteria of the best professional results and cost-effectiveness in the shortest time.

The first undoubted priority is to define and introduce electronic health records in accordance with the basic scheme of electronic health records laid out at the national level and integrated into the daily work of medical and allied professionals. The core research challenge related to this topic is to identify which standards should be used to enhance the interoperability and integration between institutions and across technologies.

The second big challenge is to design and implement data exchange between various healthcare service providers on one side, and the exchange between them and the Health Insurance Institute of

Slovenia on the other. To make the existing system interoperable at the desired level the government will require significant research assistance in reviewing and standardising the elements so that they will be able to serve the needs of appointed medical practitioners and medical commissions and at the same time to review and standardise the existing records in the IS of healthcare establishments and relate the data to patients.

Hand in hand with the goals stated above, the national healthcare portal needs to be gradually implemented. Research assistance will also be needed to find the best solution for building and designing portal in such a way that it provides access for patients through the web to general and personal information in the fields of medicine and healthcare services.

Substantial research related to possible solutions in place is also needed in the field of the health insurance card system (which needs to be further developed), the system for identifying healthcare workers and users of healthcare services and a new organisation model for managing national waiting periods.

Due to the envisaged development of the online health services supporting telehealth, possible systems and technological solutions should be analysed in order to achieve cost-effectiveness and consumer and staff friendliness.

Given the risk of the existing digital divide in Slovenia in terms of social, geographical, age and other dimensions and the potential to deepen them by employing eHealth services, there is significant potential to employ alternative delivery channels. Slovenia would benefit from applied research and the development of work to extend existing services to a multi-channel format and to develop future services with these requirements in mind.

Related to the digital divide issues, another field, which should receive more attention from researchers is user needs. It is unclear at what levels users' needs for the various user categories vary across national borders. However, such information is needed to guide the setting of priorities when developing eHealth applications.

VI: CONCLUSIONS

eGOVERNMENT

The most visible eGovernment infrastructure is the national public administration portal. All services provided by the national government are brought together on this portal. It provides easy access to information offered by the state and user-friendly services which citizens need when dealing with the state. It offers a comprehensive list of civil servants to whom citizens can submit applications and enables citizens to communicate with public administration bodies, which could allow a quick and user-friendly response. The electronic online services currently available to citizens are: e-taxes, the land register, access to one's own personal data on the basis of a personal digital certificate, the land cadastre, the building cadastre, the Register of spatial units, the court register, the data information service , information of a public character, the Klasje classification server, an interactive atlas, and a register of regulations.

Policy-making on eGovernment and the supervision of policy implementation in Slovenia is the responsibility of the Directorate for eGovernment and Administrative Processes at the Ministry of Public Administration. Of course, the final implementation of eGovernment covers a wide range of services provided by different ministries and governmental bodies that carry out specific administrative tasks on regular bases. All of these have to play their part in policy development. The development of eGovernment policy in Slovenia is strongly connected to and influenced by numerous strategy and programme documents issued at national and European levels. The most recent strategy 'e-Administration Strategy' presents a strategic vision for the development of e-Administration in Slovenia and outlines the main actions to be taken in the 2006-2010 period.

The financial structure of eGovernment development corresponds to its institutional structure. Practically all funds come from the national budget. The financing model is a horizontal one where resources from the different ministerial budgets are pooled together and invested under the authority of the Ministry of Public Administration. European Union funds play a significant role in financing national eGovernment projects as Slovenia benefits from being classified as an EU Objective 1 Region. It has received EUR 237.5 million in funding for the 2004-2006 period.

The demand side of eGovernment services in Slovenia faces some irregularities that can be seen as a consequence of the undeveloped market for e-services. On the one hand, service users are satisfied with the offer but, on the other, the number of users is growing slowly and getting closer to the EU average according to Eurostat. The percentage of individuals using the Internet to interact with public authorities was 21.2% in the EU25 and 11.7% in Slovenia in 2004, whereas in 2005 this average increased to 17.6% in Slovenia, whereas the EU25 average remained at 20.7%.

Slovenia has made great progress in comparison with other European countries in implementing eGovernment. According to the existing EU methodology, and taking into account recent development and growth trends in this field, we can expect Slovenia to remain among the top ten countries in the EU25 over the next few years. In 2006, Slovenia was ranked 6th in the EU25, above the EU-25 average as regards the amount of fully available online services.

Important impacts of eGovernment in Slovenia are: improved information quality and supply, increased efficiency, enhanced customer satisfaction, and online access to registers reduces both the process time of administrative procedures and personnel costs.

Among the problems with eGovernment in Slovenia is, for example, the lack of a single body of legislation dealing only with eGovernment. eGovernment service developers, especially those working with databases, report serious legal difficulties in connection with the over-protected personal

data. Furthermore, the local level has practically been left out of eGovernment development. Due to the circumstances of European legislation on funding, nowadays the idea of a third level of governance features very strongly in political discussions.

eHEALTH

EHealth in Slovenia is increasingly important. Only a few years ago, Slovenia had no clear vision of the future of eHealth. Today, however, the expansion of eHealth is being planned at national level and it is recognised as one of the major priorities in the health policy sector.

The national government started to prepare an eHealth policy, strategy and action plan in 2005. The Ministry of Health introduced a strategic plan for implementing IT and e-services in the healthcare system in Slovenia for the 2005-2010 period, named 'eHealth^{2010}'. The document 'e-Health^{2010}' is also the national e-Health plan which was submitted to the European Commission, and was prepared on the request of the EU. In 2007, the national government prepared a resolution on the national development programme which is part of the overall reform policy in Slovenia. The resolution largely focuses on the more important eHealth projects. The strong political involvement in eHealth planning can be identified as a significant achievement, which is now visible throughout various areas, especially in the higher number of eHealth services offered to citizens.

However, there is still a deficiency in the quantity and quality of eHealth services in both business and household sectors in Slovenia. Apart from two examples of good practice (the rich supply of health-related information on the Internet and the successful implementation of the electronic health insurance card in 1992), all other services are lagging far behind. With respect to eHealth services for users, the majority of online services are provided by the private/commercial sector, while the public sector mainly offers only online information regarding health topics in general. There is a lack of proper electronic health records, ePrescriptions, telemedicine, online consultancy with a family doctor, regular practices of making appointments online, etc. However, the achievement is that key eHealth services are currently being upgraded and new services are being introduced. At present, the central eHealth service, and the health insurance card have progressed and new functions have been introduced

The investment level in Slovenian eHealth was, and remains, quite low. Until recently, only a few special national eHealth projects were funded directly from the budget. The majority of investments in health informatics, equipment and software came from the budget for healthcare provision. In practice, this means that hospitals, GPs and specialists also had to redistribute their annual budget to cover the development of eHealth in their institutions. The volume of private spending in eHealth R&D is generally up to 30% of the public spending on a particular project, which results in an increased level of private-public partnerships. The figures reveal that the health sector has lagged behind other public services in terms of IT investment. However, the law on the national budget for 2006 and 2007 plans to bring this trend to an end. The law clearly indicates that the government is planning to invest in equipment and (above all) in additional training and improvement of the skills of healthcare workers, which can be identified as a major achievement. So far, Slovenian eHealth projects have not been funded by the EU.

Another severe shortcoming of eHealth services seems to be the lack of a central information system which would make locally archived information interoperable. In Slovenia, technical development in the provision of eHealth services varies according to delivery level. While at the local level, the technical background is quite well developed, Slovenia lacks a unified and integrated information system at the national level. A portal would enable the safe and reliable exchange of information for all stakeholders in the healthcare system and provide electronic services and information in a standardised and transparent manner. Though there are ICT companies ready to provide the technology and services to make such a portal possible, the main barrier is financial. Furthermore, there is poor back-office management of the information. The electronically collected data is not properly analysed and procedures still involve a lot of human effort. The private sector, especially the

managers of health ICT companies, reported that they face serious difficulties related to the insufficient regulation of the eHealth field, especially concerning health databases.

Rather than an obvious shift in the demand for eHealth, there has been a continuously growing number of people who are interested in online eHealth at both household and business levels. Data on virtual interaction in the eHealth area show a completely different picture to that of eGovernment. The percentage of people seeking health information online is the highest among the New Member States and far above the EU average. According to the RIS (Research on the Internet in Slovenia) 2001 survey, more than 60% of the total Slovenian population (aged 15-65 years) was interested in receiving both health advice or help in interpreting a diagnosis online. 58% of Internet users also expressed an explicit interest in using eHealth services. Interest was strongest in finding information on the use and properties of medicines; and around 16% of the respondents (Internet users) were interested in buying medicines online. Similar findings apply for businesses. The only social factor that has slowed down some eHealth developments has been legislation. This is especially obvious in the online sale of medicines, which used to be prohibited. The corporate and household sectors are actually those which strongly support the development of eHealth. The only problem that derives from these two sectors is that they are sometimes unaware of the eHealth services available due to their insufficient promotion.

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Abstract

In 2005, IPTS launched a project which aimed to assess the developments in eGoverment, eHealth and eLearning in the 10 New Member States at national, and at cross-country level. At that time, the 10 New Member States were Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovenia, and Slovakia. A report for each country was produced, describing its government and health systems and the role played by eGovernment and eHealth within these systems. Each report then analyzes, on the basis of desk research and expert interviews, the major achievements, shortcomings, drivers and barriers in the development of eGovernment and eHealth in one of the countries in question. This analysis provides the basis for the identification and discussion of national policy options to address the major challenges and to suggest R&D issues relevant to the needs of each country – in this case, Slovenia.

In addition to national monographs, the project has delivered a synthesis report, which offers an integrated view of the developments of each application domain in the New Member States. Furthermore, a prospective report looking across and beyond the development of the eGoverment, eHealth and eLearning areas has been developed to summarize policy challenges and options for the development of eServices and the Information Society towards the goals of Lisbon and i2010.

The mission of the JRC is to provide customer-driven scientific and technical support for the conception, development, implementation and monitoring of EU policies. As a service of the European Commission, the JRC functions as a reference centre of science and technology for the Union. Close to the policy-making process, it serves the common interest of the Member States, while being independent of special interests, whether private or national.