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National Report of Estonia

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INTRODUCTION

The principles of developing information technology in Estonia follow, most of all, the interests of citizens as the bearers of democracy. Therefore, the main goal of all IT projects is to improve the well being of a citizen and to increase security of environment. Those principles also apply for all information technology projects in sphere of legal administration and legal protection.

Information technology is mainly treated as a mean to improve availability and quality of public service and as a mean to improve security and efficiency of work in cooperation between different establishments in legal administration system (courts, prosecution, police, prisons etc.) which create additional values for citizens.

Following report gives an overview of main principles and activities in legal administration system in Estonia and the global directions of the state and the public sector in field of information technology.

Policy issues

Information technology as a tool to optimize and access to justice

Raising of questions

The immense amount of information and the global and rapid exchange of information are the key words, characterising the world at the turn of millennium. The characteristic feature of the present world is also the aspiration to use the newly emerged infotechnological assets and potentials in our common interests. This holds true both on national, regional and international level.

Implementation of information technology has the most direct impact on legal system and on legal administration system of every country. At the same time it creates a number of questions.

How will the use of information technology influence the state and the society as the whole?

Will it threaten certain basic principles of democracy like the privacy and security of individuals, their basic rights and freedoms?

Or will the quick, flexible and unlimited information processing and exchange rather expand the opportunities and rights of an individual, by bringing legal services to him more quickly and unrestricted by his spatial location? Here we face another question - will different groups of individuals and organisations have equal access to the legal service?

Is the state ready to provide legal service in the information society? And are the people ready and prepared to consume such electronic legal service?

These questions and many others have to be answered. It seems that the society has no way back in the field on information technology. Our only alternative today is to apply and implement information technology rationally, taking into consideration all its possible advantages, but at the same time remembering concurring dangers.

2. Effect of implementation of information technology on legal administration

The different ways of implementation of information technology may have different impact. We have considerably increased work efficiency, opportunities and speed in the branches of legal administration, elaborating and applying legislation by replacing the printing machine by a computer. This made it possible to put technical work in the ministries, investigation authorities, courts etc. on an entirely new level. Such implementation of information technology may not give any direct effect for the consumers of legal service, as the changes took place inside organisations and are often overlooked by individual consumers.

The level of computerisation is naturally most important, as it creates the potential environment for usage of technological advantages.

In Estonia the need for computers in the public sector is constantly increasing. The need has increased by 14.5% on the average during the past few years. The present rules stipulate that 58% of people working in the public sector must be provided with computers. 90% of this need has been satisfied. At the same time we have to mention that the ministries were totally provided with computers already in 1998. These numbers demonstrate that there is still enough development space in the public sector.

It is considerably more important in implementation of information technology to effect changes in work processes of the people, working in the field of justice. The activities connected with forwarding, exchanging and acquiring information will undergo principal changes. This will make it possible for judges, prosecutors, investigators and other people working in the system of legal

administration to concentrate on their basic work only. Here is the key to economic administration of justice, which in its turn brings along increase in work efficiency and quality.

Estonia may hereby present quite a few positive examples both in legal system as well as in public sector as a whole: commercial register, database on court decisions of the courts of the 1st and 2nd instance, and the Supreme Court; the register on persons, detained in prisons, information system for electronic co-ordination of draft laws; e-Government etc. The Government has also approved of the idea to computerise the process of criminal proceeding to the level where most of information of evidence value would already from the beginning be presented in electronic form.

The utter objective of information technology is to increase the capacity of legal system and legal administration. It would enable for the state to save time, money and human resources. Direct investments into information technology since 1994 make up 1% of the Estonian State budget. The Ministry of Justice has allocated 5% of its budget into infotechnological investments.

3. Effect of implementation of information technology on the consumer of legal services

The consumer of legal services expects quick and high-quality administration of justice and solutions to his legal problems. Pre-condition or achieving necessary speed is immediate access to legal text, possibility to perform direct acts using information system and possibility to get information necessary for making decisions. In order to satisfy these expectations one needs technical equipment. But it is equally relevant to design new services and opportunities, for example it must be possible to reach the police, court or any other legal protection body through information system without any social or spatial restrictions. This presumes corresponding know-how, people with proper education and motivation, but also investments. For individuals the new opportunities and services in the field of justice would mean saving time and less complicated management. Our ideal here is the interactive legal system, which, based on the possibilities of information technology, should be consumer-centred.

Another question is, are the individuals and undertakings ready and prepared to consume legal services in the information society. Such readiness presupposes first of all availability of the so-called critical mass and respective possibilities. Under critical mass we hear keep in mind well-educated people, students and pupils who use information technology daily in their professional work. But the critical mass will take final shape only provided individuals, solving their own legal problem or simply interested people or the so-called borderland people resource to information technology.

During the 3rd quarter-year of 2001 we have registered 39000 new Internet users in Estonia. According to Estonian statistical data 36% of people, aged 15-74 years use Internet. The percentage is still almost twice higher among the younger population, which in its turn refers to definite growth potential. According to the estimation of sociologists the potential growth of Internet users in the nearest years may amount to 70-80% and depending on age peculiarities will voluntarily grow in the future. The aim of the project launched by the private sector Look@world is to increase the number of Internet users in three years over 90%. The above facts demonstrate the existence of infotechnological potential in Estonia and hereby we feel it necessary to underline the obligation of the state and of the Ministry of Justice to establish internet-based services, to grant their security etc.

As an example of Estonian contemporary developments in the field of e-services we may bring the Commercial Register WAP, which makes it possible to find the commercial register information by means of a mobile phone. 39 000 persons in the year 2000 presented their income declaration electronically, through E-Tax Department. "I decide today", or the so-called TOM aims at increasing public participation in the state decision making processes. Everybody may electronically present his ideas, thoughts and comments on draft legal acts in the phase of their elaboration.

4. Usage of information technology as the technological basis of the state based on the rule of law

The democratic state based on the rule of law is the moving force and objective in the European legal tradition. Information technology seems to be one of the realities that form the framework of the modern functioning of the state based on the rule of law. Technological possibilities secure both the participation of citizens in e-elections and legislation process as well as flexible administration of justice and criminal probation. But first of all we must secure technical possibilities and ground concurring risks.

A few pre-conditions for emergence of the state based on the rule of law from technological aspect are as follows:

1. secure sufficient access to Internet;
2. create possibilities for interactive communication and management in the law enforcement system;
3. grant sufficient security to protect privacy and trust in the state;
4. to adjust legal acts to the existing technical opportunities (i.e. to grant the possibility to use digital signature).

In Estonian legal system we have taken several steps to secure rule of law through implementation of information technology. Our aim at administration of justice and computerising criminal procedure is to optimise the processes as well as to increase the quality. It seems to be proper to say that information technology is one of primary means in granting the state based on the rule of law.

5. Risks related to use of information technology

Introduction of new solutions brings along certain risks, which in case of use of information technology are difficult to predict.

Implementation of new technology in the field of justice calls for expansive and long-term investments.

Every radical change has caused certain opposition in society, taking into account the inertia of human mind and human habits. Such opposition has its sources both inside the legal administration system as well among the users of info services.

As inside the organisation it means solving optimisation tasks, it presumes re-division of resources. This puts the existence of a number of present workplaces at risk. How could we manage this task without impairing welfare of the people working in the legal administration system?

Implementation of information technology causes several technological questions as well. Can the machine replace a man and how are we able to monitor and control the work of machines? This question becomes less important with introduction of more reliable technology and with acquired experience. Namely experience and conquering the original fear of new technology helps us to stabilise the psychological factor.

Development of the so-called critical mass is a time-consuming process. Its roots lie in the inertia of human mind and habits as well as disbelief of information technology, but also possibly on human laziness. To overcome the distrust towards electronic signature or electronic elections one has to spend enough time at learning and practising, in order to master the respective technological aspect. At the same time the person sitting at the computer may have suspicions whether his personal data, processed at each action, are sufficiently protected.

It is also essential to inform the society on the possibilities, offered by electronic legal services, as well as of the possible dangers involved in the usage of information technology. Training advanced training, elaboration of printed and electronic study materials are just some of the tools to educate the consumer of service. Psychological counselling may also be necessary. How such activities are organised in different countries may turn out to be one aspect of co-operation and exchange of experience.

6. Security problems in use of information technology

The studies conducted in Estonia show that 51 % of people aged 15-74 consider publishing of personal information in the Internet either highly insecure or rather insecure. Only 27% of people consider it secure or rather secure. The reasons probably lie in insufficient reliability and in the fact that people are unaccustomed to the new technology, but on the other hand also in the security risks related to the technology itself. Immense systemised meta-data may attract criminal element both from the aspects of data dissemination as well as unauthorised procession. Estonia, based on the Act on Public Information has taken the most liberal approach in respect of data publication. Huge part of public sector information is public and must be accessible through Internet. The court decisions of the courts of 1st and 2nd instances and the Supreme Court are public and accessible through Internet, except the cases directly restricted by the law.

The availability of information and liberal approach to proceeding of information may bring along the possibility of misusing the information, but that in its turn may create fertile soil for criminality and also for terrorism. Hereby we should pay essential attention to technical as well as legal measures.

We must grant technically sufficient security and monitoring so that all possible threats could be eliminated in as early phase as possible. In this respect Estonia has decided to avoid creation of mega databases that could be used for criminal purposes.

It must be provided by law who has access to information and to which kind of information. It is also necessary to apply proper sanctions for criminal offences and due processes of investigation.

7. Conclusion

For the conclusion we may say that functioning of the legal system in the information society takes place in the electronic environment. It seems that the time of "electronic state based on the rule of law" is not in the far future anymore. Such environment must be secure, reliable and easy to use. Electronic services should be accessible for everybody 24 hours a day irrespective of the person's location or place of residence.

Creation of such a system calls for reorganisation of the legal administration system, first of all in the Ministry of Justice. Both the legal administration system and the consumers of legal services must overcome a number of psychological barriers or overcome their fear of new technology.

There are certain questions where we consider it necessary to exchange experience with the ministries of justice of the other countries, but also to co-ordinate the respective activities. May we name only a few of them: elaboration of different kind of electronic legal services, achieving the so-called critical mass of the consumers of the services, grounding of psychological risks in the legal administration system and by the consumer of the services as well as granting the security of the services.

REDEFINING THE PROCESS DESIGN

THE COOPERATION BETWEEN THE SYSTEMS OF LEGAL ADMINISTRATION

Courts and prosecutors offices

A new direction in the development of courts information system (KIS) has been taken on year 2000, when ministry of justice decided to execute a thorough strategic analysis of the courts information system. Triggering that process was the need for information system capable of giving and maintaining court-related information and additional organizational resources which different developments so far were unable to sustain. Second important process started on 2001 was mapping of different work-processes in courts in order to find constraints and restrictions in courts workflow, again with the goal to increase the efficiency of courts.

As a result of activities, the main goal of development was defined: to increase the speed of judgments and to reduce the amount of judgements later changed.

When describing the to-be model of courts workflow, all the current work processes were revised and parts of the process, where implementing information technology could bring the complete system to entirely new level of efficiency, were extracted.

Accepting documents. The situation today shows, that reception of documents (mostly on paper), registering them and getting an overview of documents in process through paper media is inefficient as whole and in the situation where receiving of digital documents is increasing. The problems in document processing and handling are planned to be resolved with development and implementation of a standardized and common document-processing environment for entire area of administration (development project JUHIS). The purpose of the system is to ensure the implementation of standardized and digital document processing in all branches of administration (courts, prosecution, criminal prevention offices etc.) Second purpose is to implement digital workflow within the area of administration, which will become possible with exploitation of central registry of documents and should reduce the amount of additional activities carried through in order to maintain paper-based documents. Third most important purpose is the possibility of fast information exchange between establishments and access to relevant information used by establishment according to its role. Fourth aim of the system is to develop so-called special processing layer (based on central documents registry) for courts and prosecutors offices, in which registered, activity-specific documents live on as a virtual file/folder. The meta-information of a specific process will be added to central documents registry, in order to produce a documents view and a process view for a set of documents involved in the process and gathered in a file.

In addition, the system also contains a document-scanning module to ensure digital preservation of all documents and a module for publishing public information and documents over the Internet. Technology behind the system is Microsoft .NET platform, on which additional developments

are made. The system brings no additional user-interfaces for the end-user, as the system is being used entirely through web-browser and Microsoft Office software. In addition, digital signing module is to be added in order to ensure the value of proof for digital documents exchanged between different establishments and between establishments and citizens.

In the scope of document processing issues like standardization of courts documents and unified numbering of legal matters in the state (in order to better understand the sequence of cases and movement between court instances) are under discussion.

Sharing of cases. In order to get faster verdicts and judgements in different legal matters and in order to more efficiently plan the potential of judges the project of sharing the cases has started. The essence of the project is to implement first-in-first-out (FIFO) principles in legal proceedings. From certain point all additional cases for judge will be suspended in order to let the judge process currently in hand cases faster. Based on the Goldratts theory of constraints, number of optimal cases in hand is worked out. Rules of sharing: sharing new cases between judges the "normal amount" of cases per judge is to be considered. As proposed, "normal amounts" are:

- Criminal- and administrative: 15 to 20 cases simultaneously;
- Civil and administrative offence cases: 30 cases simultaneously.

New cases will be shared between judges working below the limit of "normal amount". If the limit is reached then all new cases remain on hold until a judge finishes a case. As it is important that important cases would not get suspended, a set rules has been worked out for cases on which FIFO will not apply. A sub-purpose of the project is to work out a measuring system for judges through comparative results.

A separate procedure for preprocessing the appeals and complaints will be created in order to avoid faulty cases to be entered in FIFO.

Preparation of lawsuit (the legal matte). The idea of that phase is judge and a consultant working as a team, letting the consultant take care of technical preparations, leaving juridical matters to judge and court hearing. The plan is to make all the information necessary available through document-handling system to get a good view of the process, supervise the consultant and save judges time.

Investigating the circumstances. One of the biggest problems nowadays is nonexistent, insufficient or inoperative access to information necessary. To provide consultants and judges more secure and faster access to other state registers and databases is one of top priorities.

In that matter huge amount of work has been done by States department of Information Systems (RISO) in project Crossroad, X-road (X-tee). X-road is a working name for the complex integration and service layer of states registers and databases. (See x-road)

Inviting to court, coordinating sessions. The main reason why processing in courts stall, is cancellation of sessions. Therefore the ministry plans to significantly reduce the risks while planning the sessions by implementing electronic scheduling of court hearings in all courts.

Processing a legal matter is slow when unreal dates of hearings are set because of unawareness of other parties' schedules. Therefore, a set of rules should be established how to harmonize dates of meetings or sessions, how to book additional resources necessary and if no longer necessary how to release resources.

Another big problem nowadays is the lack of information about process parties' whereabouts. In the future, invitation to court is considered delivered, when mailed to address found in the register of population (including e-mail). In the future, every citizen must have an address, PO box or e-mail address that he/she regularly checks in order to ensure proper reception of correspondence delivered.

Coercive means of bringing a person to the court should be developed to be more operative. The idea is: parties in process will assure the presence of witnesses in court. Complainer must inform the defendant. If complainer could not, and informs the court, then the court will help or will judge without the defendant present.

Technically, implementation of teamwork software (MS Outlook with Exchange) is in progress even today, in order to have secure and centrally administered e-mail accounts and possibility of booking resources and viewing calendars. Solution provides a possibility of central contacts management, which allows different establishments to find specific contacts from another establishment fast and from one user interface (MS Outlook). It is planned to link Outlook with

document handling software, so that notes in calendar will point to specific materials in court or in criminal process.

Deciding/Judging. Main problem in that phase is lack of access to information needed for deciding or passing the verdict. This concerns mainly the register of legal acts and court verdicts in force. Official texts of legal acts on paper will be replaced with official digital online Register of Legal Acts (Elektroniline Riigi Teataja). As another source of information, digital database of supreme courts verdicts is already available for use. Register of verdicts from first and second instance of court (finished in fall 2001) should also become a very useful source of information. Important is to achieve critical mass of verdicts in the register and simplicity of finding necessary verdicts.

To reduce the amount of work done two times and to improve exchange of information between prosecutors offices, courts and police, implementation of criminal processing register (ver. 1) will begin shortly. Register in question contains mostly meta-data about criminal process (since most documents are on paper), but also offers a possibility to add digital documents. Different preliminary investigation offices (Customs, Border Guard etc.) will use the register over web-based user interface. At this point only exception is police; special interface is being developed to integrate police information system POLIS with the register of criminal proceeding. The system will be piloted this spring.

As a future vision, ministry of justice wishes to integrate the registry of criminal process with ministries document handling system, where different establishments use the register through web-based user interface (except police). This register will then be the basis for fully digital criminal process file, and later on, fully digital legal matter file. System is designed to be central, but user-specific views of the information may differ.

Major congestions today in implementing solutions described, are most of all end-users awareness and skills in information technology, the insufficient condition of hardware, telecommunications, inertness of court system, and constant philosophical and meaningless disputes how all this is going to affect the institution of courts independency.

IMPLEMENTATION OF DIGITAL PROCESSING IN DIFFERENT ESTABLISHMENTS

Digital processing - why?

Although digitalization of documents is a natural process, it should not be artificially forced in conditions, where it brings no actual benefits for the organization. Therefore, the change in process with implementation of such new method should not be only formal. One of main goals in implementing digital document processing is to revise and change the process itself. After analyzing the needs and possibilities, preparations for creating "paper free office" began in summer 2000. The project eBüroo (eOffice) started.

Benchmarks of organizational changes

Through out the history, many processes have developed in paper processing which would be wise to give up. Even necessity of some structural units should be revised. Therefore, 4 principles were stated for future consideration:

- Optimization of movement of document in organization – not every document needs decisions from administration
- Decision-making and responsibility should be brought closer to creation point of document.
- Although not every document gets resolution from administration, using digital workflow and document handling gives administration means to intercept when necessary.
- By increasing the document creator's level of responsibility it is possible to leave out formal steps from the "ladder" of synchronization.

Assumptions

As the level of information digitalization is constantly increasing it will soon be possible to talk about fully digital processing, which covers the whole lifecycle of a document. Implementation of fully digital solution in real proceeding can not happen without legalization. In Estonia many important steps have been taken towards fully digital proceeding, legislation now allows digital proceeding in states official management.

First of all, since last summer it is allowed for a government establishment not to produce physical documents on paper, if possible otherwise.

Secondly, we can talk about fully digital proceedings only if documents circling institutions are digital and have a value of proof, which means that they have a digital signature attached. Digital Signatures Act that in standard situations equalizes manual signature and digital signature makes that sort of solution possible. The implementation of digital signature takes part in cooperation of 5 ministries.

It is clear that interorganizational cooperation cannot be implemented if there are no official and commonly accepted standards. In that matter, the Chancery of State has started Document Handling Program for Government Institutions (DHP). DHP is interorganizational cooperation program for developing digital management. The purpose of DHP is to define common content-handling principles for transition from paper-based documents to digital documents in official management. The implementation of digital management will increase the speed of document processing and improve the availability of documents, will make public management more transparent and give better overview of activities. The results of the program will provide citizens better access to government institutions' public information. According to one of the decisions of the DHP Board, future efforts are directed to accelerate the implementation of open standards, most of all, implementation of XML-based solutions. Quoting the announcement: "Implementation of xml-based document standards will assure the common use of documents in document registries, internet services, document exchange and composing descriptions for archive. It is important to work out templates of both content and layout for commonly used documents, so that the documentation created in an institution would be evenly understandable for everyone"

eBüroo (eOffice)

Back to the project eOffice. When choosing organizational unit for piloting, ministry of justice itself was chosen. The possibilities were favorable – unit was almost 100% equipped with (PC) workstations and many digital routines in workflow were accepted and in use. First documents handling program got implemented couple of years ago, also groupware solution (MS Exchange with Outlook) was in use.

The need was brought out by parts of ministry itself: ministry was divided into 3 buildings in 2 cities and movement of paper between them was slow. In addition to that, existing document-handling program was commonly unpopular and suffered from lack of support. So, the necessary level of integration with other applications was never achieved.

The creators of necessity were different public responsibilities – the Act of Public Information demands a large variety of information to be published over Internet. Also, a very new form of correspondence was stated – the request of information – which, when passed electronically, demanded answering within 5 days. Compliance with observance of such requests has significantly changed communication with private sector: public sector must be very active while presenting the information required.

Considering previously stated needs and necessities the goals for eOffice were set:

- To increase the efficiency of process and to bring the responsibility closer to the creator of the document (system must ensure, that documents do not lay on someone's desk untouched, simple documents linking mechanism lets people to focus on finding relations between contents, not finding just documents);
- To provide fast and accurate information for administration (Is someone overloaded, who has missed deadlines etc.);
- To accelerate the process itself (search engine reduces time spent finding a document, time is saved by NOT actually moving any physical papers/documents);
- To increase the transparency of process and tracking of changes (who is working with the document, how big is his/her contribution, what are the deadlines, where in the "ladder" of synchronization is the document);
- To increase the systems ability to bring all public information to common citizen with maximum efficiency;
- To give a basis for future critical revision of organization (whether the path of document is optimal, whether all the steps are even necessary)
- To provide public servant with more flexible and user-friendly working environment (smooth implementation of applications, working at home etc.)

- To get experience and basic modules for expansion of fully digital documents processing for whole area of administration.

Implementation

Implementation is in progress at the time this report is being written: introduction of concept and solution developed is going on in all levels of administration, testing and integration is in progress too. Microsoft products are chosen to serve as technological platform: the heart of documents management is SharePoint Portal Server, workflow is being handled by Exchange and Outlook and for the first time Estonian version of Office XP is being implemented. The base of scanning module is Kofax Accent Capture. Still open is the development of archiving module, because government institution must follow a set of very strict rules of digital archiving, which are not yet stated. Also, a web-accessible terminal server version is in use and has received very warm welcoming.

Although Microsoft products are widely used, it does not rule out use of other products in other organizational units. To ensure compatibility of different components, the ideology and rules of development must be very strictly stated, according to which components are created. Basically, organizations ability of digital communication between other organizations relies completely on components and compatibility of their outputs. Project JUHIS was started in order to create such ideology and conception. The branch of interorganizational document exchange moves towards the use of central DHP outputs XML and DTD.

JUHIS

Ideology

JUHIS (Management Information System for Legal Field) is not so much a solution than an ideology for creating a solution. Main structure consists of 2 layers:

- Standardized base-modules that are the same in every establishment's information system;
- Standards for creating specific processing layers, if such necessity should arise. Standards must assure, that object which has passed or is a result of establishments special process (courts decision for example) is usable in any other information system built using JUHIS ideology and base modules.

Process management

Focusing on changing work processes, a completely new term "process management" is in use. Process management in the context of JUHIS is an object that joins together so far independent components: managing documents, teamwork and workflow. Central object will be the case in hand. With creation of document (or with scanning the document or receiving a digital document) an object is defined in documents register. Then, various elements from various subsystems will be joined to the document (the workflow is created). While processing the document, cooperation between people is necessary in form of e-mails and meetings and coordination. An overview of the process is then created for the user interested, giving him/her a glance to the whole process: document itself, its annexes and related documents, guides and resolutions, deadlines etc.

Modularity

Modularity is an important part in whole ideology, which brings out different linked modules in the system. It must be possible to implement and use the system even if one or more modules are missing. Each and every module consists of basic functionality that is same in each establishments information system. That allows focusing on developing special processing units and should ensure more efficient implementation of innovations.

Defined modules are:

- Scanning module
- Registering module
- Document handling module
- Indexing and search
- Workflow processes module
- Teamwork module (groupware)

- Publishing module
- Archiving module

Unified standard allows centralizing modules – for example it is (in principle) possible to create one document-handling base for all courts or central archiving for all area of administration as one component. One idea, which needs more thorough risk and efficiency analysis, is a center for all branches of administration, which digitizes all incoming mail and prints out and sends all outgoing mail.

Simpler idea is to gather all databases in one storage management system. All demands for such developments are met – ministry of justice and establishments in the field of administration are connected in fast data transmission network via secure VPN solution.

Central databases are also very good examples of the idea. For example, centralizing the personnel management system Persona last year: all the databases in establishments (ca. 35) were gathered and one central database, located in Tallinn, was created. All the data is now updated centrally and now more reliable information is available online. The changes and benefits for the organization: formal interaction has reduced – paper reports from different sub-institutions are no longer needed. the Chancery of State also demands statistics about the personnel information, providing this year's statistics will be uploading a XML-based file.

Ministries databases, such as commercial register, register of persons detained in prison, database of court decisions of the 1st and 2nd instance and the bailiff's information system offer even more wider possibilities of cooperation for institutions outside the ministry.

Interorganizational cooperation

In development and implementation of process management there are 4 logical levels, which differ in the number of establishments involved – expanding the system and inclusion of institutions and users groups must be smooth but thorough to define needs of a specific group. The 4 levels mentioned are as follows:

1. One establishment (piloting) – process management will be implemented within one institution only. For readiness and necessity, the best organization would be ministry itself. Within the project eOffice basic components and special processing layer will be created in accordance to JUHIS ideology.
2. Between the establishments of same kind (courts or prosecutors offices) – application will be created on the basic modules and will be implemented in all establishments (all courts, for example) that have sufficient technological base. As an example, we may name a pilot for testing document-handling software Amphora. This step helps to standardize and systemize document management in order to map fully functional special processing layer. Also, ideology and technology different from Microsoft is tested – Amphora is web-based application using open source components.
3. Between the establishments of different kind – when every establishment has its own special processing layer, where compatibility of documents is ensured already in the basic components level, developed then these establishments are able to communicate. In this phase exist 2 different sublevels: movement of legal matters between different instances of court and in full version movement within area of administration following the logical path: prosecutors office -> court -> prison or other sort of enforcement -> probation office.
4. Communication outside the legal sphere – documents exchange over XML according the states standard of documents handling and exchange. Most of this phase should be possible to implement after completion of phase 1 – ministry of justice, as a unit with biggest correspondence, is capable of fully digital communication with other government institutions ready. The use of complex special processing layer in interorganizational communication will be very small, except for police (logical step in process of criminal proceeding).

To summarize: with sufficient standardization and implementing principles of modularity and storage management it is possible to achieve a situation where data banks are put, unnecessary doubling is absent, between establishments move only references to data, and the use of that data requires nothing but rights to access...

eJustice

According to cooperation agreement between Ministry of Justice, Ministry of Economical Affairs and the Chancery of State of joint implementation of digital documents management a pilot eJustice was started.

Projects purpose was to implement electronic coordination and processing of draft laws between 3 parties and propose possible solutions for legal regulation of fully digital processing.

Objective

One of the results of this project was a simple working environment called eSpace, where all the draft laws and all information according were available. One could get information about the whole lifecycle of a draft (the working group that created the draft, their contacts, deadlines, various comments, questions, drafts yet to come, search engine etc.)

With the development of new coordination system several other processes started in order to change existing legislation, create new and to change current working arrangements.

Successful testing and stating terms of use preceded implementation of full-scale system. The results of the pilot were positive and eJustice, currently under development should be in use in all ministries by the fall of 2002.

The projects objective is changing existing process of coordinating draft laws. The changes to come may be divided into 3 groups:

- Changes in public servants working arrangements;
- Changes in the inner working arrangements of the institution (a very inert and relatively closed system)
- Changes in the communication process between establishments

Regardless of the fact that technological solution for eJustice is yet under development there is possible to make first conclusions of the results its implementation will bring.

Legal base

The criterion, that development of the public administration and implementation of information technology must take part simultaneously, was stated in the very beginning of the project.

Complexity in that matter will be creating flexible and appropriate legal ground on one hand and development of technical solution facing the needs of its consumers on the other. One cannot exist without another – implementation of information technology in public sector requires rather complex base of legal acts (needed to execute power invested in the government by law).

Transparency

Implementation of eJustice brings very principal changes in the way documents are published. The main purpose of government institutions – to process incoming information, modifying it of necessity and in the end stating it into one commonly understandable document – will remain the same. Information technology and the use of Internet will open whole new perspectives in publishing information available.

It is true, that from the establishment's point of view, it could mean additional obligations for the establishment – for example changing the process of work so that the latest version of some draft would always be available at institutions home page.

On the other hand, public servants work will become more efficient and easier with the possibilities to monitor the coordination process, to make additional proposals, search etc. Most of the requirements mentioned are already stated in the law – the Act of Public Information requires publishing its correspondence on its website from all government institutions.

Administrative bureaucracy

While designing the eJustice system, various public sector specific circumstances had to be considered. Bureaucratic communication is often described with very strict requirements of documents

layout, strict requirements of coordination and superscription and following of formalized processes. At the same time the activity of public institutions is characterized by the huge amount of different documents, therefore issues of archiving are in the scope of the project. The problems concerning archiving are yet to be solved.

Time

One of the results of implementing eJustice is better and more flexible use of time and teleworking in the future. Although, there have not yet been thorough discussions on the results of implementing such working style.

Situation in hand

What is the situation in hand, are all the presuppositions for interorganizational digital processing of documents already achieved? The main problem at the moment is different ways of keeping information – some documents are on paper media, others are stored digitally in different formats. Still, most of the documents are created in computer and the document on paper is a simple copy of digital information (or is it vice versa?). Nation-wide projects for standardizing digital documents (such as XML-format for draft laws) have already started.

eJustice: Post-implementation changes in working environment:

Changes in planning the activities

The widening scope of the objectives of public administration, implementation of new technology and the growing amount of information accessible by civil servant makes the completion of tasks of public management harder. In addition, the amount of tasks is growing but uncontrolled expansion of public sector rather reduces efficiency.

Changes in planning the activities using eJustice are:

- Change of the form how proposal of creation of draft and the draft itself are presented;
- Possibility to monitor the status of the draft, flexible system of setting deadlines, electronic notifications of changes in status of a draft;
- Changes in planning of work at the level of civil servant – possibility to more efficiently use groupware, chance to make personal schedules, possibility to monitor the status of draft created;
- Changes in planning of work at organizational level – more accurate definition of workload and separate tasks. As draft laws are sent to all ministries for coordination, there is a possibility to better understand other ministries directions in work.

Evaluating changes in comfort of coordination

Evaluating changes in comfort of coordination can be done from the level of public servant using the solution. A few mistakes have been made when the need of comfort of use is underestimated as the practice shows, that ignoring the issue of human comfort very often leads to failure of projects. Creating a new technical solution can never be an objective itself; the objective is achieving efficiency through implementing technology, valuing the needs of people daily using the technology.

Changes in comfort of coordination are as follows:

- Possibility to monitor the draft through the process – awareness of the status of the draft, the changes made etc.
- Increases the amount of work done with computers – ergonomics of the workstations should be reevaluated
- Quick access to already processed drafts and other documents;
- The need of transporting papers will reduce; all activities can be done with computers (using e-mail, web-browser, Outlook etc.)
- Standardization of the forms for publishing and coordination of draft laws.

Evaluating changes in speed of coordination

The benefit of eJustice is probably most visible and measurable in the change in speed of coordination. Change in speed is mainly reducing the time of physical transport of documents from point A to B – it is no longer needed and will be replaced by instantaneous transfer between computers.

The reduction in speed of coordination consists (presumably) mainly of time saved by removing physical transportation of documents.

The draft law is coordinated with a letter where remarks and proposals to the draft are stated. In digital coordination similar letter is produced, but delivering it is different (paper is replaced by digital means of communication).

Implementing digital documents management is an innovation that will not (presumably) reduce time spent working with the document. Reading the draft, stating remarks and proposals and formulating them into a letter of coordination takes time. Practice has showed that time spent coordinating a draft is in correlation with the volume of the draft and the complexity and importance of the issue handled in the draft.

When coordination letter or coordinated document or application for extending the coordination time is not received during 15 days then the draft is considered coordinated. The pilot eOffice increases significance of so-called silent coordination. The drafts are sent to all ministries for coordination. As the draft usually concerns only a very narrow field of interests only a few ministries react. Therefore, in global relations silent coordination is expected to prevail.

Conclusion

The purpose of project eJustice was mainly to simplify and to reduce time spent on coordination of various drafts of acts. The result does not only depend on the existence of environment needed; but also requires efficient intra-organizational management of public business and possible revising the superscription process.

Ministry of justice has started a pilot eOffice, conclusions made while piloting applies at least in some extension to project eJustice as well. Solutions are needed for problems concerning most of all signing and endorsement of documents because incompleteness and unclearness in the documents path of coordination causes delays in the process. eJustice's impact on inner-organizational structure may be as follows:

- It presumes 100% of workstations to be equipped with computers. In the organizations participating in project that level is achieved.
- Necessity to thoroughly define moving paths of documents and remove contradictions from the process.

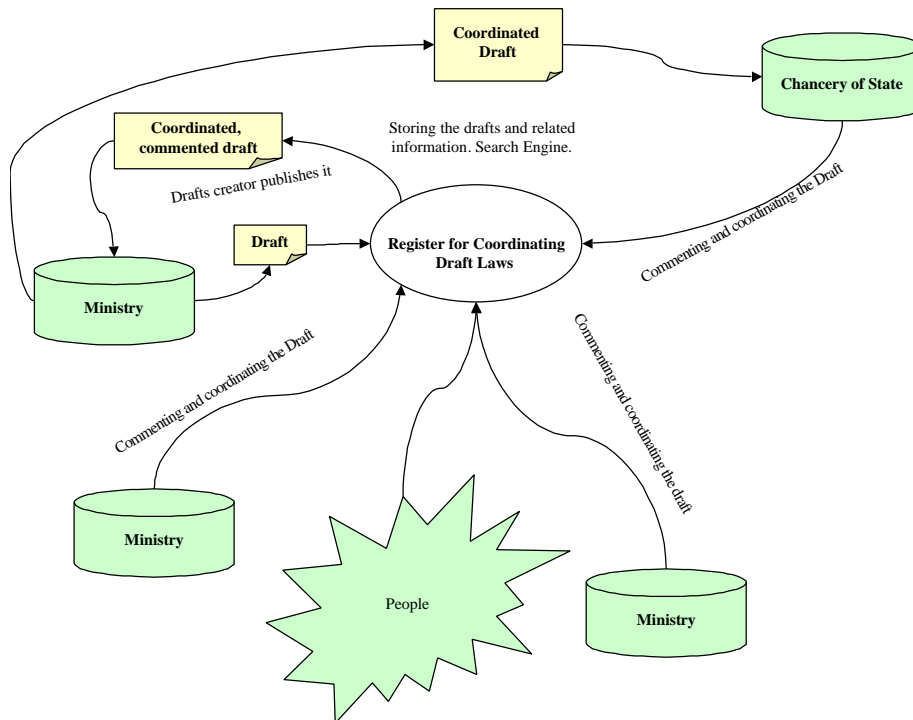


Figure 1: The eJustice system

CHANGES IN THE TECHNICAL ARCHITECTURE

Digital document and digital signature

The common objective for implementing digital signature is to create a possibility for institutions to use fully digital documents in work processes. To replace common paper documents with digital ones, problem with the digital data's value of proof must be solved. In other words, the value of proof of the digital document (which is nothing more than a series of bits and bytes) must be guaranteed: one must be able to identify the creator of the document, the date of creation and whether the document has or has not been changed after signing.

The main objectives for implementing digital signature are:

- To make public services more comfortable and accessible for the citizens and to increase the quality of the service;
- To reduce the expense and increase the efficiency of public service.

Digital signature is a complex set of data created using technological and organizational means, which the signer uses to mark its connection to digital document and that the receiver of the document uses to verify the document's signer, signature date and document's integrity.

Digital signature in technology is a HASH function's result of the document encrypted using asymmetrical cryptographic algorithm (RSA). X.509 certificates are used to link the private key used in encryption process to a specific person.

While signing the document, a certain abbreviation (HASH) of the document is created, which gets encrypted using a private key linked to a specific person. The result of that process is digital signature – link between document and person that excludes the possibility to change the document against the signer's will.

All the technology behind digital signature is complex and probably unnecessary for the citizen to know – technology is old and has proven to be useful in everyday practice. For the common citizen it is enough to have the will to sign digitally and to have the instruments to do that – whole process is point-and-click and made as simple as possible.

The instrument of giving digital signature is an infrastructure that, on one hand, enables the person to execute its will to sign digitally and on the other hand ensures the protection of the secret and personalized information needed to sign digitally.

The most common ways to protect data is to establish password-protected access to a database, to a file etc. In more complex systems using magnetic or chip cards alongside the passwords increases security even more. Estonia has chosen the way, where so-called common instrument for digital signing is united with the domestic personal identification card – ID card. It is decided that PIN-protected smart card ensures necessary protection for information needed to give digital signatures.

To give a digital signature citizen needs ID-card with all the necessary certificates, a computer equipped with smartcard reader, Internet connection and a digital document to sign.

ID-card as a document for personal identification and a tool for digital signing.

The ID card is the new generation's identification document, which works as an instrument for giving digital signatures. ID-card is a primary domestic identification document, and can be used to sign documents digitally.

The ID card is a document for domestic use and is mandatory for all Estonian citizens and permanent resident aliens over 15 years of age. The Citizenship and Migration Board issue the card.

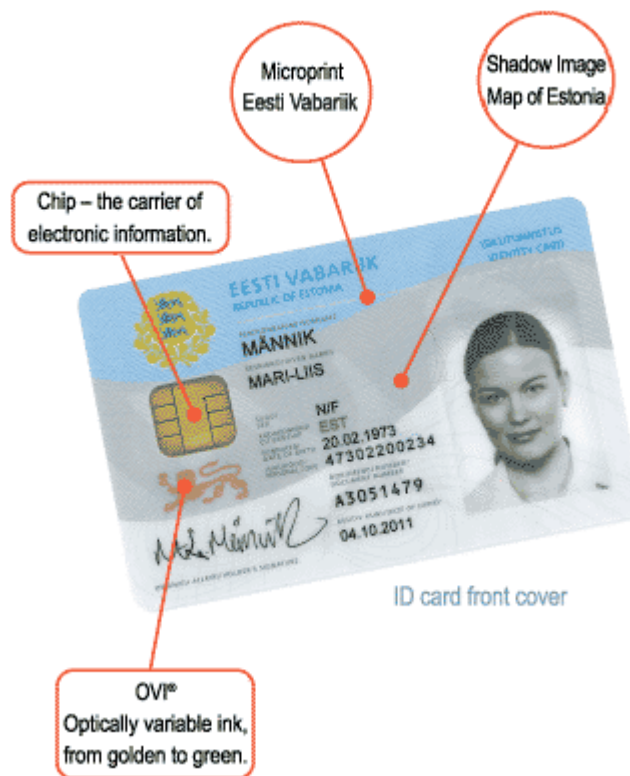


Figure 2 Estonian ID-Card Front Cover

The ID card contains the holder's surname, given names, sex, citizenship, date of birth, place of birth, personal code, photo, signature, date of issue and date of expiry, and document number.

For resident aliens with valid papers, the ID card also contains residence and work permit data. In addition to many security features, the card has a machine-readable code and a chip, an electronic device containing the visual data on the card and two security certificates (long number series) to verify the individual and supply digital signatures.

The card's chip contains only the personal data printed on the card as well as the keys and certificates used to verify them.

The ID card is the most state-of-the-art and counterfeit-proof of its kind. The Swiss company Trüb AG manufactures the cards, with information printed onto the card in Estonia, where the security of the new technology is painstakingly monitored. The number and complexity of physical security elements is overwhelming, and the holder of the card is only one who knows the PIN codes and PUK code necessary for using the card electronically (signing documents digitally, for example). The authenticity of the digital signature is verified and conveyed to the other party by the Certification Center Ltd, which maintains a list of suspended and revoked security certificates.

In size, the card is no different from a bank or phone card. ID-card is not a future project - it is reality.

X-tee (Crossroad)

The aim of the X-road program is to develop software, hardware and organizational methods for standardized usage of national databases. X-road is a unified service layer for national databases.

X-Road is the modernization program of national databases with the aim to change national databases into a common public, service-rendering resource, which would enable agencies, legal and natural persons to search data from national databases over the Internet, provided they are entitled to do so. At the same time, the system will ensure sufficient security for the treatment of inquiries made to databases and responses received.

The creation and development of public administration databases has so far been decentralized. National databases have been predominantly formed technologically and periodically independently from each other. The central management and regulation of data exchange at national level has been avoided so far. The development of databases has so far been directed through the IT financing mechanism.

X-road project was started for various reasons, most of all because information systems in Estonia had reached a level, where increasing amount of data processed required more and more connections between databases. Various IT development projects were developing basically the same things: building interfaces between different databases.

Second, standardized interfaces will be developed, which enable to increase the dialogue between citizens, state and private organizations on one hand and their communication with databases on the other.

Third, unified authentication module for communicating with the systems is to be developed. At the moment, reliable authentication service is purchased from banks that are between citizens and national databases.

The service of X-road consists of various set of queries, which have been solved in three different ways: a citizen accesses the service through "citizens portal", a organization accesses the services through a bit more complicated portal or through a special interface.

Most of the databases are based on commonly used platforms such as Oracle, Informix, Progress, Sybase etc. with standardized query languages (SQL). As operating systems, MS Windows, Sun Solaris, IBM AIX etc. are used.

The technical solution for the project is not migrating all databases to one platform, but creation of unified user interface for all databases.

States XML-RPC services consist of many functions, usable over Internet, to access databases and other services in different public organizations. Some databases are already accessible through web-browser, some through custom-made user interfaces.

As a rule, those services are not commonly accessible, but accessible to limited number of people and organizations over secure channel.

In the first stages of the pilot project the technological possibility to access certain data of the Citizenship and Migration Board and the Motor Vehicle Center was realized.

In the 2nd phase of the project lot more information services will be added and administration of the system will be improved.

Technologically, the system consists of Python modules, which are imported to Python based freeware application server Zope. Zope supports XML-RPC and enables M2Crypto library to be imported for use of encrypted channel. At the same time, technology is not restricted to Python/Zope, suitable applications can be successfully produced using PHP, Perl, Java etc.

Vision for 2003

- The citizen can get information from national databases, a common data storage, within his or her limits of authority 7 days a week and 24 hours a day.
- The civil servant can use all national databases in the decision-making process within his or her limits of authority.
- The entrepreneur can use information included in national databases for carrying out business.
- The state has become more transparent, integral and intelligible for the citizens.
- The administration and development costs of databases have decreased by 30 % in total; thanks to the unified user interface it is easier to use databases.