

ICA Country Report 2004

ESTONIA

1. Identification of strategic and operational goals

The Estonian information policy (adopted by the *Riigikogu* [Parliament] in May 1998) had become outdated. During the past six years many goals have been reached or are currently being dealt with actively. Estonia has been a member of the European Union (EU) since May 2004 and this has also changed the background system in which the Estonian information and communication policy was developed. In 2004, 'Principles of the Estonian Information Policy 2004-2006' was adopted.

The main objectives of the Estonian information policy for the next five years are the following:

- introduction of e-services in all state agencies together with respective training and awareness-raising activities for the whole society;
- keeping the level of ICT use in Estonia at no less than the average level of the EU, ensuring thus the efficiency of the Estonian economy and society in general;
- increasing the export capacity of the IT sector.

According to the Estonian information policy, the information technology action plan must be approved annually by the Government. The information policy priorities for 2005 are as follows:

- Developments in GIS. This project should make land information services easy to use and maps accessible for all authorized users and other information systems.
- Development of electronic document management in the public sector; modernisation of electronic document management in the public sector ensuring that, within the range of 75% of communication between state agencies, duplication of electronic documents with paper-based versions will be eliminated for long-lasting storage of digital documents the archives will be developed.
- Further development of a population information system. A population register needs to collect the main personal data of Estonian citizens and foreigners who have a residence permit with the aim of providing these data to state and local government agencies according to their assignments.
- Modernisation and optimisation of state databases.
- Development of the project eSocial Welfare. The aim of the project is to converge the functions of social trusteeship into a whole e-service based system and, in conjunction with the institutions of employment and health service, to guarantee high-quality services for citizens;
- Development of information and communication technology (ICT) in education and science. This priority includes projects such as 'Tiger Leap+', '*Estonian Grid*', 'Tiger University', etc;
- eInclusion and broadband strategy;
- Development of an eProcurement programme. This programme takes state procurement into the electronic environment.

- A state information technology environment for natural and legal persons as well as officials operates as whole. With the help of this environment, all these parties can utilise directly services provided through this environment.
- Development of IT security and the drafting of basic principles for a common IT security policy.
- Development of the eBorder project and preparations for the integration with the Schengen information system.
- Co-ordination of an action plan.
- Development of the project eLegal Protection which is a set of ICT projects for developing e-services for citizens and for the creation of an ICT working environment for legal protection organisations in the administration of the Ministry of Justice and the Ministry of Internal Affairs.
- Development of the project called 'Digital Cultural Heritage'. The project has many subprojects, the aim of which is to protect and preserve the Estonian cultural heritage with modern ICT solutions.
- Development of the eHealth Services and implementation of the Digital Health Record or summary chart of health-related activities that have taken place in an individual's life from birth to death. Also, development of health related e-services.

In the background of these tasks the overall goal lies in the development and integration of the ICT infrastructures of the state and local governments into a common citizen-friendly service environment that would observe the principles and requirements of the development of democracy.

The co-ordination of the present information policy is assigned to the Ministry of Economic Affairs and Communications. The implementation of the information policy is based on information policy action plans, drafted at the beginning of each year, and setting out activities that different state agencies are planning to initiate for the development of the information society. The action plans that state responsible authorities, expected outputs and evaluation of finances are submitted to the Government of the Republic for approval before the drafting of the state budget and will be considered when compiling the state budget strategy.

In drafting the action plan, the Ministry of Economic Affairs and Communications [MEAC] proceeds from the objectives and priorities set out in the Estonian information policy and EU strategic documents targeting the development of the information society. Representatives of the private and third sector will be involved in the drafting of information policy action plans.

2. Organisational structure

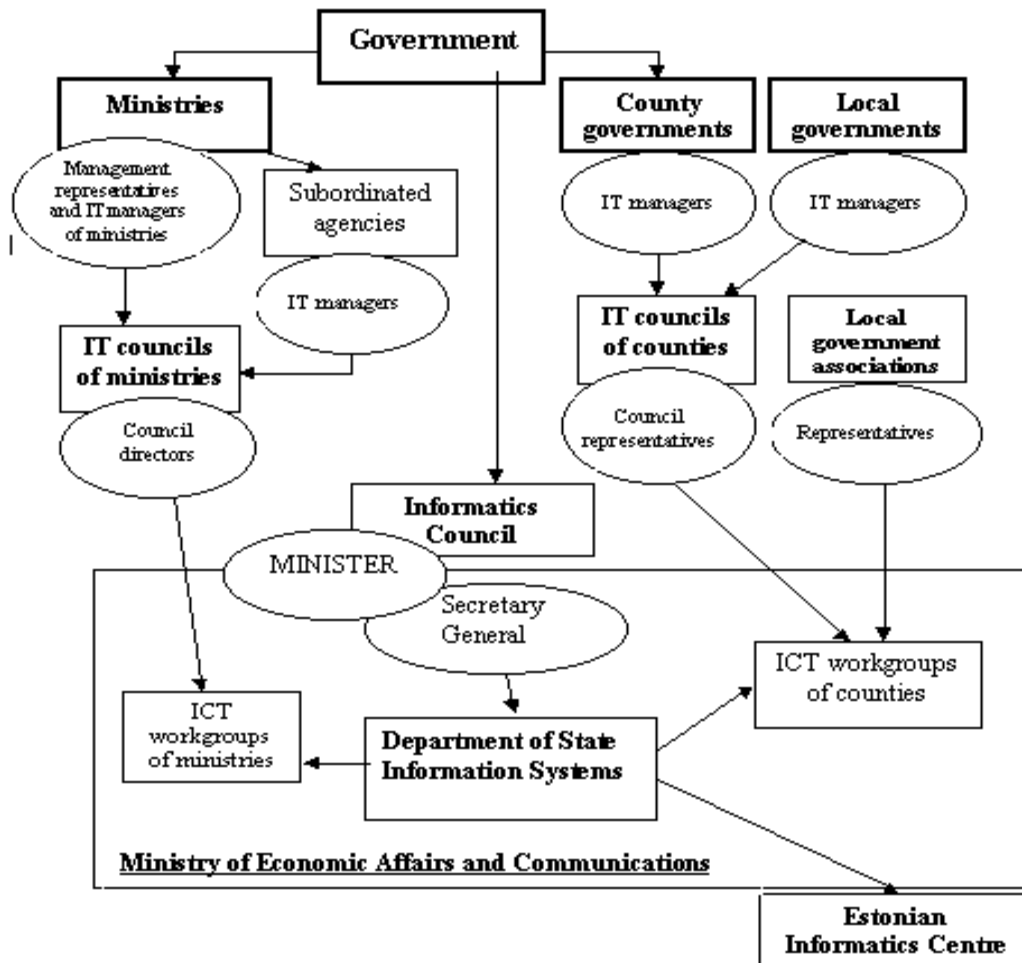
In Estonia, the Ministry of Economic Affairs and Communications is responsible for the general ICT coordination – more precisely the Department of State Information Systems. The tasks of the department include the co-ordination of state ICT-policy activities and development plans in the field of state administrative information systems [IS]: state ICT budgets, ICT legislation, co-ordination of ICT projects, ICT audits, standardisation, ICT procurement procedures, and international co-operation in the field of state IS.

In October 2003, an IT adviser was appointed to the Minister of Economic Affairs and Communications with the aim of strengthening the central co-ordination and

facilitate communication between the ministry and political circles as well as of increasing the awareness of the public about information society related developments in Estonia

In October 2003, the Estonian Informatics Centre [EIC] was re-organized. The Estonian Informatics Centre – an implementing body in the jurisdiction of the MEAC – is responsible for the development of computer networks, arranging of data communication in public administration, accomplishment of ICT public procurement, as well as administration and development of bigger nationwide ICT projects. There are three departments in the EIC: the Data Communications Department, the Department of Development and the Department of Management. The main tasks after reorganization are:

- Project management, including preparation of ICT projects for public institutions and organisation of ICT audits in national information systems.
- Monitoring the ICT situation, collecting and analysing data on the development of state information systems.
- Development of state registers.
- Development of computer networks and arranging of data communication in public administration.
- ICT standardisation activities, solving the compatibility problems of ICT systems in different state offices.
- Elaboration of legal aspects of informatics.
- Accomplishment of ICT public procurement (according to applications presented by the public institutions).
- ICT promotion and publishing activities, including publishing of journals 'Arvutimaailm' (*in Estonian*) and 'Baltic IT @ T Review' (<http://www.ebaltics.com/bittr>).



Organisational structure of ICT management in Estonia

3. Financing

The share of ICT costs has throughout years formed about 1% of the overall figure of costs in the state budget and it has increased in absolute value together with the increase of the overall figure of the state budget. The actual expenditures on ICT in public administration are larger, as the expenditure item does not include the salary costs of ICT staff, expenditures on ICT of these public sector agencies, which only receive grants from the state budget for developing their activities, training costs of ICT education, and expenditures on ICT development and use in local government budgets. Compared to many other countries, where expenditure on ICT is estimated to be 2.5-4% of the state budget, Estonia's expenditures have been quite modest.

In connection with the amendment of the State Budget Act, the expenditure item for ICT costs was removed from the state budget draft for 2003. Instead these costs have now been included in the articles 'economic costs' and 'obtainment and renovation of material and immaterial assets'. However, the previous application forms for applying costs on ICT development were partly maintained and an expert committee, formed by the Ministry of Economic Affairs and Communications, presented its opinion on applied costs as well.

The Government declared the information policy action plan priority number one for 2005 and every institution has to take it into account while planning its ICT budget for 2005.

4. Changing laws, regulations and policies

To a large extent, the Estonian ICT legislation has been elaborated (see Table 1).

Table 1. List of most relevant acts related to information society in Estonia

Acts have been translated into English by the Estonian Legal Language Centre and are available on the Internet: <http://www.legaltext.ee/indexen.htm>

Name	Passed on:
Archives Act	25.03.1998
Broadcasting Act	19.05.1994
Copyright Act and Associated Acts Amendment Act	06.01.2000
Cable Distribution Act	31.05.2001
Citizenship Act	19.01.1995
Consumer Protection Act	15.12.1993
Contracts and Non-Contractual Obligations Act	26.01.2001
Databases Act	12.03.1997
Digital Signatures Act	08.03.2000
Official Statistics Act	11.07.1997
Personal Data Protection Act	12.06.1996
Population Register Act	31.05.2000
Principles of Estonian Information Policy	13.05.1998
Public Information Act	15.11.2000
Public Procurement Act	19.10.2000
Riigi Teataja Act (Riigi Teataja = State Gazette)	20.01.1999
Securities Market Act	17.10.2001
State Liability Act	02.05.2001
State Secrets Act	26.01.1999
Telecommunications Act	09.02.2000

Taking into account the rapid development of ICT field, we can, however, claim that the legislation valid at present will get in the way of real life and needs further improvement. This applies, for example, to the Databases Act (1997), which includes restrictions on effective introduction of new trends in data processing. The Databases Act is currently under improvement. The new name of the act is ***State Information Systems and Data Services Act***. The aim of the act is to create legal basis for the organisational regulation and administration of state information systems. With the help of this act the needed data will be accessible to state and local government agencies and to all other persons for officiating public services. All justified solutions from the old act will be maintained, but in addition juridical presumptions will be created for developing the state information systems into a virtual data environment. The main features of the new act are:

- collecting data to data services;
- databases classification (main register, state register, database of local governance agency) to data classification and regulating data services.

At present, Estonia has almost finished harmonising its legislation with the European Union. For instance, work is currently under way for transposing the European Union's new telecom package into Estonian legislation. Within the process, the Telecommunications Act from 2000, that was aimed at liberalising the telecommunication market, was changed into a law regulating liberalised telecom

market. The new act is called the *Electronic Communication Act*. This act has three aims:

- to harmonise electronic communication sphere with EU's justice ;
- the regulation of equipment used in telecommunication;
- the improvement and updating of electronic communication regulation.

Very important for developing the information society is the 10th chapter, which regulates entrepreneurs' responsibilities in data protection and security of communication network. Composition of this chapter was guided by directive 2002/58/EC 'Directive on privacy and electronic communications'.

Estonia's accession to the European Union [EU] has opened up financial measures for Estonia with the aim of diminishing social and economic disparities between various regions of the EU. Estonia can apply for support from four *Structural Funds*:

- European Social Fund, supporting promotion of skills of employees and jobseekers and the promotion of employment;
- European Regional Development Fund, supporting economic development and the creation of new jobs;
- European Agricultural Guidance and Guarantee Fund, supporting the re-organisation of agriculture and rural life;
- Financial Instrument for Fisheries Guidance, supporting the balanced use of natural resources and development of competitive industry.

In addition to the above four funds, the Cohesion Fund has also been opened, helping to finance large-scale environmental and transport investments.

National Development Plan is a programming document submitted by Member States to the European Commission that contains a detailed description of priority areas needing support. As a means of planning over several years the development plan includes national, regional and field-specific priorities, measures and objectives. See the Estonian National Development Plan for the Implementation of the EU Structural Funds SPD 2004-2006 Programme complement:

http://www.strukturifondid.ee/failid/Programme_Complement27.04.pdf

The most important measure in the development of the information society is measure 4.5: Information Society Development [ERDF]. The measure is aimed at supporting the realization of objectives set in the Estonian information policy document 'Principles of Information Policy 2004-2006' as well as in 'eEurope 2005'. The specific aims of the measure are the following:

- the development of a one-stop channel for citizens and ensuring the interoperability of information systems;
- further development of public sector e-services;
- the development of digital content.

See more about structural funds: <http://www.strukturifondid.ee/?lang=en>

European Union policies and initiatives, in particular the eEurope 2005 action plan, are significant factors in our domestic policy-making in the field of ICT.

5. Identifying and building additional critical infrastructure

5.1 ID-card and digital signature

To realise real savings from the implementation of e-services, both in terms of time and money, a national ID card project was initiated in Estonia in 1998. A smart card was introduced, the functions of which are twofold: it can be used for personal identification purposes and for giving digital signatures. Unlike in some other countries, Estonia proceeded in the development of its ID card from the principle that the ID card itself would not contain any other data than that necessary for the identification of a person while all other information would be stored in different information systems. In 2001, the Parliament established ID-card as a compulsory identity document. The implementation of an ID-card actually means establishing a new nation-wide infrastructure in Estonia – an ID-card is a component of the public key infrastructure. The structure includes a certification service provider (certification centre and its subunits, see more: <http://www.sk.ee/pages.php/0203>), which issues certificates, and a catalogue service provider, which takes care of making these certificates available for everyone.

By September 1st 2004 582,231 ID-cards had been issued, which means that approximately 44% of the population has an ID-card.

To read more about the ID-card and digital signature projects visit:

<http://www.ria.ee/english/2003/p32.htm>

<http://www.ria.ee/english/2002/p23.htm>

<http://www.ria.ee/english/2002/p24.htm>

To see more about the ID-card and digital signature visit:

<http://www.id.ee/pages.php/0303>

Because of the concept of the Estonian ID-card, according to which the smart card itself does not contain any other information than that necessary for the identification of a person, there is no longer need for a special health insurance card. A person will be identified with his/her ID-card, while the information about his/her insurance will be maintained in the respective database.

Another very popular e-service is the ID ticket for public transport in Tallinn and Tartu. In Tallinn, 90 percent of those who constantly use public transport started buying ID-tickets within a few months. At the same time, the number of people using an ID-card doubled.

Preparations are under way for the use of an ID-card in order to check the right to drive a vehicle.

In 2003 several state agencies started to use digital signatures in their daily work. One such agencies is the Tax and Customs Board, – one of the most innovative state agencies for introducing new technologies. The Tax and Customs Board put digital signatures into service in a universal form, exactly as provided by the Digital Signatures Act and as intended by the system developers. A subsection describing the digital signing option and procedure provided by the Tax and Customs Board was added to its homepage: <http://www.emta.ee/?lang=en>. The user (whether a private

person or a company) can use a simple form to upload documents straight into the document management system of the Tax Board. A digital signature can certify any tax document that up until now was required on paper but now there is no need for any additional paper documents.

Another successful implementer of digital signature is the Ministry of Justice and the entire Estonian court system. On 12 June 2003 an important decision was adopted in the Tallinn Circuit Court where, for the first time in the court practice, a digital signature was regarded as equal to a handwritten signature on paper. In addition to the Digital Signatures Act, this decision gave significant practical support to the court practice as in Europe there have been cases where digitally signed documents have not been accepted as evidence. The Ministry of Justice has started an extensive introduction and training project in the whole Estonian court system to enable the reading of digitally signed documents in court and to exchange them with lawyers. Law offices have also warmly welcomed this system as they bear the main responsibility of communication with courts and are now pleased to spend less time and efforts on the submission of documents.

5.2 Backbone network *PeaTee*

The backbone network *PeaTee* (in English EEBone) connects all Estonian county centres and several nodes in Tallinn. *PeaTee* has an Internet connection based on TCP/IP protocol and 16 Mbps bandwidth. The bandwidth of the backbone network between cities is 4-50 Mbps and connections to Estonian Internet Service Providers (ISPs) are 100 Mbps and 1000 Mbps Traffic within Tallinn is 100 Mbps up to 1000 Mbps

PeaTee is a public network. Every state and local government agency has the right, though not the obligation, to use *PeaTee*. A state agency decides upon joining *PeaTee* depending on which bandwidths and access services it needs and whether it would be more useful to outsource them from public service providers or from the Data Communication Department [ASO].

The use of the backbone network is financed centrally from the state budget and the use is free of charge for subscribed clients. End-users must look after the security of their local network themselves.

PeaTee was launched in October 1998. At present, it has over 850 end-users and ca?? 12,000 computers from all over the country have been connected to the network. Further information on the network services is available at (<http://www.aso.ee/>), in Estonian only).

To read more about *PeaTee*: <http://www.ria.ee/english/2003/p15.htm>

5.3 Data communication network EENet

The task of the data communication network EENet is to manage, co-ordinate and develop the computer network of science, education and culture. EENet participates in drafting and implementing national network policy, in the work of national informatics programmes and in the activities of international networking organisations CEENet, TERENA, etc, and manages the Estonian top-level domain (ee).

As of 1 January 2004, 419 agencies had permanent connections to the EENet; there were 500 virtual homes for education, cultural and research related projects in the service server nw.eenet.ee, 2,084 mailboxes for 316 institutions and 263 thematic mailing lists. In the .ee top-level name server 19,191 domain names had been registered by 1 January 2004.

To read more about EENet: <http://www.ria.ee/english/2003/p15.htm>

6. Communicating and marketing to the public

The [Look@World Foundation](#) is a private sector initiative aiming to contribute to the development of the information society. The foundation aims to offer people more Internet access possibilities, raise the availability, simplicity and user-friendliness of public sector services on the Internet and promote the Internet as a channel for accessing information and using services by changing people's attitudes towards it and organising Internet training.

In 2001, the idea of giving free of charge elementary computer and Internet training to 100,000 Estonian residents was raised. When it was implemented at the end of 2001 few people were convinced of the success of the project. In 2004 this project came to an end.

Facts about the training project:

- 102 697 people i.e. some 10% of the adult population of Estonia, received training;
- 11 693 courses were carried out – 35 courses were being held on any given day;
- 8-hour elementary computer and Internet training was free of charge for participants;
- 17 new Look@World classrooms with 34 full-time trainers/coordinators were established;
- 245 classrooms for training and 280 part-time teachers were involved;
- The average grade given by participants to the course was 4.8 on a scale of five;
- Over 70% of participants have started using the Internet;
- 442 Public Access Internet Points [PAIP] employees received special training;
- It took only 1.5 months after the decision to launch the project was made for the first training session to be carried out;
- Project costs stood at 39.9 million croons, which were fully covered by four private companies.

In summer 2002 the Government of the Republic of Estonia, the United Nations Development Programme [UNDP] and the Open Society Institute [OSI] signed a Memorandum of Understanding to set up jointly a Regional e-Governance Centre (*E-Governance Academy - EGA*) in Estonia. The main aim of the training centre is to provide training in ICT co-ordination, organisation and the usage for the public sector managers, specialists and representatives of the third sector of former Soviet republics, Central and Eastern Europe, and Asia. The training project offers practical information and experiences of Estonia, the expertise of EU international experts and the exchange of experiences of participants in the training.

The E-Governance Academy (<http://www.ega.ee/index.php> — in English, Russian and Estonian) involves Estonian top specialists who give a review of ICT usage in

Estonia and other countries. Different theories and practical experiences are shared in the process. The topics of the training cover development strategies of e-governance, ICT industry and education; and the problems of judicial regulation and global issues concerning ICT development. The activities of the e-Governance Academy comprise 8-10 training sessions per year for 10-15 member groups.

In addition to training EGA is active in research. Some examples of research topics:

- *ICT and corruption.* The ICT and Corruption project aims to gather the solutions already in place and working and bring them to the attention of decision makers in countries with high corruption and low ICT penetration. EGA is creating a so-called ICT toolkit for reducing corruption and plans to develop later implementation - training course based on the toolkit. The primary objective of the project is to contribute to the efforts being made to reduce corruption all over the world. The project points towards the stimulation of networking and sharing and the exchange of knowledge and experience in the fields of corruption research between developed and undeveloped countries. A more specific goal is highlighting those experiences which at present show some of the most inspirational and innovative approaches to building the corruption-free society for all and presenting the results to the representatives of countries where the persistence of corruption problem is very strong.
- *Open Source Software (OSS).* EGA will contribute to the OSS programme in two ways: policy research and the dissemination of results.
- *eRights.* The explosive growth of ICT has substantially changed the environment in which we live. The basic parameters of the information society are not all the same as they used to be. In order to raise our awareness about these changes that are taking place around us, EGA aims to create a draft Charter of Information Rights.
- *eDemocracy.* eDemocracy is a wider research direction for EGA. EGA is developing a 2-3 days introductory course on different aspects of e-democracy.

More information and contacts about research topics can be found on EGA's homepage: <http://www.ega.ee/index.php>

There are 570 *public libraries* in Estonia and, when branch libraries are included, these number over 600. The network of public libraries covers Estonia evenly from the capital city of Tallinn to the remote areas of the country. Libraries - especially in rural areas where smaller post offices and banks, medical care centres, community centres, schools, etc. are being closed - have acquired an ever-increasing importance as public service providers. Therefore it is the public libraries that provide citizens with free access to public information and the information resources of the whole world. Taking into consideration the Public Information Act, all public libraries should have Internet connection. In 2004 this project was completed and now people can use the Internet free of charge in all public libraries.

Another important event for *libraries* in 2004 was the development and implementation of a Web-based information, *system URRAM*. This Web-based software and the central database enable the readers to use library services through the Internet and make it more convenient to search for, reserve and lend necessary data

media. The reader can see the status of data media in real time (what is present in the library; what has been lent out) and the dates due of data media borrowed by him/herself.

To read more about this project visit: <http://www.ria.ee/english/2003/p37.htm>.
For more information about system URRAM see: <http://urram.urania.ee/avaleht.html>
(in Estonian only).

The *eCitizen* project discussed below is also aimed at communicating to the public.

7. Improving national portals

In 1998 within the project '*Vahetu Riik*' (in English '*Direct Government*') a common access point for Estonian government agencies and constitutional institutions was created through an Internet domain *riik.ee* (*gov.ee*) and the Virtual Estonian Web Centre was established for administering it. The 'e-government' portal (<http://www.riik.ee/en/>) has been changed and improved time and time again with: new topics, databases, links, etc. having been added. In addition to the role of being the state portal it has also acquired the role of an integrator and co-ordinator of national information systems. In 2000 the project went through several organisational changes and new development trends were prepared, most of which have now been realised.

Addresses like <http://tom.riik.ee> (portal '*Today I Make Decisions*'; in Estonian only), <http://ats.riik.ee/pub/> (public document system, in Estonian only), etc. have been added to the domain. Several virtual servers and websites of state institutions and projects use the domain's resources. Although there have been only a few changes to the portal's content during the last year, the portal's administrative organisation has stabilized and the quality of the content has improved. At the same time it has served as a basis for several new projects.

The fact that the system has an average of over 100,000 visitors per day on weekdays proves the popularity of the portal. During peak hours there are over 5 visits per second, about 18% of them being made abroad. Besides Estonian the working languages of the portal are English (<http://www.riik.ee/en/>) and Russian (<http://www.riik.ee/ru/>); the data capacity of the two latter is, however, limited as compared to the former.

The e-government portal should not only be the receiver of data but it should also become a data store and an interactive cooperation tool for government agencies.

Thus, to facilitate compliance with the Public Information Act, local governments have been provided with the option to disclose their documents in the common and integral server. The Ministry of Economic Affairs and Communications has provided a free server at <http://ats.riik.ee/pub/> (in Estonian only) for public sector agencies that have to meet the requirements of the Public Information Act yet who lack sufficient technology and finances.

Since the beginning of 2000 every state agency and local government has the option to use the modules of public services in the e-government server. The following modules are available: guest-book, voting, discussions, and questionnaires. All state

and local government agencies can use these modules free of charge. These so-called communication modules can be used for organising discussions and polls on the web.

Service 'Forms in the Internet'. The service has made document forms available for citizens to communicate with state agencies. Forms are in PDF-format and over 400 can be printed out or about 80 can be filled in directly on to the screen. At present the citizen can personally submit forms obtained from the Internet or filled in on the screen or send them by mail to a the relevant state agency, which will then act on the forms. Thus the service saves time for the citizen. However, it is not yet possible to transmit documents directly to state agencies via the e-government portal due to the lack of a secure and authenticating transmission system of digital documents. Presumably, there will be such an option after the implementation of records management program of government agencies and the realisation of the eCitizen project.

eSchool (eKool) is a web-based home/school interface initiated and implemented by the Look@World Foundation in 2003 with an objective to improve communication between the school (teachers) and the home (parents). On one hand, the environment enables better involvement of parents in learning processes and school life; and on the other, *eSchool* significantly contributes to the standardisation of information collection and storage in general education schools. The centrally managed information system allows parents and teachers to obtain and submit information about their children's grades, missed classes, home assignments and timetable. In September 2004 there were 62 schools linked to this service and 3000-4000 users every day. Those who have participated in the project for a year admit that the greater transparency between the school and the home has led to better study results. The *eSchool* environment will be developed further so as to ensure web-based access also to study materials. For more information see: <https://www.ekool.ee/>

The most popular online services provided by the state and government agencies include payments for services or goods/documents through Internet banking, obtaining information from homepages, printing out documents (forms, applications), submission of information about oneself or one's family, and expression of one's opinion or participation in public debates. See Table 2.

Table 2. Usage of online services provided by state and government agencies (people aged 15-74)

	Number / %	Time
Payments for services or goods/documents through Internet banks	47%	October 2003
Obtainment of information from homepages	43%	October 2003
Printing of documents (forms, applications)	26%	October 2003
Submission of information about oneself or one's family	37%	October 2003
Expression of one's opinion or participation in public debates	8%	October 2003

Source: AS Emor.

Internet banking and eTaxBoard services have within a short time become very popular with Estonians. There are approximately 942,000 (August 2004) Internet banking clients in Estonia (the whole population being 1.35 million). Since 2000 it has been possible to fill online tax declarations. As of February 2002 ID-card owners can enter eTaxBoard via the Tax and Customs Board's website (<http://www.ma.ee>) by using an ID-card. In spring 2004 approximately 260,000 tax declarations were completed online, about 80 % of all declarations.

8. Converging service channels

There are two main single access points – the national portal www.riik.ee, which is a unified access point for the state agencies, and www.eesti.ee, which is an information portal aimed at the citizens.

In addition to WWW services WAP, PDA and also other services are used.

9. Authentication procedures

Authentication can be carried out by using the ID-card. The authentication with the ID-card functions securely and it is convenient to use the card wherever user names, passwords, code cards, etc. have so far been used – be it Internet banking services, internal applications of a company, intranets or public portals. It is convenient mainly because the system administrators do not need to deal with the administration of user names and passwords and people do not need to deal with multiple passwords and password cards. In the case of loss of the card, its use can be blocked with one phone call. The application of the authentication function is quite easy – the user account based access to information systems has to be transferred to personal identification code based application (i.e. the personal identification code included in the certificate has to be connected to the user account). An application allowing ID-card based authentication in *Windows* computer workplaces has been completed as well.

The ID-card is suitable wherever a person's identity needs to be authenticated or when documents have to be digitally signed. The authentication with an ID-card functions securely as the card-owner is responsible for his/her ID-card and the usage of it. ID-card can be used also for signing and encrypting e-mails. Every authentication certificate includes the person's e-mail address forename.surname XXXX@eesti.ee (XXXX is the random number assigned to the person). The person can register his/her daily e-mail address in the mail server and respective e-mails will be forwarded to that address.

As for providing e-services of state information systems, it has been agreed that authentication is carried out with an ID-card or through Internet banking. The four major banks provide free authentication services of Internet banking. Some of the banks allow using the ID-card as an alternative option besides their authentication protocols. For example, the citizen's portal can be entered with the ID-card and the authentication mechanisms of the four commercial banks.

By September 1st 2004 582,231 ID-cards had been issued, which means that approximately 40% of the population has the ID-card.

10. Development of gateways

10.1 Project *X-Road*

The modernisation program of national databases (Project *X-Road*: <http://x-tee.riik.ee> – in Estonian only) enables civil servants, legal and natural persons to search data from national databases over the Internet, provided they are entitled to do so. The system ensures sufficient security for the treatment of inquiries made to databases and responses received. The technical solution of the program does not lie in the transition of all databases to some larger data management system but in the creation of unified user interfaces for different databases. Communication between databases as well as between users and databases takes place via the centre – the data exchange layer of information systems.

To read more about project visit: <http://www.ria.ee/english/2003/p34.htm>

The joining of agencies and databases with the X-Road did not take place as quickly as the contracting agency of the programme - the State Information Systems Department (RISO) of the Ministry of Economic Affairs and Communications — had planned. The main impediment was not the elaborate software or installed hardware, which both functioned perfectly, but various legal and organisational barriers. However, a new regulation came into force in an January 2004 which ordered all government agencies, including local government agencies to inform MEAC no later than March 2004 when they will join X-road. All government agencies should be connected to X-road by January 1st 2005.

By the end of 2003, the majority of state main registers and databases — service providers — had already joined or were joining the X-Road. The number of average queries per month in January 2004 was approximately 270,000 and in July 2004 1,000,000. The average number of queries per day in September 2004 was 17,550. So far, the maximum queries per day in 2004 is 102,639. By the end of August 2004, the total of database services provided through the X-Road accounted for 155.

10.2 Project *e-Citizen*

The project *e-Citizen* (also known as the citizen's IT environment [CIT] project) is a form of co-operation between state institutions to help make the state more citizen-oriented by means of ICT.

The broader goal of establishing CIT is to allow all people to obtain information about their rights and obligations, and to actively participate in public life at national, regional and local level. CIT consists of the citizen's portal, kernel?? basic?? tools for services, and the information portal.

The information portal of CIT is a free-access website for informing people about their rights and obligations in communication with state and local governments. The portal also contains tips for conducting administrative operations with state agencies, forms, links to legislative acts and useful homepages, relevant phone numbers as well as www-services. The portal has often been called the citizen's handbook. The information portal at <http://www.eesti.ee/> is currently available only in Estonian. From the technological aspect, the Russian and English language portals have been realized as well, but they still lack sufficient information (the portals can be accessed at <http://www.eesti.ee/rus/> and <http://www.eesti.ee/eng/>).

To read more about the project visit: <http://www.ria.ee/english/2003/p35.htm>

There are many interesting new services, which can be used through this portal. Based on the exchange layer of databases – X-Road – a new service was created by the Ministry of Education and Science in 2004 for high school graduates, allowing them to obtain information about the results of their finals through the eCitizen portal <http://www.eesti.ee>. The service is a good example of the multi-platform approach as students can order the information to be sent either to their mailbox or to their mobile phone as an SMS. This service has had about 22,000 potential clients and 20,000 of them have used this service.

As of 2004, Estonian families can apply for the child benefit without leaving their home or office via the eCitizen portal <http://www.eesti.ee>. For citizens, this is just one service, while in fact five different registers communicate with each other through X-road for its provision. This service has so far had about 17,000 users.

As of 1st August 2004, Estonian citizens can apply for the European health insurance card via the eCitizen portal <http://www.eesti.ee>. Instead of filling out the several forms necessary for obtaining the card, citizens now need only to check and confirm that data on a pre-filled form is correct. This service has so far had approximately 12,000 users.

11. Estonian government's IT architecture and interoperability

The Estonian government's IT architecture and interoperability framework is based on the country's public key infrastructure [PKI] and an ID card, the middleware X-road for the integration of databases, and the citizen environment that is known as CIT. The framework defines a set of recommendations and guidelines, which describe the way in which organisations have agreed (or should agree) to interact with each other. The framework is not a static document. It will be updated on a yearly basis. Adherence to the architecture and interoperability framework, however, is mandatory in terms of policies and specifications. These set out the underlying infrastructure, thus allowing public sector organizations to spend more time on the building up of E-services.

In June 2004, the Ministry of Economic Affairs and Communications of Estonia published the first version of a new document – 'The Government IT Architecture and Interoperability Framework'. This framework was developed in co-operation between state and local government agencies and private sector IT experts. Implementation of the framework is to be co-ordinated by the State IT Interoperability Council. The framework gives recommendations on technical policies and specifications for joining up public administration information systems all over Estonia. It is based on open standards and encourages the use of open source software. The three pillars on which the framework is based are the Estonian PKI infrastructure and the ID-card, the middleware X-road for the integration of databases, and citizens' environment CIT.

To read more: <http://www.riso.ee/et/koosvoime/BalticITUV.pdf>

12. Training senior managers and policy officials

Different ICT related courses are provided regularly for senior managers and policy officials.

There are several workgroups, such as ICT managers of ministries, ICT managers of counties, etc. Usually these workgroups meet once in every three months. They gather to discuss matters concerning them and to pass on good experience to one another.

Twice a year a big seminar for all public sector ICT managers is held. This is mainly to inform all ICT managers about changes in ICT field and to give them all possible opportunities to communicate with each other.

13. The Document Management Programme of government agencies

Electronic document management in the public sector will be further developed and digital archiving will be launched. Particular attention will be paid to the development of Internet-based communication and information management between the state and local governments.

The development of databases will be continued with the objective of ensuring integrity, availability and interoperability of data. Steps will be taken to create, in fields of life where deemed necessary, databases consisting of digitally signed documents.

In order to increase the quality of leadership and management in the public sector, operational information systems will be created for compiling the activity statistics and financial information of ministries and state agencies.

14. Measuring results

Results are being measured mainly through indicators set out within the activities of the eEurope action plan.

As for the Information Society indicators of Estonia, please see <http://www.ria.ee/atp/eng/index.html?id=424>.

On the whole, it is difficult to measure the results of e-government investments, i.e. the public value obtained from implementing different e-applications. Success is too often measured on the basis of the uptake of online services or hits on a website, whereas real success should lie in reduced transactions, through IT and process redesign.

15. Feedback from the public

Feedback from the public is not gathered centrally. Every agency has organised it in the way most suitable for the agency.

One source of feedback is, however, the e-democracy portal TOM [*Täna Otsustan Mina* – in English 'Today I Make Decisions']. The aim of this website (<http://tom.riik.ee>) is to enhance the population's participation in the state's decision-making processes. One can submit ideas, guidelines, and thoughts and comment on draft legislation submitted by others or elaborated by ministries during the creation phase. Ideas that have found support among users will be submitted by Prime Minister's resolution to respective agencies to be executed. The public can constantly monitor what happens to the idea. Pre-registration is required in order to submit, comment, vote and sign ideas. Everyone can read the ideas and comments.

The fact that in September 2004 497 ideas that had been submitted in TOM were in legislative proceeding in different government agencies proves the popularity of TOM.

16. E-governance including e-voting and obtaining comments on proposed laws and regulations

The e-democracy portal TOM (see above) is a way to enhance the population's participation in the state's decision-making processes.

According to the Coalition Agreement between Union for the Republic — Res Publica, Estonian Reform Party and Estonian Peoples Union for the years 2003–2007 a greater weight to a citizen's vote is considered to be important. The coalition aims at creating the conditions for electronic elections for the local government elections of 2005. Electronic voting project started in 2003 with the aim to give e-voting possibility to all ID-card owners in the 2005 local government elections. It is now possible because:

- There exists a legal basis for carrying out e-voting which is laid out in the following legal acts:
 - Local Government Council Election Act, § 50;
 - Riigikogu Election Act, § 44;
 - European Parliament Election Act, § 43;
 - Referendum Act, § 37.
- A public key infrastructure enabling secure electronic personal authentication using digital signatures and ID-cards has been created – currently (January 2004) over 350,000 ID-cards have been issued. By the 2005 elections this number should approach 800,000, meaning that most of the eligible voters should be covered.
- The coalition agreement of the current government states: 'The coalition shall aim to create the necessary conditions so that it would be possible to implement e-voting at the 2005 local government council elections'.

More information about e-voting: <http://www.vvk.ee/elektr/docs/Yldkirjeldus-eng.pdf>