The National Concept of eGovernment

Ministry of Finance
of the Slovak Republik

Contents

Executive Summary

1. Executive Summary

The Slovak Republic Government ("SR") approved the eGovernment Strategy of the Slovakia through SR Government Resolution No. 131/2008 of 27/02/2008, wherein it defined the vision, strategic goals and directions of eGovernment in the SR until 2013, including managing structure, implementation plan and framework funding sources for strategic goals implementation.

Another binding step of the SR Ministry of Finance ("MF SR") in the field of eGovernment at the national level is the National Concept of eGovernment[1], which is based on SGGI, Act[2] on Public Administration Information Systems ("PAIS") and also supports implementation of the government program resolution of August 2006 with an indicative implementation horizon by 2013.

The implementation of the eGovernment strategic vision needs to be built on a conceptual approach, which sufficiently coordinates, manages and measurably monitors the process of eGovernment. The conceptual and systematic approach will enable the establishment of conditions for the improved provision of public administration services to the public, comparison of disparities in the field of information-communication technology implementation ("ICT") between state administration and local self-governments, and improvement of the Slovak eGovernment level in light of European Union ("EU") assessment criteria[3].

eGovernment is a controlled process establishing conditions for efficient ICT application in government processes, as well as a controlled process introducing ICT itself into public administration in the Slovak Republic.

The legal framework supporting ICT application in the public administration, satisfactory infrastructure and efficient digitalisation of government sections is crucial for ICT application in public administration. Their concurrent formation, along with the necessary political, institutional and implementation support, will lead to the expected contributions of eGovernment for all social life stakeholders – citizens, businesses, public administration and other public[4].

The document „The National Concept of eGovernment":

- **Defines the framework of eGovernment** for the administration service processes to be efficiently digitalised throughout the entire public administration structure;
- **Defines eGovernment principles** for the activities of public administration entities in ICT application to follow a concept resulting in the digitalisation of administration service processes, provision of efficient public eServices, and also to support a government program resolution with respect to public administration modernisation;
- **Defines the architecture of integrated PAIS** for public administration to provide the public with all types of information, communication and transaction eServices via various access channels, and to also establish conditions for their efficient provision.
- **Describes a conceptual approach, which is to be applied by PAIS administrators in the eGovernment of the relevant administration sections;**
- **Defines a framework of priorities**, which will start up the process of efficient eGovernment.

---

1 Section Par1 Letter j) of SR NC Act No. 275/2006 Coll. on Public Administration Information Systems and change and amendment of certain acts as amended.

2 Act No.275/2006 Coll. on Public Administration Information Systéme and change and amendment of certain acts as amended

3 MTPT SR. June 2005. Process, organisation and data model of pub lic administration service digitalisation. P. 24.

4 The term "public" defines all entities, except for public administration entities.

Executive Summary

The National Concept of eGovernment introduces a new approach to eGovernment, especially through focusing on the digitalisation of administration service sections in line with objectively defined competencies of state administration and local self-government. Application of the stated principles, priorities and PAIS development, in line with the integrated PAIS architecture sides, PAIS administrators will result in a qualitative change not only in the provision of public administration services to the public, but also in administration services themselves.

The concept is based on the current situation in SR eGovernment and on implementation approaches, the so-called best practices from other countries that reached the highest levels of eGovernment. Practical implementation of this concept will establish conditions for the processing of official public matters via various electronic means, reduce unproductive time spent over administrative matters, establish conditions for reduced administrative fees and eliminate multiple performances of identical actions. Public administration will be more efficient, more transparent. ICT implementation into administration service processes will eliminate paperwork through the gradual transfer to electronic documents processing and electronic communication with the public and other public administration bodies.

Using various access channels, the public will be able to select the relevant form related to a given matter, complete it, clearly authenticate it using an electronic signature, and submit it for processing. Integrated PAIS will enable request processing without requesting the relevant attachments, provided such data is already included in the existing PAIS database. Communication between respective PAIS will respect security features, EU standards and MF SR standards[5].

[5] Section 4 Par.Letter c) of Act No. 275/2006 Coll. on Public Administration Information Systems and change and amendment of certain acts as amended.

Introduction

2. Introduction

eGovernment is embedded in government programs and programs of political parties as a significant tool for public administration modernisation supporting the optimalisation of public administration functioning and improving public services.

The following are key reasons supporting eGovernment:

- Public administration should satisfy statutory demands and rights of the public, as well as enable the observation of public statutory duties towards the state and the municipality.

  The public expects the quality of public administration services to be comparable with the private sector, especially as far as accuracy, timeliness and availability are concerned.

- EU accession and growing Slovak competitiveness increase the number of public administration interactions, which raises demands on administration services.

  Frequently, the only possibility to manage administration is through supporting personnel capacities. On the one hand, the bureaucratic apparatus significantly contributes to the internal stability of countries; however, on the other hand, it slows down innovation processes that could improve work efficiency. Increased administration volume raises demands placed on internal decision making processes, which leads to further growth of direct and indirect costs.

- Complicated and qualified decisions supporting national competitiveness cannot be made without current and suitably processed information.

  Experiences and lessons learned in projects implemented in the surrounding countries point to the possibilities of efficient management resulting from the development and practical use of new information-communication technology. Recently, such proven efficiency improving solutions are being preferred over historically stable, bureaucratic practices.

In its program resolution of August 2006, the Slovak government adopted eGovernment through a declaration on the formation of a knowledge society, which it considers to be its priority. The Slovak Republic government considers information society to represent a key element in the development of knowledge society. It is included in all key parts of its program resolution. With respect to eGovernment , the following is declared:

- "The government will establish conditions for the efficient coordination of public administration bodies in the field of information society;
- The government guarantees citizens Internet access to all information generated by the public administration and to be legally accessible;
- In contact with public administration bodies, the government will enable citizens to use electronic communication as a fully-fledged alternative to written communication. In selected publicly accessible state institutions free access points will be provided for electronic communication with public administration;
- The government will continue in improving the digital skills of public administration personnel."

eGovernment Advantages

eGovernment results in efficient electronic administration services significantly contributing to improved efficiency in the provision of services to citizens and businesses, in the performance of the administration services themselves, and in the mutual interaction of public administration bodies. Contributions especially include the following:

Introduction

- Increased transparency of work and the related public administration accountability towards citizens, businesses and other organisations, which will increase the level of public control over public administration;
- More efficient activities and a minimised cost of public administration functioning;
- Minimisation of time necessary for the handling of matters and limited administrative load for the public in communication with public administration;
- Improved availability of information, especially in cases where the public needs to contact several authorities to collect the necessary information through the "one-stop shop" concept, meaning institutions provide citizens and business with all information and services under one roof;
- Opening of new public eServices and increasing citizen involvement in the administration of public matters to increase democracy;
- Improved quality of management processes and public output.

Just as stated in the adopted eGovernment strategy, eGovernment advantages can be summed up as follows:

- **The citizen will get more**
  - through the possibility of using electronic public administration, the citizens will get equal access regardless of regional and social disparities;
  - public administration will be closer to citizens, public administration services will have improved availability, and citizens will have the possibility to handle official matters from any place with information system access
  - general information availability for all citizens will increase and the corrupt environment will be eliminated
  - **The state will pay less**
  - the system of public administration functioning will become more efficient, services will be optimised, and new services introduced
  - **Slovakia will become a preferred business destination**
  - conditions improving the business environment will be established
  - appeal of the Slovak Republic to foreign investors will increase
  - the effect will be multiplied for the establishment of a knowledge society

Current Situation

From 2001 to 2006, several strategic documents were prepared. Action plans were developed, which resulted in the implementation and opening of only some selected eGovernment eServices to the public.

Despite the adopted strategic documents and action plans, spent resources and verbal efforts to advance eGovernment, Slovakia ranks among the lowest in the assessment of eGovernment services among EU member states.

On the other hand, stating that eGovernment has stagnated completely in the SR would not be accurate. Slovakia has advanced, but more slowly than the EU average.

Introduction

The following graph presents a comparison of full service digitalisation increases with other EU states from 2001 to 2007[6] (Fig. 1)

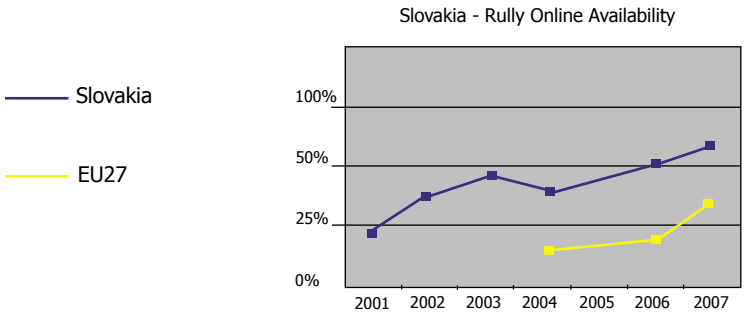

Fig. 1 – Comparison of full service digitalisation increases in Slovakia and other EU member states

Based on analyses described in several documents[7], causes of the current situation may be summed up in several specific groups:

- Insufficient links, management coordination and measurable control of implemented eGovernment tasks

In previous years, government resolutions adopted several tasks[8] in the field of eGovernment. Since the tasks did not have sufficient links to state budgets, nor the government legislative tasks plan, not many were implemented. Further, there was no efficient system of management, coordination and measurable implementation control. Local self-government was not included conceptually into the process of eGovernment, despite the growing tendency of the scope of its competencies and responsibilities.

- Missing political support of eGovernment , as well as a lack of ambition to efficiently change traditional administration service processes

Political support is a prerequisite for the efficient implementation of the eGovernment process, since public administration represents the political-administrative system of state functioning. Managing eGovernment only through government resolutions is not effective enough. Government resolutions do not possess any legal power and are not binding for bodies comprising public administration. Successful eGovernment depends on the allocation of sufficient financial resources, as well as the will to change the public administration system and organisation of work and optimise and integrate administration processes to improve the efficiency, scope and quality of public services. Changes in public administration work procedures and organisation especially depends on political will.

- PAIS functions autonomously, without any mutual interconnection, just like the relevant databases, which are neither available online nor usable for legal acts

In public administration, there are many implemented autonomous information systems[9], i.e., in some cases, IS without any mutual interconnection with varying architecture and quality which represent sufficient solutions. However, their complex overview is missing, especially for local self-government. The respective systems meet various requirements of their administrators, who build them especially through own initiative approach and not in coordination with other PAIS administrators. PAIS functions autonomously, without any mutual cooperation. Information is used in isolation, which results in repeated data structures, multiple collection and processing of data, and inefficient use of existing information sources, as well as a loss of financial resources and time.

6 Capgemini.p. 77. Available at:http:/www.capqemini.com/m/at/EU eGoverment Report 2007.pdf
7 Information audit, Process, Organisational and Data Model of EGovernment , National Strategic Reference Framework 2007-2013, Operation Program Information Society, EGovernment.
8 For example: egovernment Strategy of Slovakia and Action Plan in 2004, including its updating in the following years. Action Plan for Information Society to Slovak Competitiveness Strategy until 2010. 2005, Road Map of Public Administration eServices Introduction, etc.
9 The following may be considered the most important PAIS: Tax IS, Customs IS, Register of Citizens, Small Business Register, Business Register IS, State Treasury IS, Social Insurance Company IS, Real Estate Cadastre IS, library IS, museum IS, gallery IS, etc.

Introduction

- Lacking legal framework for eGovernment

The current legal framework is inadequate for eGovernment. It is not based on any "architecture". When generating actual regulations, concept and coordination are not applied. The applied terminology is neither unified nor clear, nor harmonised with EU terminology. The generated legal standards do not represent a mutually interlinked system of regulations supporting ICT application within various public administration sections.
The valid legislation does not explicitly define competencies, tasks and duties of public administration authorities with respect to information society as such, nor specifically in terms of eGovernment. Clear definition of competencies, tasks and duties of state authorities, local self-government and other eGovernment process stakeholders is missing. A legal framework expresses the will and idea of state political representation on its functioning.

The process of public administration information systems design and implementation needs to be coupled with the process of public administration legal system formation. This is the approach applied in countries leading in eGovernment (see charts)[10].

- Uncoordinated establishment of public administration technical-communication infrastructure

The current status of technical-communication infrastructure may be considered inefficient for transaction levels of eServices provision. Further, public administration technological and communication infrastructure is significantly undersized, especially with respect to HW equipment and Internet coverage. Low efficiency is especially seen in the individual approach to technological-communication infrastructure development. This infrastructure needs to build on safe and stable networks, especially enabling the implementation and operation of mutually interlinked PAIS, as well as the provision and development of efficient eServices. Finalisation of the necessary infrastructure with maximum use of the existing technological-communication environment is a prerequisite for Slovakia to be able to communicate electronically with Europe and the world.

eGovernment Framework

eGovernment is often mentioned in various situations and from various points of view. eGovernment especially needs to be seen as a controlled process, which should be implemented throughout the entire public administration structure. It is a process of social, legislative, methodological, technological and organisational-personnel conditions established for efficient ICT application in administration services, as well as a controlled application process of ICT itself. This process results in electronic administration processes, i.e., eGovernment.

According to the European Commission, eGovernment has the following role: "ICT introduction into public administration, together with organisational changes, new approaches and skills, aim to improve efficiency of services, increase transparency and support public policy."[11]

eGovernment deals with ICT application in administration services. It does not cover ICT application in areas such as eEducation, eHealth, eCulture, eResearch, etc.; it only partially touches upon them (Fig. 2). In terms of these areas of eGovernment, public administration has a role in establishing conditions (especially legislative) for ICT application.

10 Examples are stated in document:
11 Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions: "The Role of eGovernment for Europe's Future". 26 September 2003.

Introduction

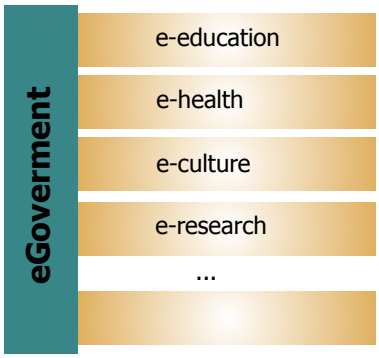

Fig. 2 – Schematic eGovernment position in the context of other eTopics

In eGovernment, the substance of administration services supersedes the technological level. Technological level is "only" a means to efficient administration services provided by the relevant general government entities in line with their entrusted competencies, tasks and duties.

eGovernment subjects are public administration institutions. The eGovernment object of interest is the public.

The PAIS act defines obliged persons as public administration institutions obliged to build PAIS in line with the National Concept of eGovernment. eGovernment needs to consider the organisational and competence specifics of state administration and local self-government.

Specifics in various fields	State administration	Local self-government
Organisations and Management	✔ Hierarchic management structure - Central level - Regional level - Local level ✔ Specialisation of state administration authorities ✔ Tasks and duties are defined by: - General legal regulations - Internal legal standards - Government documents (resolutions, edicts, etc.)	✔ Single-level local self-government management structure (Bratislava and Košice are specific) ✔ Two-level territorial arrangement ✔ Integration of administration services Tasks and duties are defined by - General legal regulations - Internal legal standards
Administration competencies	✔ State administration services	✔ Transferred state administration services ✔ Local government services (local goverrtment competencies[12])

State administration	Local self - government	
Processes of state administration	Processes of transferred state	Processes of local self government

Fig. 3 – Principal Administration Service Groups

12 Act No. 369/1990 Coll. on Municipal Organisation as amended; Act No. 302/2001 Coll. on Self-Government of Higher Territorial Units as amended.

Introduction

Generally, methodological guidance of state administration authorities and, in the legally defined scope, of local self-government are a competency of one, or several, central state administration authorities ("CSAA"); strategic management is performed by the founding authority; executive management is the competency of the appointed or elected representative.

In addition, administration services are divided into actual topical areas, i.e., administration sections. Within an administration section, public administration bodies deal with the relevant agendas in line with their competencies, duties and tasks defined by the relevant public law standards.

Administration service processes are characterised through significant unification, regulation and division into three groups in terms of competencies (Fig. 3).

The public service process view should represent a substantive basis for all entities involved in the eGovernment process and for process optimisation in various administration sections. Further, it will form the basis for PAIS data and functional requirements specification, implementation of the necessary changes and legislative regulations in the effort to provide efficient public services, and to make possible the information exchange between the respective public administration institutions. The public administration process view forms the basis for integrated PAIS architecture.

Slovak public administration is a complicated and unstabilised system in terms of space, organisation and competencies. Topical areas, i.e., administration service sections, may be considered stabilised. Public administration reforms especially change the allocation of competencies over respective topical areas to the relevant public administration entities - not, however, the contents. Therefore, it is necessary to digitalise the topical areas regardless of the relevant competent authorities, i.e., digitalise administration section processes. This approach to eGovernment will enable the establishment of key infrastructure and information systems of administration service sections to come in line with organisational and competence arrangement of public administration, even in cases of changes in the respective competences.

Integrated PAIS will enable online simultaneous access to services for both citizens and the business sphere from various service points, i.e., time and distance barriers of public access to services are minimised, and the time needed for processing official matters is reduced.

eGovernment aims to establish PAIS with digitalised agendas of all relevant administration service sections, meaning that they are primarily fully or partially PAIS supported.

Further Steps

Legal framework supporting ICT application in public administration, satisfactory infrastructure and efficient digitalisation of administration service sections form the pillars of eGovernment. These pillars need to be built conceptually, i.e., defined principles, priorities and architecture of an integrated PAIS need to be applied consistently, with the aim of improving public administration functioning both on the inside and towards the public. Without political support, as well as institutional and implementation provisions, the formation of such pillars will fail. (Fig. 4).

Introduction

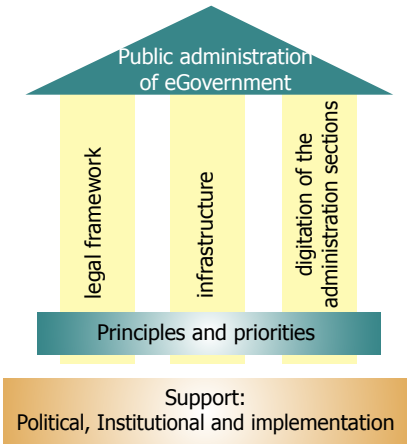

Fig. 4 – Key pillars of eGovernment

The National Concept of eGovernment (following the vision, strategic goals and eGovernment directions definition in the eGovernment Strategy) especially defines key principles and priorities of eGovernment and architecture of the integrated PAIS, i.e., a logical unit consisting of a mutually interconnected autonomous administration service IS using basic architecture components described in chapter 4.2. Consistent and binding application of the said principles and priorities by PAIS administrators may lead to the desired target status of SR eGovernment. The eGovernment process will respect the current situation and results reached in the fields of infrastructure, solutions and available services, provided it is efficient enough to further build on the existing solutions.

The National Concept of eGovernment will be followed by feasibility studies respecting EC requirements for public administration electronic services and infrastructure. Together with approved PAIS development concepts presented by obliged persons, these identify projects accelerating eGovernment. These projects need to be implemented in line with the concept of integrated PAIS architecture. Further, it is also necessary to define financing sources and identify the necessary scope and implementation of changes in the existing legislation and in administration service processes. Amendment of acts will represent one of the critical factors for the success of changes, since it calls for the involvement of relevant legislators – the relevant ministries, a wider dialogue, and political support in Parliament.

Parallelly, a series of analyses and research will be carried out to identify citizen, business and institution (including international) priorities. Services will be analysed, which citizens and business not only consider to be necessary, but also to make life easier. Then, a project implementation schedule will be generated to support the process of eGovernment.

Further, it will be necessary to secure sufficient eGovernment promotion for the general public to learn about the advantages gained through the use of eGovernment information and services, e.g., how easy it can be to find information, how much time and money is saved in transaction services, etc. It will be necessary to create a community-educational program at the government level, which will present the public with practical aspects of ICT use in the form of massive or regional information-educational campaigns.

Also, it is necessary to organise training for all public administration staff using ICT and focusing on specific IT skills, secure relevant personnel for IT departments, and establish relevant remuneration and position for public administration IT specialists.

Should the new conceptual, systematic and controlled access fail to be implemented, costs will increase and thereby decrease cost efficiency of eGovernment development.

3. eGovernment Principles

eGovernment principles update generally valid principles[13] forming eGovernment . Their consistent application in the formation of eGovernment pillars will generate an integrated infrastructure and PAIS able to cooperate at national and European levels (e.g., Pan-European projects).

General definition of eGovernment principles (Fig. 5) results from generally recognised eGovernment principles accepted by EU member states, as well as from IDABC[14] resolution[15] adopted 21, April 2004 by the European Parliament. This resolution entered into force 1, January 2005.

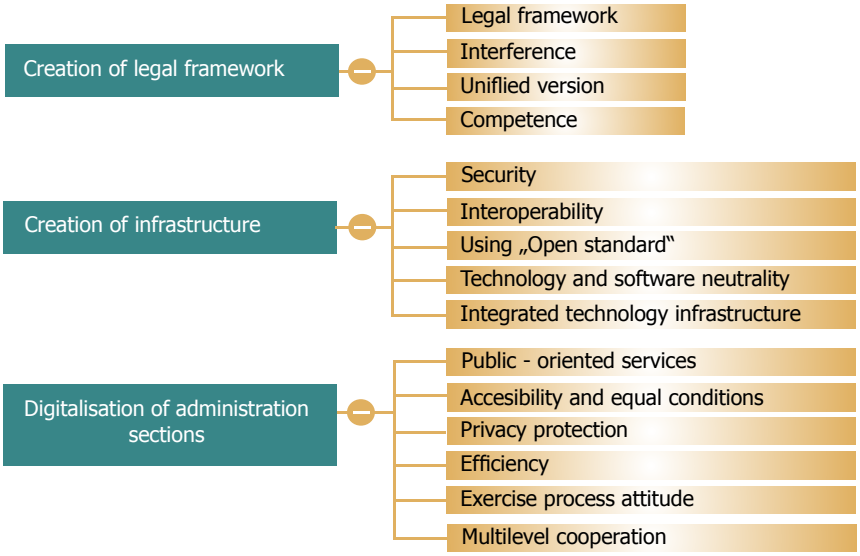

Fig. 5 - eGoverntment Principles

The respective principles are specified in the following sub-chapters and should be respected and applied by PAIS administrators in the implementation of the relevant PAIS, or the relevant electronic services provided by public administration.

3.1 Legal Framework Formation

Legal framework represents a functioning system of legislation, methodology and standards creation and application. In the form of a mutually interlinked set of regulations, the legal framework creates conditions and defines rules for eGovernment.

The following are principles for legal framework formation:

- Legal framework

eGovernment especially involves the contents, i.e., substantive side of administration services; technology represents the means for their efficient performance. Practical application of this principle means that the implementation of respective projects will be conditioned by an approved plan of required legislative changes emphasising optimisation of administration service processes. SR legislative rules should include an eGovernment impact clause to be included in

13 MTPT SR. 2005. Chap.4.1 Basic Principles of EGovernment of document Process, organisation and data model of public administration service digitalisation. p. 21.
14 IDABC is a communitary program of the European Union managed by EC General Directorate for Business and Industry.
15 5. 25)

the general part of explanatory reports to draft acts.

- Interconnection

The eGovernment process needs to be interconnected with the process of public administration legal system formation. Otherwise, the potential of ICT application in public administration will be used in a very limited scope. Legal framework formation is a prerequisite for the establishment of ICT application conditions in state administration services, since state administration activities are limited by the constitution and laws. This condition also applies to local self-government, namely in terms of the transferred state administration services and, to a larger extent, to self-government services, except for cases where local self-government is competent to act not only under an act, but also otherwise as not prohibited by law. In such cases, local self-government has legislative "power" in adopting local legal regulations within the governed territory. It also monitors their observation. Therefore, local self-government also needs to form eGovernment legislative conditions linked to direct ICT application.

- Unified Interpretation

Within the actual administration section agendas, PAIS should electronically interpret the valid legislation and methodology of administration services implementation. Such a situation may only be established if public administration authorities use the following in their administration services:

- PAIS guarantees an accurate and unified interpretation of valid legislation and methodology;
- Central reference registers and code lists are available online and useable for legal acts.

Databases usable for legal acts may not be created, nor applied electronically in administrative services, without the relevant legal support. This means that public administration authorities will only use PAIS approved for the relevant administration section by the relevant PAIS administrator. According to Act No. 275/2006 Coll. on PAIS and change and amendment of certain acts as amended, the administrator defines the purpose and means of information processing and is responsible for PAIS administration and development. In the administrative services within a given administration section, obliged persons are obliged to only use PAIS identified by the PAIS administrator of the given section.

- Responsibility

An ICT application in administration service processes within the respective administration sections is guaranteed by the responsible public administration authorities, i.e., PAIS administrators, in line with their competencies and under the hierarchical structure of methodological management applied within the relevant administration section. PAIS administrators are responsible for their entrusted section, its currentness, plausibility and availability.

3.2 Infrastructure Formation

Infrastructure is a technological-communication environment securing the implementation and operation of the administration section IS, as well as the provision and development of public administration eServices. It is formed by an integrated technological-communication infrastructure (HW, WAN, LAN) and organisational background of its administration and operation.

Infrastructure formation has the following principles:

- Security

Reliable data and information exchange needs to take place within an approved homogenous security policy respecting the rules and practices providing for information protection and its safe distribution. Public administration authorities need to harmonise their own security policies with this homogenous security policy, which is to be harmonised with the joint European security policy. The relevant security measures are described in a document approved by the European Council. [16]

[16] Council Decision 2001/264/EC of 19 March 2001 adopting the Council's security regulations (OJ L101, 11. 4. 2001, p. 1), see also Commission Decision of 29 November 2001 amending its internal Rules of Procedure (OJ L317, 3. 12. 2001, p. 1).

Identification and authentification functions will be safe, indisputable, confidential and totally transparent to avoid data abuse.

- Interoperability

Public administration information systems or software applications need to be able to communicate, i.e., mutually cooperate, use and exchange data. PAIS design will respect the National Concept of eGovernment and provisions of the European Interoperability Framework[17] defining a set of recommendations and guidelines for the provision of eGovernment services.

- Open Standard Application

The application of open standards, i.e., generally available standards internationally designated as "Open Standards", contributes to public administration eServices interoperability.

- Technological and Software Neutrality

Information-communication technology develops very fast. Therefore, public administration digitalisation solutions will be accessible to new technology with the goal of reaching technological and software neutrality. Unique solutions will not be preferred, just like any attempts for monopoly supplier dependencies.

eGovernment will prioritise Open Source Software. Open Source Software is available under licences enabling its users to study, change, improve, or further distribute the modified or original software. Source code availability contributes to interoperability.

- Integrated Technological Infrastructure

Public administration technological infrastructure needs to be flexible, i.e., requiring financially undemanding modifications in case of public administration structure changes, especially at performance and application innovations levels. It needs to build on technology enabling the establishment of mutually interlinked and cooperating PAIS respecting user (citizen, businesses and public administration) requirements for the provision of efficient and quality services.

3.3 Digitalisation of Administration Sections

Digitalisation of administration sections means ICT application in administration service processes, i.e., the development of administration section IS utilising principal architecture components and infrastructure described in this document to the maximum possible extent.

Administration sections digitalisation has the following principles:

- Public oriented services

The provision of public administration services will especially focus on the client, i.e., the public. Services should meet the following characteristics:

- **Once is enough:** Public administration subjects will not request natural persons and legal entities to prove and present facts already registered by another public administration subject, or PAIS, such as multiple reporting of change of permanent address to various public administration authorities, or repeated presenting of a business register extract in a service arrangement. The relevant data entering the public administration system will not be requested from the service beneficiary provided such data relevance and accuracy do not change (i.e., data will be registered once and used many times). Repeated entry of existing data into established systems extends the handling times, increases administrative load of matter-handling and service provision, and increases the possible error rate, coupled with multiple system entries. Efficient application of the "once is enough" rule assumes the establishment of a public administration data and metadata central vocabulary (to be processed by a metainformation system described in chapter 4.2.7.2). The practical result of this principle application is the maximum use of administrative data sources with harmonised, optimised and standardised data features. The proposed data features also must respect the needs of the relevant administrative source supervisor and its other users and eliminate duplications.

[17] Available at: http://ec.europa.eu/idabc/servlets/Doc?id=19528

eGovernment Principles

- **Event-driven services:** The relevant services will also be provided to the public automatically on the basis of events and not only on the basis of the service beneficiary impulse. Event driven service provision aims to eliminate the service beneficiary need to follow their own legal duties/rights. These services may be implemented, e.g., through the generation of pre-completed electronic documents using the relevant public administration databases. An example may be the notification on identification documents expiry 30 days prior to their expiry.
- **Feedback:** Services will provide feedback, e.g., through the possibility of seeking information on a handled-matter status.

Availability and Equal Conditions

eGovernment will establish equal opportunities for all.

Further, ICT implementation will apply the principle and observe the standards providing for web page availability to persons with disabilities or other handicaps.
ICT implementation should consider socio-economic disparities between regions and population groups to reach adequate eGovernment levels in all regions and for all population groups.

Privacy Protection

Electronic communication with public administration must provide for personal data protection and respect individual decisions on data use for other purposes than originally declared.[18]

In this respect, full conformity with existing European and national legislative regulations on data protection will be reached.[19] Personal data protection needs to be coordinated with the existing procedures listed in directive 95/46/EC[20]. Therefore, technology providing for increased privacy protection should be applied.

Efficiency

Public administration electronic services will be provided efficiently. The following principles will contribute to increased efficiency:

- Minimisation of personal visits of service provider and other authorities
- 24/7 eService availability
- Optimisation of administration service processes
- Digitalisation and automation of administration service processes
- Maximisation of existing electronic format data use
- User friendliness

18 The European Court of Justice has emphasised in its recent judgement of 20 May 2003 in the echnungshof case the importance of the cumulative application of articles 6 and 7 of Directive 95/46/EC.

19 Directive 2002/58/EC of the European Parliament and of the Council of 12 July 2002 concerning the processing of personal data and the protection of privacy in the electronic communications sector. (OJ L201, 31. 7. 2002, p. 37).

20 Directive 95/46/EC on the protection of individuals with regard to the processing of personal data and on the free movement of such data.

eGovernment Principles

- Process Approach Application

When developing PAIS, it is necessary to apply a process approach representing the basis for an integrated PAIS architecture development. Digitalisation of public administration service processes will enable monitoring, analysis and evaluation of administration service processes within the entire public administration structure. The process approach will establish conditions for administration service processes optimisation and integration, resulting in increased efficiency and quality of public services.

The process approach results in a complex process model divided into several aspects for simplification reasons:

- Functional – represents a set of activities and links between them that are performed in the scope of administration services.
- Organisational – represents structure, competencies and the relevant links between organisational units within administration services.
- Data – describes data entities and links between them that the public administration entities use in administration services.

- Multi-level Cooperation

eGovernment may not be successful without the cooperation of public administration authorities. It is of principal importance for the establishment of mutually interconnected systems to be used in public services provision and sharing of data between the public administration authorities in the administration of public matters.

1. Architecture of Integrated Public Administration Information System

The architecture of an integrated public administration information system represents a concept draft of the system, its parts, components and relations between them. It is a concept draft securing public administration strategic goals[21]. Since it involves ICT application in administration service processes, it will be necessary to propose suitable methods, procedures and technology for the digitalisation of the respective administration departments and for electronic communication between public administration and the public (G2P[22] - B2C and G2B), between public administration entities (G2G), within public administration entities (G2E[23]) and others (G2A[24]) (Fig. 6). As far as administration services are concerned, the proposed solution must provide for public administration internal communication and external communication with the public and foreign countries to take place in electronic form. Further, legislative changes need to make such electronic communication and electronic documents equally valid to their hard-copy counterparts.

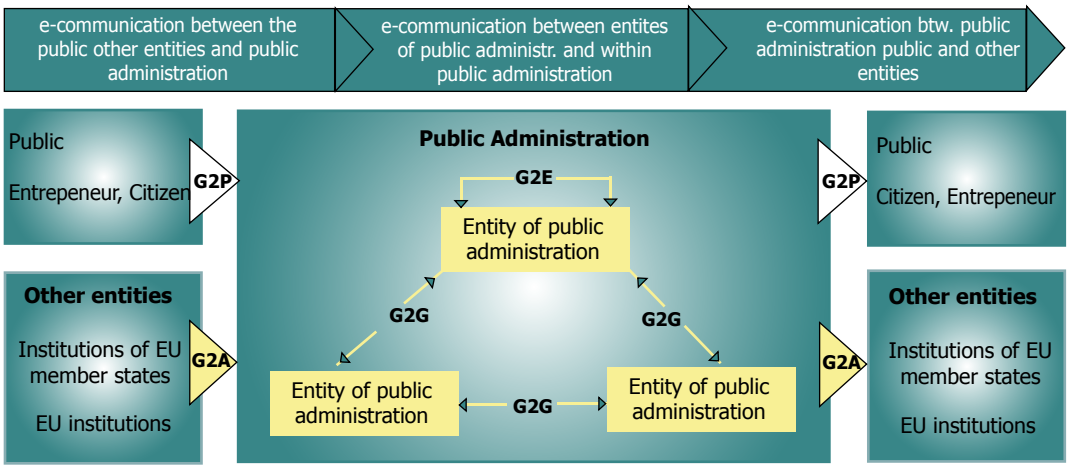

Fig. 6 – eCommunication overview within administration service information flow

The target architecture of a public administration integrated information system (Fig. 7) will consist of mutually interconnected self-contained information systems of respective administration sections applying principal architecture components. Information system administrators within the respective administration sections, i.e., competent public administration authorities, are responsible for administration within the relevant legislatively defined sections. Therefore, in line with their competencies, they will be responsible for information systems development, administration and operator selection within the given administration sections, except for central portal shared services, where this is defined by the PAIS act. Mutual interaction of information systems within the respective sections administered by the relevant public administration authorities will follow defined and approved rules and standards for data exchange between PAIS using technological and communication infrastructure. Communication infrastructure should be closed and especially reserved for safe communication of these systems and for their mutual communication mediation. Communication with the public will take place over various communication channels – Internet, telephone, etc.

Information systems of administration sections are tools to the satisfaction of internal and external public administration functions. These are detailed in subchapter 4.3.

21 SR Government Resolution: 131/2008. Chap. 1 Strategic Summary: Increasing the satisfaction of citizens, businesses and others with public administration. Electronisation of public administration processes. Increased efficiency and performance of public administration. Improved public administration competency level. Draft EGovernment Strategy.

22 G-Government, O-Public, C-Citizen, B-Business

23 E-Employee

24 A-European Administration

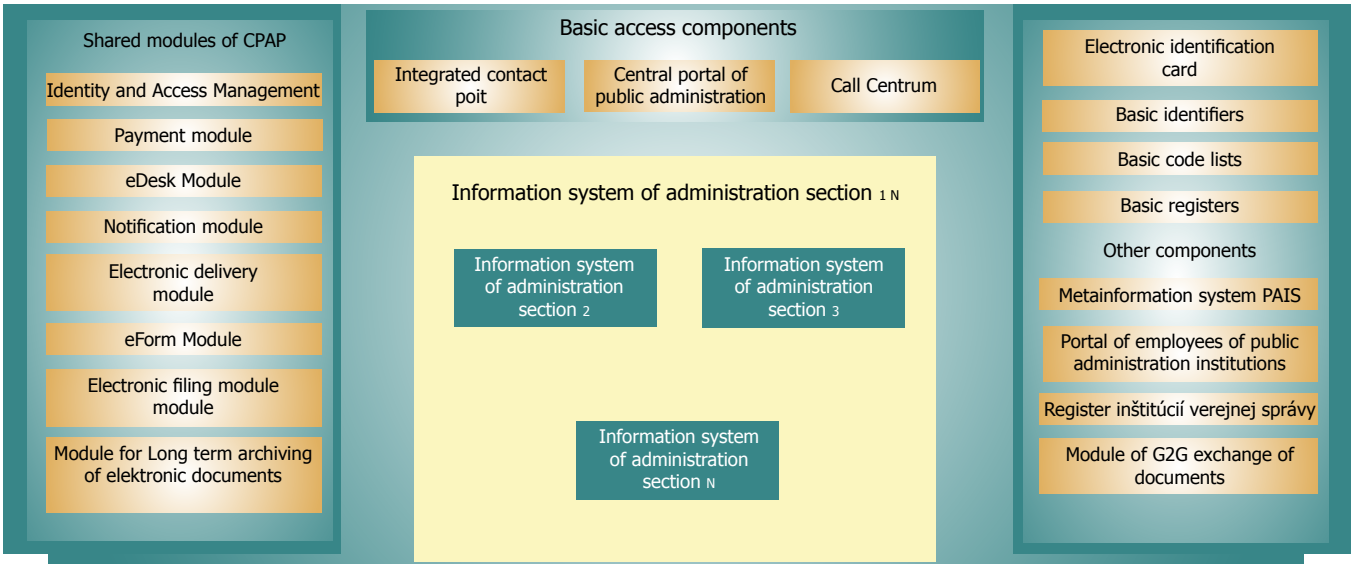

Fig. 7 – Target architecture of integrated PAIS

4.1 Architecture Type

An integrated PAIS needs to enable the smooth and efficient interoperability of all integrated information systems. Further, it needs to improve public administration service efficiency via the administration service process of optimisation and digitalisation.

Repeated PAIS service use increases the efficiency of IS themselves and of their development. This will be especially provided for via basic components forming part of the respective section PAIS.

The most recent trend in system integration with the possibility of repeatedly usable components is the development of service oriented architecture ("SOA" [25]). In general, such architecture is described as one in which all functions and services are defined in a descriptive language and have application interfaces enabling their use within business processes. The use of such independent services via the relevant communication protocols is also possible without knowing the operation system, platform or programming language, or operating or implementing the service itself.

SOA is not an actual product or standard applied in any specific field. Rather, it is a widely accepted approach to information systems analysis, development, operation and especially integration on the basis of joined distribution services use offered by the respective information services.

Within the SOA product market, there is an established technology, which is also considered to represent such architecture implementation - this is called Web Services. The basic principle behind the SOA architecture applying Web Services is schematically depicted in the following figure (Fig. 8).

Information systems provide Web Services to other information systems possessing the possibility of using them. Information systems providing Web Services publish them in the Web Services catalogue. Other information systems may search such Web Services in the service catalogue along with their provider. The requesting information system may use the found service in the provision of its own services. In this way, information systems are considered to represent service contractors and subcontractors, whereby a new, complex web service may be created out of the web services.

[25] According to Gartner Group study, about 80% of the IT services market will be SOA technology and standards based by 2008.

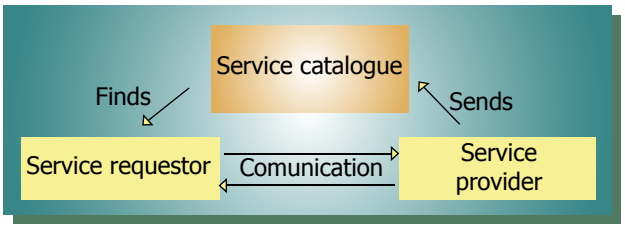

Fig. 8 – SOA architecture basic principle

SOA principles may be implemented at the following levels:

1. Integration between various PAIS.
2. Development of the PAIS themselves with their internal architecture in line with the SOA approach.

In the case of an existing or newly established PAIS, it is necessary to establish the first mentioned level. In the case of a planned, innovated or newly established PAIS, it is necessary to also secure the send level.

Interoperability Principle

PAIS interoperability principles may especially be reached through the use of open standards. Standards most commonly used in information exchange and mutual provision of services are XML ("eXtensible Markup Language") and web services:

- XML – extensible markup language was developed and standardised by W3C[26]. It is especially designated for data exchange between applications and for document publishing. It enables the ability to describe a document structure with respect to material contents of the respective parts; it does not deal with document formatting.
- Web Services – standard defined by W3C. It was designed for inter-system interoperability via a computer network. It enables communication between various types of information services by precisely defining communication formats between the system providing the service and the system using it.

Except for XML standards and web services, it is also necessary to define data structure standards not only at the level of the respective items (e.g., name, surname …), but also the level of the entire XML document structure used in data exchange. It will be necessary to define and standardise data blocks used in data exchange. Their standardisation is solved by the work group "PAIS Standardisation Committee".

This area applies the XSD technology standard:

- XSD – ("XML Schema Definition"), a standard defined by W3C. This standard describes data structure, or the XML document scheme and its possible contents. It defines document positions possibly, or necessarily, including various elements (items), their order, number, values or data types (a chain of letters, number, truth value, etc.), which enables the control of XML document data accuracy.

Further, it will be necessary to define and standardise web service communication interfaces. For this purpose, the WSDL technology standard is used:

- WSDL – ("Web Services Description Language"), a standard defined by W3C. It describes the functions offered by web service and the method of their use and defines communication in the form of service input and output specifications. WSDL describes web service communication interface.

Interoperability of integrated PAIS architecture will be secured via web services with standardised specifications described in WSDL language. The web services data exchange standard will be XML language, with structures standardised and described in XSD scheme. The described standards comply with the PAIS defined standards[27].

[26] It is similar to a consortium, in which member states personnel develop common W3 standards. As of February 2008, W3C had 434 members.
[27] Current decree on PAIS standards is available at: www.informatizacia.sk

SOA access directly materialises in the eGovernment benefits

In the selection of architecture suitable for eGovernment , several criteria were considered, including especially the efficient use of public funds, reliability and quality. An SOA approach application will result in the following:

- Lower integration costs – standardised services enable easy and fast interconnection of various applications;
- Lower maintenance costs – repeatedly used services reduce the number and complexity of IT services and shorten the time necessary for maintenance and servicing of such services;
- Lower development costs – repeatedly used SOA services enable the fast generation of new composition applications;
- Higher quality services – SOA stresses repeated use of services - more testing cycles performed by various users increase the quality and reliability of services;
- Lower risk – a lower number of operating services provides a better overview of IT processes.

4.2 Principal Architecture Components

Principal architecture components of an integrated PAIS represent architecture components to be used by several PAIS in electronic administration services. Development of such components will be reached through the implementation of key eGovernment projects. Without them, the eGovernment processes will not be able to continue efficiently. The following are the most important principal architecture components of an integrated PAIS:

Electronic ID card;
Basic identifiers;
Basic code lists;
Basic registers;
Basic access components;
Common PACP modules;
Other components.

4.2.1 Electronic ID card

The proposed electronic ID card solution represents the EU format ID card with an electronic chip containing electronic identification data, enabling the storage of a qualified electronic signature ("GES"). This tool is proposed to secure the clear identification and qualified authentification of natural persons. However, electronic identification and authentification can also be used in other solutions, such as the use of payment cards, mobile phones, etc. Electronic identification means will be used in public administration eServices, as well as in eServices provided by other entities at the national and international levels.

The issue of electronic ID card introduction is not new to Slovakia. On 13/03/2006, the SR Government received the document of the Ministry of Interior of the SR ("MI SR") No. KM-73/VI-2006 – "Feasibility Study of Electronic ID Cards Issue for Use in Public Administration Electronic Systems". It was compiled as a result of SR Government Resolution No. 557 of 13/07/ 2005 on draft Slovak Republic Competitiveness Strategy until Year 2010 – Action Plans. The submitted document considered the technical and organisational possibilities of issuing electronic ID cards with a chip to find the easiest, fastest and economically least demanding implementation method.

The document sums up chip technical requirements. The most important criteria are its certification by the National Security Office, in line with Section 10, Par. 2 Letter j) of SR NC Act No. 215/2002 on Electronic Signature and change and amendment of certain acts as amended. A key objective is to support electronic signature introduction through the issuing of a safe electronic signature instrument in the EU format of ID cards in the form of polycarbonate cards

(Fig. 9). The proposed solution also considered the possibility of possible further chip use for biometric data storage. Qualified electronic signatures should be issued by accredited certification authorities.

Fig. 9 – Proposed EU format ID card in the form of polycarbonate cards

The proposed technological solution of chip data structure covers the following structures for:

a) Qualified electronic signature, with the possibility of storing components for a qualified electronic signature. There are the following components: private key, qualified public key certificate, and root certificate of accredited certification authority;
b) Client certificate for the storage of certificate components necessary for mutual chip verification and applications, or for SSL connection establishment;
c) IFO and personal data defined in the relevant regulation, including ID card special entries;
d) Other data objects as per the requirements of other state institutions and consideration of chip memory capacity.

Initial chip personalisation unblocks the card and introduces the relevant data structure profile into an EEPROM chip, which is common for all issued ID cards with an electronic chip. This generates the desired card structure, and the National Security Office transfers the current root certificate to the chip.

Depending on the considered options, it would be less demanding - technologically, financially and timewise - to issue electronic ID cards at the respective offices receiving applications for the issuance of documents with an electronic chip for a qualified electronic signature. Following graphic card personalisation and card issue, the citizen would have the opportunity to apply for the issue of a qualified certificate with any of the commercial accredited certification authorities. However, the National Concept of eGovernment is not a cost analysis evaluating the proposal of financing state-qualified certificates, as is the case, e.g., in Austria. This analysis should be included in the relevant feasibility study.

The electronic ID card should be in line with the approved process of eIDM implementation by 2010[28]. Electronic identification standardisation within EU countries will most probably result in a target situation in which it will be possible to use electronic ID cards in all EU states.

Electronic ID card introduction would propel the Slovak Republic to leading positions in electronic documents use, joining such countries as Austria, Finland, Estonia, Belgium, etc.

28 2007-22-11]. Available at: http://ec.europa.eu/information_society/activities/egovernment_research/doc/eidm_roadmap_paper.pdf

4.2.2 Basic Identifiers

It is necessary to define basic national identifiers for unambiguous and safe identification of natural persons and legal entities communicating with the public administration. The following identifiers are involved:

- Natural persons identifier ("NPI");
- Legal entities and entrepreneurs identifiers ("LEI").

Currently, the proposal of national identifiers is not coordinated within EU countries, since the process of the existing national identifiers replacement by new ones is very lengthy and legislatively demanding. Nevertheless, the situation is assumed to change in the future, which will result in national identifiers compatible within EU countries. This is also supported by the activities that followed the European Health Insurance Card introduction ("EHIC"), which requires clear identification of Slovak citizens in other EU countries when making use of urgent health care and vice versa, and clear identification of EU citizens when registering them in information systems providing health care or social benefits.

Basic identifiers represent key elements enabling the integration of distributed data processed by other PAIS. These are clear identifiers of principal data entities, whereby each data entity will have a defined attribute acting as an identifier.

Hence, basic identifiers will represent common identifiers for communication between PAIS, which will enable the sharing of basic data entities between PAIS and other systems according to precisely defined rules.

To establish optimum conditions of basic identifiers definition, administration and allocation at a nationwide level, it is necessary to secure the following common requirements:

- Clear identifier allocation to data entity, i.e., excluding duplication existence,
- Meaning-free, i.e., it will not contain any characteristics enabling the deriving of any information on the identified object,
- It will consist of a symbol chain supporting self-correcting and control functions (numeric chain, alphabetical symbols, etc.),
- Binding character of identifier use at the national level,
- Generation of maximum protection from possible fraud,
- In case of evidence burden, establish the possibility of repeated identifier generation at any time.

Introduction of the NPI is a prerequisite for information society; it needs to be introduced in the nearest possible future.

4.2.1.1 Natural Persons Identifier

A natural person identifier is a basic identifier clearly identifying natural persons.

Currently, according to Act No. 301/1995 on Birth Number, the Slovak Republic uses the birth number as a general natural person identifier. It secures inambiguity of personal data in information systems. A whole range of Slovak registers applies the birth number as a clear natural person identifier, as well as a key information system search criteria.

As has been the case for several years, MI SR has been dealing with the issue of electronic identifiers introduction. Based on SR Government Resolutions No. 557 of 13, July 2005 "Draft Slovak Republic Competitiveness Strategy Until 2010 – Action Plans" and No. 837 of 19, October 2005 "Draft Road Map of Public Administration Electronic Services Implementation", the Ministry prepared a feasibility study on the proposed introduction of an identifier for communication between public administration information systems and generation of a clear citizen identifier from the birth number.

When preparing the concept, MI SR, in cooperation with the Office for Personal Data Protection, continued the direct contact with partner authorities in the Czech Republic, and also collected information on identifier introduction in Austria. With this information, MI SR prepared a draft and procedure for the introduction of a clear natural person identifier from the birth number in line with safe generation, derivation and use with guaranteed privacy protection according to European Parliament and Council Directive 2002/58/EC, European Parliament and Council Directive 95/46/EC, and the

relevant national legislation.

The new identifier will be used for PAIS communication with a natural persons register, for clear identification of natural persons, for the issuing of a qualified electronic signature certificate, and for eGovernment services.

NPI structure will allow its use in identification and authentification means (e.g., identification chip cards). NPI will be registered and processed by the natural persons register and allocated to all natural persons conducting business with the public administration, or all natural persons with data registered in any PAIS.

4.2.2.2 Legal Entities and Entrepreneurs Identifier

The legal entities and entrepreneurs identifier represents another basic identifier clearly identifying legal entities and entrepreneurs.

Currently, to clearly identify legal entities and natural persons – entrepreneurs, an identification number ("IČO") is used; it has registration significance. It is a unique eight figure neutral (non-predictive) number, where the first seven figures represent a sequential number and the eighth digit has the character of a control key. It is allocated to any legal entity and natural person – entrepreneur. It does not change throughout the legal existence of a legal entity and natural person – entrepreneur as registered in the organisations register of the Statistics Office.

LEI will be registered and administered by the register of legal entities and entrepreneurs (described in more detail in subchapter 4.2.4.2) and will also be allocated to all legal entities and entrepreneurs conducting business with the public administration, or all legal entities and entrepreneurs with data registered in any PAIS.

For the above-mentioned reasons, the use of the existing IČO identifier seems reasonable for LEI purposes.

4.2.3 Principal Code Lists

Principal code lists include an important source of data necessary in administration services. They will represent a binding source of data to be available in the provision of public administration eServices. To secure the validity and currentness of the permissible data item values list included in code lists, it needs to have a clearly identified administrator responsible for the central registration and administration of the code list itself.

Each code list needs to have an identified and standardised structure and contents using the XSD standard. The definition will include names of attributes, their data types, and permissible values.

Public administration information systems administering code lists should provide eServices declassifying the current code list contents, as well as historical data (code list contents in a precisely defined moment in time) via web services.

4.2.4 Basic Registers

Public administration conducts business with natural persons, legal entities and entrepreneurs. Therefore, the data entities natural person, legal entity and entrepreneur are considered to be crucial. Another important type of data is spatial information localising various object types, such as real estate, addresses, etc. Address is a common attribute of natural persons, legal entities and entrepreneurs, and real estate. Such data is registered in public administration basic registers:

- Natural persons register – natural persons;
- Legal entities and entrepreneurs register – legal entities and entrepreneurs;
- Spatial information register – spatial information defined in directive INSPIRE 2007/2/EC[29];
- Address register – addresses.

[29] Available at: http://www.sazp.sk/inspire/index.php?option?=com_content&task=view&id=82&Itemid=60

Definition and introduction of missing basic register system, their administrators and the relevant data, together with data standards, are prerequisites for electronic data exchange between registers and with other entities. From a technical point of view, this requires the generation of communication interfaces for the exchange of information between public administration institutions, natural persons and organisations. To implement the conditions, organisational and technical modifications will be required to access to basic register reference data for the needs of public administration institutions and the public, as well as changes in the relevant legislation to enable electronic data use for legal purposes.

Basic register reference data will form a complete and trustworthy data source. Thereby, their electronic form will be legislatively recognised at the level of an official document. Any reference data will represent the reference data of one basic register. The issuing of official extracts and copies in hard copy remains the responsibility of source databases. Other basic registers or other information systems requiring this reference data for their operation will be obliged to reference the given data via clear identifiers and accept it from the basic register without any possibility of modifications. For example, the registering of legal entities and entrepreneurs will include a reference to complete the organisation address in the address register in the form of an address identifier under which the given address is registered in the address register. Hence, part of the basic register information contents will be referenced and available to qualified persons as a public administration service.

Basic register data will be entered by "registrars", or source databases administered by public administration entities responsible for the registration and administration of registered subject data usable for legal acts. It will be necessary to harmonise basic register data with data responsibility of the "registrar". Further, basic register reference data will be available to other registers, possibly other PAIS or IS outside the public administration in real time and according to precisely defined rules using interfaces.

The following diagram depicts the schematic relation between "registrars", providers and users of basic registers (Fig. 10).

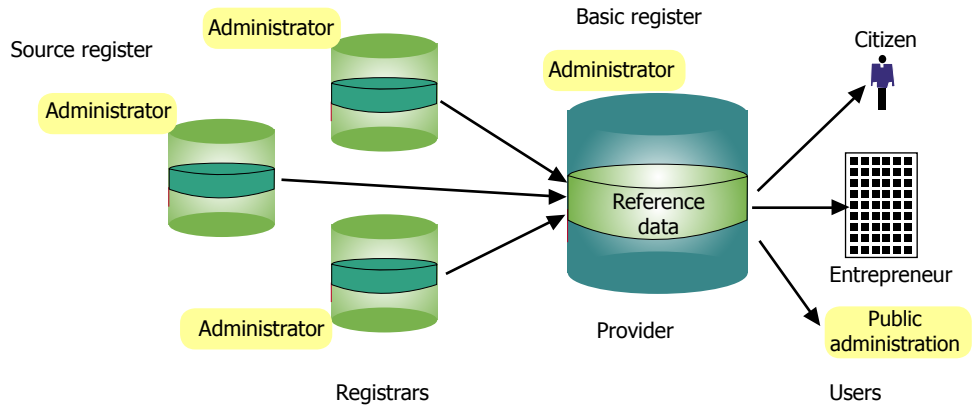

Fig. 10 - Schematic relation between "registrars", providers and users of basic register

Each of the basic registers will provide, at a minimum, the following set of web services for communication with other IS:

- Provision of reference data by one data entity (service output) on the basis of a clear identifier (service input).
- Provision of reference data from several data entities (service output) based on a list of clear identifiers (service input).
- Provision of a clear identifier list for data entities (service output) whose reference data were changed from a defined moment in time (service input).

Basic registers will provide data to defined users via communication interfaces (Fig. 11).

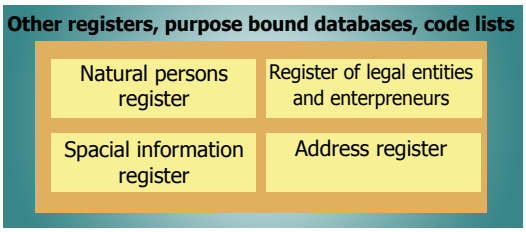

Fig. 11 – Communication interfaces between basic registers and other entities

The basic registers generation aims to establish one point of access to information for public administration information systems. The proposed system observes the eGovernment principles and does not interfere with the enforcement of relevant competencies within the respective administration departments.

Legal Framework

The provision and use of electronic communication data for legal purposes may only be secured through the establishment of a relevant legal framework. From a legislative point of view, it is necessary to prepare a draft act on public administration registers and define standards for data exchange between registers. The act on public administration registers should establish a framework for the use of basic registers electronic system for legal purposes. The act will define the contents of registers and the rights and duties of administrators, operators and users.

Basic registers must be generated and updated via source databases, or via registrars, whereby the contained data must be legally binding. The contents of such registers must represent a sole source of reference data for other PAIS. The proposed act on public administration registers should include the following as a minimum:

- Define and describe basic registers.
- Define the legal binding character of data contained in basic registers.
- Define and describe the system of reference data creation, registration and administration in basic registers.
- Rights and duties of all public administration entities to use basic register reference data via secure infrastructure.
- The rights of entities outside public administration to use basic register reference data.
- Conditions and methods of registers used by state security forces.
- Data protection.

4.2.4.1 Natural Persons Register

The natural persons register is a basic register[30], which should contain a uniform and data-consistent source of data on all natural persons having contacts with public administration. The natural persons register will be established through the extension of the existing citizens register by natural persons currently not listed in it but having contacts with public administration.

The natural persons register should be the source of valid data enabling the identification of a person, identification of address and relations to other persons, as well as other administrative data defined in Act No. 253/1998 on Slovak Republic Citizens Residence Reporting and Slovak Republic Citizens Register as amended.

The information system of the natural persons register should cover central register administration, information services provision and administrative-management activities of source agendas.

30 The proposed register will be in line with the Act on Personal Data Protection No. 428/2002 Coll. as amended.

The register should contain the following data as a minimum:

- SR citizens with permanent residence in the territory of the SR.
- SR citizens without permanent residence within the territory of the SR.
- Third country nationals with registered residence within the territory of the SR.
- Third country nationals with granted asylum within the territory of the SR.
- Natural persons who are not registered in the citizens register and have contacts with public administration.
- Clear identifiers of natural persons.
- Clear address identifiers.

System administrator: MI SR.

Proposed providers of source databases:

- MI SR.
  - Register of citizens
    - Municipalities
      - Register Office (birth, marriage, death)
      - Residence notifications (residence registration, de-registration)
    - Courts (via municipalities, local offices) (divorce, legal competence, prohibited residence)
    - MI SR (naturalisation and de-naturalisation)
    - National Personification Centre (numbers of passports, ID cards)
    - Border and Aliens Police Bureau (data on aliens)
    - Special registry office (international register events)
- Other relevant providers

4.2.4.2 Register of Legal Entities and Entrepreneurs

The register of legal entities and entrepreneurs is a newly proposed basic register. It is a virtual, uniform and data-consistent source of data on all legal entities and entrepreneurs having contacts with public administration. In practice, it means the introduction of a central database integrating data of partial (source) registers currently registering the respective types of legal entities and entrepreneurs. Competence changes are not expected in the operation of the existing source databases. However, the existing source databases will be obliged to provide their partial data to the register of legal entities and entrepreneurs under statutory conditions.
Administrators of register source data will preserve:

- Their statutory competencies within the relevant administration sections[31],
- The current technical status of own registers development,
- Management of own financial sources.

The register should contain the following data as a minimum:

- Clear identifiers of legal entities and entrepreneurs.
- Clear address identifiers.
- Business names or names of legal entities and entrepreneurs.
- Legal form of legal entities and entrepreneurs.
- Statistic classification of economic activities – SK NACE (as of 01/01/2008 named Industry Classification of Economic Activities - OKEČ)[32]
- The date of legal entity and entrepreneur establishment; date of registration or date of business licence legal force in case of entrepreneurs.

31 For example, in line with the Act on State Statistics No. 540/2001 Coll. as amended.
32 SK NACE and ESA 95 codes will be provided by the SR Statistics Office.

- Date and method of legal entities and entrepreneurs dissolution; date of business licence expiry in case of entrepreneurs.
- ESA 95[32] classification code.

Proposed system administrator: MF SR.

Proposed providers of source databases:

- Ministry of Justice of the SR
  - Business Register
- MI SR
  - Register of Foundations
  - Register of Non-Investment Funds
  - Register of Non-Profit Organisations providing services of general benefit
  - List of municipalities
  - Register of Civic Associations
  - Register of organisations with an international element
  - Register of political parties
  - Register of Housing and Non-Housing Premises Owner Associations
  - Register of Legal Entities' Interest Associations
  - Register of municipal associations
  - Small trade register
  - Public administration institutions
  - Register of Higher Territorial Units
- Statistics Office of the SR
  - Freelancers
  - Other legal entities and entrepreneurs

4.2.4.3 Spatial Information Register

The register of spatial information is a newly proposed basic register. It should include uniform and data-consistent source of obliged persons' spatial data forming part of spatial information infrastructure as defined in the INSPIRE directive. The INSPIRE directive aims to establish rules simplifying access of citizens, businesses and the public sector to spatial data having a character impacting all areas covered by SACA. Reference source data on spatial information are the responsibility of GCCO SR. The register of spatial information should represent a source of valid data enabling spatial identification of objects and events. Through such infrastructure of spatial information, it will be possible to provide spatial information services and perform administrative-management activities. Except for observing transposition duties resulting from SR membership in European structures, this integrated access to spatial information will also improve the support of decision making processes of both the citizen and the state.

The register should contain the following data as a minimum:

- Data defined in the INSPIRE directive, such as coordinate reference systems, geographic network systems, geographical names, administrative units, etc. (due to the extensive character, we do not mention all data required in the directive)

Proposed system administrator: Ministry of Environment of the SR

Proposed providers of source databases:

- Ministry of Transport, Posts and Telecommunications of the SR
- Ministry of Economy of the SR
- Ministry of Agriculture of the SR

- Ministry of Interior of the SR
- Ministry of Construction and Regional Development of the SR
- Ministry of Health of the SR
- Ministry of Environment of the SR
- Statistics Office of the SR
- Geodesy, Cartography and Cadastre Office of the SR

4.2.4.4 Address Register

The electronic address register is another newly proposed basic register.

The electronic address register is another newly proposed basic register.

Addresses consist of several data components administered by various public administration authorities or other entities. For example, the name of a town (municipality) is registered in the register of municipalities, the postal code is allocated by Slovak Post and is registered in post code list, and the names of streets are responsibility of municipalities and do not have any central register. This results in a situation disabling complete address verification in one central register. Therefore, it is necessary to establish one central address register. Addresses need to be defined as data standards, i.e., their components, attributes, sources and administrators of address component values, administrators and operators of address register. In line with legally defined conditions, the selected entities will provide data on their respective address component to the central address register according to precisely defined rules. The central address register will provide data to other public administration entities and the public according to legally defined rules.

The address data block should include, at a minimum, the name of the municipality, name of municipal district, name of street, house number and cadastral number and post code. The register should also register historic names with a standardised form and content and also address allocation to a given territory within the administration-management state division.

The register should contain the following data as a minimum:

- Indirect spatial identifier of address – name of state, name of municipality, name of district, name of street, house number, cadastre number, post code
- Direct spatial identifier of address – address point in spatial coordinates of binding coordinate systems, with positioning accuracy of one meter
- Clear address identifiers
- Codes of statistic territorial units

Proposed system administrator: MI SR

Proposed providers of source databases:

- MI SR
  - List of municipalities – registers government-approved list of municipalities
  - District – approved by MI SR based on municipality proposal
  - Address point
- Municipality
  - Name of street
  - House numbers
  - Cadastral numbers
- Slovak Post
  - Post code

4.2.4.5 Architecture of Basic Registers with Links to Source Databases

Mutual integration of basic registers will respect the following principles:

- Data structure of basic registers will be defined and available to the public. Change management will be subjected to precise rules regulated by the relevant legislation.
- Any reference data entity (e.g., natural person for the register of citizens, legal entity for the register of legal entities and entrepreneurs, etc.) administered by a relevant basic register will have a clear identifier (e.g., NPI for natural person and LEI for a legal entity).
- Other PAIS will get hold of current basic register reference data through requesting it via web services and defined rules.

The following picture shows the structure of basic registers and their mutual links with source databases of other registers and the relevant administrators designated "registrars" in the context of basic registers architecture.

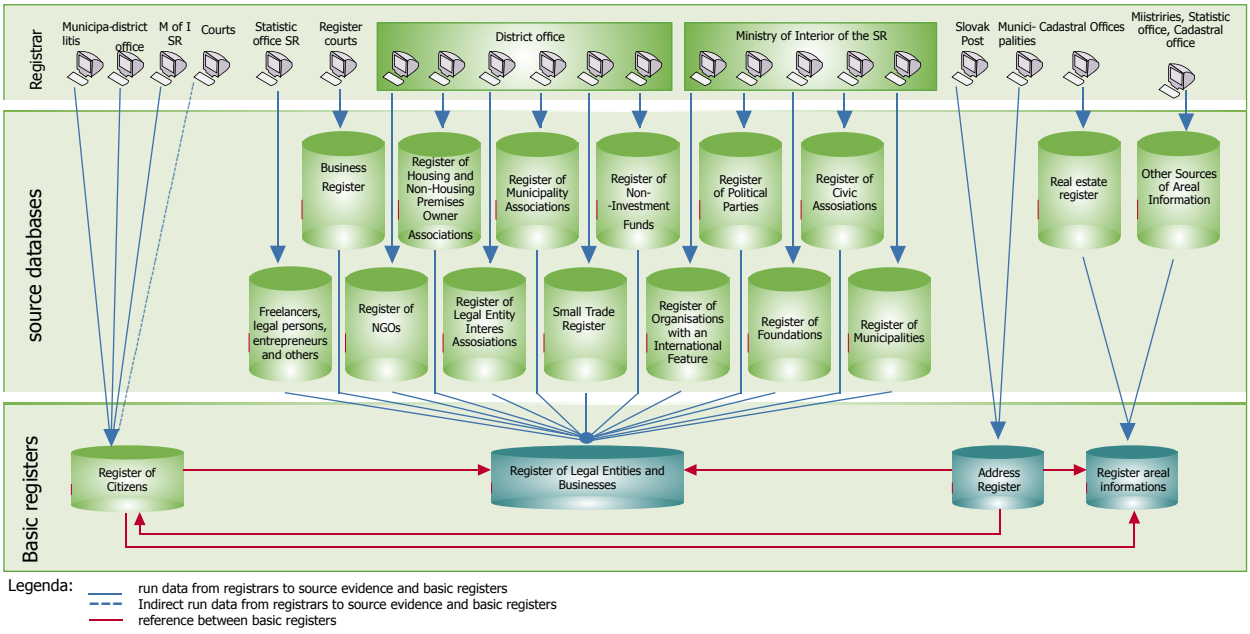

Fig. 12 – Proposed scheme of public administration basic registers with links to source databases

4.2.4.6 Integration of Basic Registers with PAIS

Integration of basic registers with PAIS will enable on-line provision of basic register reference data to other PAIS for read-only application. Further, other PAIS will be obliged to use the obtained reference data for their processing.

PAIS will receive basic register reference data in one of the following ways:

- On-line provision from basic registers via the relevant web services and based on the relevant clear identifiers;
- Generation of reference data copies from the respective basic registers.

For each act, the maximum data validity needs to be defined with respect to the act for which they are used. If the given IS contains valid reference data copies, they will be used. Should data copies in a given IS be expired, a relevant act will use data obtained in the first way, i.e., online.

Integration between basic registers (register of natural persons and address register) and IS for vehicles registration may be named as an integration example. For each person, the register of natural persons will store a data structure containing a clear natural person identifier along with data such as: name, surname, academic title, date of birth, etc., as well as a clear identifier of permanent residence address making reference to the address register. The address register will store addresses with a data structure containing a clear address identifier and other address attributes, such as name of municipality, name of district, name of street, etc. Vehicle registration IS will include data on motor vehicles, such as licence plate number, type, category, chassis number, vehicle owner, etc. Should the motor vehicle be owned by a natural person, the relevant vehicle registration IS will store a clear identifier making a reference to the register of natural persons (Fig. 13).

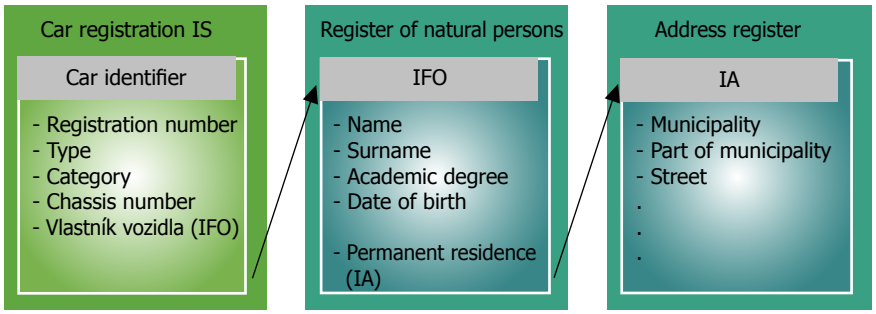

Fig. 13 – Example of basic registers integration (citizens and addresses) with vehicle registration IS

Due to system response time, network capacity and other technical limitations, i.e., due to system load minimisation, basic register reference data users may generate reference data copies (along with updates time registration) at regular intervals defined by legislation – the so-called caching. In context of the stated example, the vehicle registration IS will generate basic register reference data copies on holders and their addresses, which will be updated at regular intervals.

4.2.5 Basic Access Components

Public communication with the public administration may take place via various communication channels, for example via the Internet, telephone or personal contact. To increase such communication comfort, it is suggested to build central access components for the respective communication channels.

The following are basic access components:

- Central public administration portal (Internet);
- Call centre (telephone);
- Integrated service point (personally).

4.2.5.1 Central Public Administration Portal

Via the Internet, information on public administration services is provided from the web pages of various public administration entities. In such an environment, it is demanding to efficiently obtain complex required information.

A central information portal proposes a solution - Central Public Administration Portal ("CPAP")[33] integrating information (advice, guidelines, descriptions) the visitor searches, whereby such information originates in various information sources. Portal users will be presented with a clear and accessible form of information. Another portal service guides the user to the use of an actual public administration electronic service ("navigation") with the use of the relevant information sources. CPAP provides central and integrated access to public administration information sources and services.

CPAP is the crucial point of access to the public administration portal. The public administration portal represents a two-level system of portals formed by the central public administration portal and second level portals, the so-called administration section portals belonging to the respective administrators. Administration section portals provide more detailed information and may enable the performance of transaction services within the relevant special agendas of a given administration section or sections.

CPAP provides digital content in the form of support information for the use of public administration and links to the relevant eService forms. Such forms may be operated under the relevant administration section portals responsible for the provision of eServices or under the eForm module described in chapter 4.2.6.6. From a technological point of view, CPAP represents primarily a content management system.

Central Public Administration Portal should satisfy, at a minimum, the following requirements:

- Provision of information on public administration services.
- Information search according to situation or key words.
- Navigation to eServices according to user selection.

CPAP will support common functions[34] via the following shared services described in more detail in chapter 4.2.6:

- Identity and access management;
- Payment module;
- eForm module;
- Central electronic filing room module;
- eDesk module;
- Notification module;
- Electronic delivery module.

Type of services applying the solution: G2P

System administrator: MF SR

System operator: GO SR.

[33] According to approved eGovernment Strategy of the Slovakia, the CPAP name will change to www.slovensko.sk.
[34] In line with Section 2 Letter h) of Act No. 275/2006 Coll. on Public Administration Information Systems and change and amendment of certain acts as amended

4.2.5.2 Call Centre

Telephone communication is suitable especially for those who need professional support in public administration service use, or who need to use public administration eService, but do not have Internet access, or are not sufficiently computer literate. Such communication may be efficiently managed via a Call Centre.

Initial communication will take place via a voice menu. Depending on the caller selection, the call will be connected to the relevant operator – call centre employee.

- Professional help to public administration portal users (Help Desk)

A specialised call centre information system will enable the operator to provide the caller with professional advice using a help system.

- Public administration eService mediation over the phone

Following caller authentification, the identity will be virtually transferred to the call centre operator, which will provide the operator with access to eServices of public administration portals on behalf of the caller. Such access will enable the authorised operator to perform eServices on behalf of the caller, provided GES is not required. Depending on caller requirements and safety rules, the operator will perform the relevant activities.

The call centre should satisfy the following minimum requirements:

- Provision of professional support in the use of public administration services
- Provision of professional support to public administration portal users in the use of qualified electronic signature, etc. - Help Desk
- Mediated performance of authorised public administration eServices via the call centre staff.

Type of services applying the solution: G2P

Proposed system administrator: GO SR.

4.2.5.3 Integrated Service Point

Public administration eServices will also be publicly available through integrated service points ("ISP") – physical places where an ISP employee will mediate eServices to citizens, i.e., ISP will provide assisted public administration eServices.

Following the applicant identification (e.g., citizen or business), the integrated service point, just like the call centre, will enable the IOM staff to use eServices via the public administration portals on behalf and in the name of the applicant. This access should be possible for all public administration eServices. Should the applicant not be the holder of a GES, it will be possible to use the GES of the ISP staff whom the applicant will authorise to act on his/her behalf. This issue will be developed further within the feasibility study.

Another extending ISP service is the issuing of confirmations, extracts or other documents generated from various PAIS data. ISP information system will use integrated services (web services) to obtain, e.g., business register extracts from the relevant IS, transfer them into paper form, confirm them in a suitable way (stamp, signature ...) and hand them out to applicants. Any such document will have an allocated clear identification number and the issued document will be archived in the ISP information system electronic archive.

ISP locations will cover public needs within the territory of the SR and abroad. ISP functions may be covered by local and municipal offices, post offices, notaries, etc. and Slovak embassies abroad.

The integrated service point needs to satisfy minimum the following requirements:

- Public administration eServices provision via ISP staff in the role of a matter mediator.
- Issuing of valid confirmations, extracts or other documents generated based on data from

various PAIS in paper, possibly in electronic form.

Type of services applying the solution: G2P

Proposed system administrator: MF SR.

4.2.6 CPAP Shared Services

In eServices, there are common and repeated activities. Authentification of an eService portal visitor is an example of such activity, just like the service of electronic service output delivery, or ePayment service. It is inefficient for information systems functionality covering such activities to be repeatedly implemented in each one of them. Therefore, there will be central solutions providing the other information systems with services covering such functionality ("CPAP Shared Services"), i.e., services shared between several information systems. Other specific and unique process activities will be performed by designated specialised information systems.

The following list states the proposed shared services, together with the covered activities:

- **Identity and Access Management** – registration, authentification and authorisation;
- **Payment module** - payments;
- **eDesk module** – communication registration (filings and outputs);
- **Notification module** – notification delivery;
- **Electronic delivery module** – service output delivery;
- **eForm module** – electronic form completion and filing;
- **Central electronic filing room module** – electronic signature verification and issuing of filing delivery confirmation;
- **Long term archiving of electronic registry records** – long-term archiving of electronic registry records.

The proposed shared services are based on best practices from countries that have reached the highest eGovernment levels. The following section includes a more detailed description of their key functional requirements and the proposed administrators of the relevant services.

For state administration authorities, Act No. 575/2001 Coll. on Government Activities Organisation and Central State Administration Organisation as amended states the requirement to use central portal shared services to eliminate duplicate spending of financial resources. In justified cases, state administration authorities may develop their own solutions. For self—government authorities, central portal shared services represent recommendations.

4.2.6.1 Identity and access management

Currently, the respective public administration portals solve user registration, user account administration and authentification and authorisation separately. As a result, the citizen or businesses must establish user accounts in all public administration portals if they wish to use eServices. Access always requires authentification separately for each portal. Within registration, the user mostly states personal data and other additional data, such as e-mail address, telephone number, or preferred bank details. Since each respective public administration portal administers user accounts separately, in case of a phone number change, the user is forced to change it separately in all portals.

A solution is seen in a central system of identity management – Identity and Access Management. All public administration portals would use its services. Except from solving the above stated problems, it would also provide a central authentification mechanism enabling the application of integrated security policy. This system will also support the Single Sign On principle ("SSO"). The SSO principle enables the user authenticated for one public administration portal to change to another public administration portal without the need for repeatedly signing on. The system will enable the user to "authorise" another person to act on his/her behalf – an identity proxy. This transferred identity will enable the call centre or integrated service point staff to use public administration portal eServices on behalf of the client to whom the eService is mediated.

Identity and access management should satisfy, at a minimum, the following requirements:

- Integrated user account generation – registration.
- Integrated user account administration – personalisation.
- Integrated user authentification in the use of public administration portals – SSO.
- User authentication in the public administration call centre use.
- Function of identity transfer to another person acting on behalf of a person - identity proxy.

Type of services applying the solution: G2P, G2E

Proposed system administrator and operator: MF SR, GO SR

4.2.6.2 Payment Module

Currently, natural persons and legal entities use fee stamps or cash payments for the relevant organisation treasury or bank transfers, if the organisation provides its accounting symbols, to pay for public administration services. In case of paid electronic services, it is necessary to enable payments over the Internet as one of the steps of the service process. The solution is in the development of a public administration electronic payment module and its integration into the processes of a paid eServices provision.

The payment module should satisfy the following minimum requirements:

- Internet electronic payments under eService provision processes.
- Bank account payments via internet banking using “pre-completed” payment orders.
- Integrated user interface for all electronic payments.
- Immediate payment confirmation to service provider.

Type of services applying the solution: G2P

Proposed system administrator and operator: MF SR, GO SR

4.2.6.3 eDesk Module

The use of electronic services generates a number of electronic documents originating in the communication between the service user and provider. Forms, their attachments and other documents related to the filing of a service application or documents related to service outputs, e.g., in the form of confirmations, resolutions or other documents, can be cited as examples. Such documents are generated in the course of a service provision, such as a request for additional information sent by the service provider to the applicant, or notice on proceedings commencement or suspension.

An eDesk module will register complete eCommunication between the citizen, business and public administration. It will be a private document directory of a legal entity or a natural person communicating with the public administration. Any information system providing electronic services will use web services of this module to register in it all communication together with documents or forms forming the contents of such communication.

This module functionality will enable citizens or businesses to find all forms and documents forming part of the eCommunication between the user and public administration institution in one place. The system will offer the citizen and business an option to express satisfaction with the provided eService quality, e.g., in the form of a rating or text description.

Public administration will receive a database enabling the monitoring and analysis of quantitative and qualitative parameters of provided services. Monitoring of respective service types use, monitoring of time necessary for the provision of a service, or monitoring of such service recipients satisfaction could be cited as examples.

eDesk module should satisfy the following minimum requirements:

- Integrated registration of eCommunication between the user and the public administration
- System of service recipient satisfaction evaluation
- Statistical evaluation of service - quantitative and qualitative parameters

Type of services applying the solution: G2P

Proposed system administrator and operator: MF SR, GO SR

4.2.6.4 Notification Module

This module will provide a central solution for the delivery of information (notifications) via SMS messages, possibly via other electronic communication channels. These may be delivered by public administration within the service provision process, but also by relevant system administrators in case of ICT technical problems.

Type of services applying the solution: G2P, G2E

Proposed system administrator and operator: MF SR, GO SR

4.2.6.5 Electronic Delivery Module

In some public administration communication with citizens or businesses, the legislation requires a confirmation of delivery for certain document types (summons, notifications, etc.). The delivery takes place in the form of registered mail, or personal document delivery to the office itself. When accepting the delivery (by mail or in person at the office), the recipient confirms its delivery through the presentation of an ID card and his/her signature. Should the delivery not be accepted, the sender receives a notice of failed delivery. In any case, the sender knows if and when the recipient received the delivery, or that it was not delivered.

A similar system also needs to be implemented for the delivery of electronic mail (documents). An electronic delivery module will enable the sending and accepting of electronic documents together with a functionality generating a delivery, or failed delivery, confirmation.

An electronic delivery module should satisfy the following minimum requirements:

- Integrated delivery system for documents requiring delivery confirmation.
- Electronic signature on delivery confirmations.
- Making a delivery available only after the signing of a delivery confirmation.
- Delivery of signed confirmation to the sender.
- Delivery of information on failed document delivery following the expiry of the maximum delivery period.
- Automatic filing of delivery notification, delivered service output and confirmation of its delivery in the eDesk module.

Type of services applying the solution: G2P, G2B

Proposed system administrator and operator: MF SR, GO SR

4.2.6.6 eForm Module

Completion and filing of eForms will be supported by the eForm module grouping all management and use functions for the respective electronic forms relevant for electronic services. Its use will enable an integrated user approach, standard user interface and integration with other shared services – especially with the central electronic filing room, eDesk module and Identity and Access Management module.

An eForm module should satisfy the following minimum requirements:

- Unified interface enabling the operation of electronic forms for the provision of various public administration electronic services covering the functionality of form completion and filing.
- Integration interface for entity responsible for the provision of a relevant service.

Type of services applying the solution: G2P

Proposed system administrator and operator: MF SR, GO SR

4.2.6.7 Central Electronic Filing Room Module

A central electronic filing room module will establish the framework for the use of electronic signatures in public administration electronic services. It will verify electronic signatures on a received filing and issue a confirmation on eForm, or electronic document receiving.

A central electronic filing room module should satisfy the following minimum requirements:

- Verification of electronic signature attached to a received filing
- Issuing of electronic confirmation on when filing was received
- Securing electronic signature of a relevant public administration authority
- Provision of user applications for the generation and verification of electronic signatures compatible with central electronic filing room

Type of services applying the solution: G2P

Proposed system administrator and operator: MF SR, GO SR

4.2.6.8 Module for Long-term Archiving of Electronic Registry Records

Many electronic registry records with specific archiving periods defined in the valid legislation (Act No. 395 Coll. on Archives and Registries) are generated in the course of electronic public administration services provision. Since such a need for electronic registry records archiving applies to all public administration entities engaging in electronic administration services, it will be suitable to develop a central solution – "Module for Long-term Archiving of Electronic Registry Records", which will provide the necessary functionality in the field of long-term archiving of electronic records.

In simple terms, an electronic registry record is unstructured information stored in electronic files. Therefore, an electronic registry record is practically a file regardless of its format (text, pictures, video, audio, drawings ...). XML files represent an exception, since they contain structured information. However, they too may be considered electronic records in this context.

An electronic registry centre represents an archive of electronic registry records, which are no longer necessary in the everyday work of their compiler, but for which the relevant archiving periods have not yet expired. Following such period's expiry, electronic records will be assessed in the scrapping procedure. Historically valuable electronic registry records (marked with the letter "A" in registry plans) will be transferred to an electronic (digital) archive – not for long-term, but permanent, archiving. Other electronic registry records stored in the electronic registry centre will be discarded following the scrapping procedure.

An electronic registry centre should contain legally binding electronic registry records possibly, but not necessarily, electronically signed.

One of the key module tasks is the securing of permanent readability of archived electronic registry records. The archived records also need to be readable if the technology that generated them and the viewing applications are no longer generally accessible due to their being obsolete.

Another key task is the repeated signing of electronically signed archived registry records. Since, for some documents, the required archiving period may represent several decades and electronic signature validity represents one year in the SR, it is necessary to provide for the electronically signed registry records to be automatically re-signed through the generation of another time stamp prior to the electronic signature expiry, which will extend its validity.

Further, contents integrity needs to be secured. This means that the electronic registry record cannot be discarded prior to the required archiving period expiry - not intentionally or due to a technical problem. It may not be illegally modified and must be identical with the electronic document archived in the electronic registry centre.

The module for long-term archiving of registry records should satisfy the following minimum requirements:

- Securing of long-term readability of archived electronic registry records using records archiving in a long-term archiving format. These formats are currently defined in ISO 19005.
- Maintenance of valid electronic signatures attached to archived electronic registry records.
- Securing of electronic registry records contents integrity.

Type of services applying the solution: G2G

Proposed system administrator: MI SR.

4.2.7 Other Components

Other components represent further central solutions contributing to efficient eGovernment. These components are described in the following sub-chapters.

4.2.7.1 Public Administration Staff Portal

Simple and fast staff access to information is a dominant requirement of any modern organisation. Unsuitable information dosing and lack or excess of information minimise overall work efficiency. A staff portal providing personalised, requirement-based information relevant for each function represents a solution.
Public Administration Staff Portal should satisfy, at a minimum, the following requirements:

- Provision of general public administration information – newsletter, etc.
- Provision of specific information relevant to the job profile of a given employee, such as changes in legislation, possibilities of education via eLearning solutions to improve digital skills and other professional know-how, etc.
- Availability of lists of public administration entities, along with staff lists, their relevant positions and contact data (such data may be drawn from the Identity and Access Management system).
- Publishing of selection procedures for vacant positions in public administration.

Type of services applying the solution: G2E

Proposed system administrator: MF SR.

4.2.7.2 Metainformation System

The building, operation and development of public administration information systems is a complex task requiring thorough planning, management, monitoring and evaluation of the entire process. Performing these activities, especially making managerial decisions without precise information, is practically impossible. The solution is the establishment of a metainformation system for the needs of building eGovernment, which will manage all necessary information and provide expert activities in the building, operation and further development of eGovernment.

A metainformation system should satisfy the following minimum requirements:

- Registration of entities participating in the process of eGovernment generation and operation.
- Collection and registration of IS development concepts from obliged persons.
- Registration of eGovernment ICT infrastructure (HW, system SW and communication infrastructure).
- Registration of public administration information systems and their functionalities.
- Registration of databases (list of registers and code lists) together with data standards definition (central public administration data and metadata vocabulary).
- Databases of implemented eGovernment eServices.
- Web service catalogue named "Universal Description, Discovery and Integration ("UDDI") will provide the means for registration, categorisation and search of web services within the entire architecture of integrated public administration information system. In fact, it is a kind of register of provided web services within the entire architecture. It will contain the following information:

- Data on business entity providing services (through possible integration with the register of public administration entities),
- Description of business service groups provided by an entity,
- Binding templates describing technical information on actual services,
- T-Model providing detailed information on communication with a given service – input, output.

- ✔ Monitoring of respective eGovernment components functionality.
- ✔ Project management support.

Type of services applying the solution: G2G

Proposed system administrator: MF SR

4.2.7.3 Register of Public Administration Entities

The register of public administration entities is a newly proposed purpose-bound register. It will include a register of all institutions and entities with competencies implementing state administration services, transferred stated administration services and local competencies in the functioning of the respective society segments. Public administration entities satisfy natural persons' and entities' rights and requirements towards the state and municipalities, but also public administration rights and requirements towards natural persons and legal entities within the administered territory. For the public administration entities to be able to provide on-line eServices, it is necessary to establish an integrated register of all entities and institutions within the public administration to be able to clearly identify territorial and topical competence of a public administration entity acting on a given matter.

The register should contain the following data as a minimum:

- ✔ Clear identifiers of legal entities and entrepreneurs.
- ✔ Names of Public Administration Entities.
- ✔ Competencies of public administration entities in the handling of matters with links to competencies of public administration functional positions, whose competencies will be administered within the Identity and Access Management Module.
- ✔ Clear address identifiers.

Type of services applying the solution: G2G

Proposed system administrator: MI SR.

Proposed providers of source databases:

- ✔ MI SR.

4.2.7.4 Module of G2G Document Exchange

Public administration documents not only move around one office, but also between several public administration entities. To name an example, we can mention interdepartmental commenting procedure in the legislative process. To perform such activities, it is necessary to exchange documents between the respective public administration entities.

Document circulation management of one public administration authority is possible via the electronic document management system ("DMS"). In cases of distributed document management processes, it is necessary to provide for the processing, which was initiated and continued in the DMS of one public administration entity, to continue in the DMS of another entity, or in the DMS of more entities. A solution is presented by a system enabling integration of various entity DMS – Electronic Document Circulation System. From a technological point of view, the solution should enable the exchange of various document formats. The Committee for PAIS Standardisation defines the accepted document formats in the form of standards.

The G2G document exchange module should satisfy the following minimum requirements:

- Integrated eServices for document exchange between several DMS, possibly also exchanges with other information systems managing documents.
- Management of processing at inter-organisational level.
- Document management regardless of format (PDF, RTF, HTML …).

Type of services applying the solution: G2G

Proposed system administrator: MF SR.

4.3 Architecture of Administration Section IS

Architecture of administration section IS (Fig. 13) represents components mutually integrated into one unit and enabling electronic administration services provision within the given administration section. PAIS administrator, i.e., the relevant public administration authority responsible for administration services within a given administration section, is responsible for administration section IS management and development in line with the valid legislation. Section IS architecture may be split into the following layers:

Presentation layer – It represents user interface providing for information exchange between PAIS and users. It may be represented by:

- Internet portal
- Internet or extranet solution or portal
- Client applications (fat client)

An Internet portal is primarily used for IS communication with the public; intranet (extranet) and fat client (in case of client-server architecture) serves for communication with public administration staff operating a given IS.

Integration layer – in the SOA environment, software infrastructure typically includes the so-called middleware solution, which enables integration of software components, applications or information systems. It provides standard interfaces for application and presentation layers communication with data layer and other information systems via web service interfaces. Typically, it includes process models implemented and operated in a BPM system environment performing service processes of the information system or other systems.

Application layer – Application (so-called "business") logic providing for data processing in the form of implemented algorithms, especially the provision, storage and change of data in data layer.

It includes components or systems divided into the following areas:

- **Administrative systems** – Administrative systems include systems supporting the following: filing room, electronic filing room, registry, document management, etc.
- S**upport systems** – these are specifically ERP systems (Enterprise Resource Planning), meaning accounting, wages, assets management systems, etc.
- **Specialised systems** – In the effort to reach full administration section digitalisation, it is necessary to digitalise core processes of the given administration section, i.e., develop specialised administration section systems supporting provision of the relevant administration services electronically. These systems support processes that are unique and specific for services of a given state administration or self-government section. They are called custom development solutions and include, e.g., budgeting IS, tax IS, social benefits IS or system for local taxes and fees administration, etc.

Data layer – Data layer stores data in a suitably selected structure for the needs of application layer processing. The stored data may be divided as follows:

- **Reference data** – if a given IS is responsible for the administration of one of the basic registers or code lists, its data layer includes reference data, meaning data provided to other information systems. Within public administration, reference data is register data unique for the registered object; it is the product of source agenda, of a given administration service section, and is used in other PAIS.
- **Referenced data** – data obtained from other basic registers or code lists stored in data layer.

In line with European Union terminology, such data is called administrative data. As stated in section 3.3 Digitalisation of Administration Sections, efficient use of reference and referenced data is conditioned by the establishment of a public administration central data and metadata vocabulary and optimisation, harmonisation and standardisation of administrative data sources.

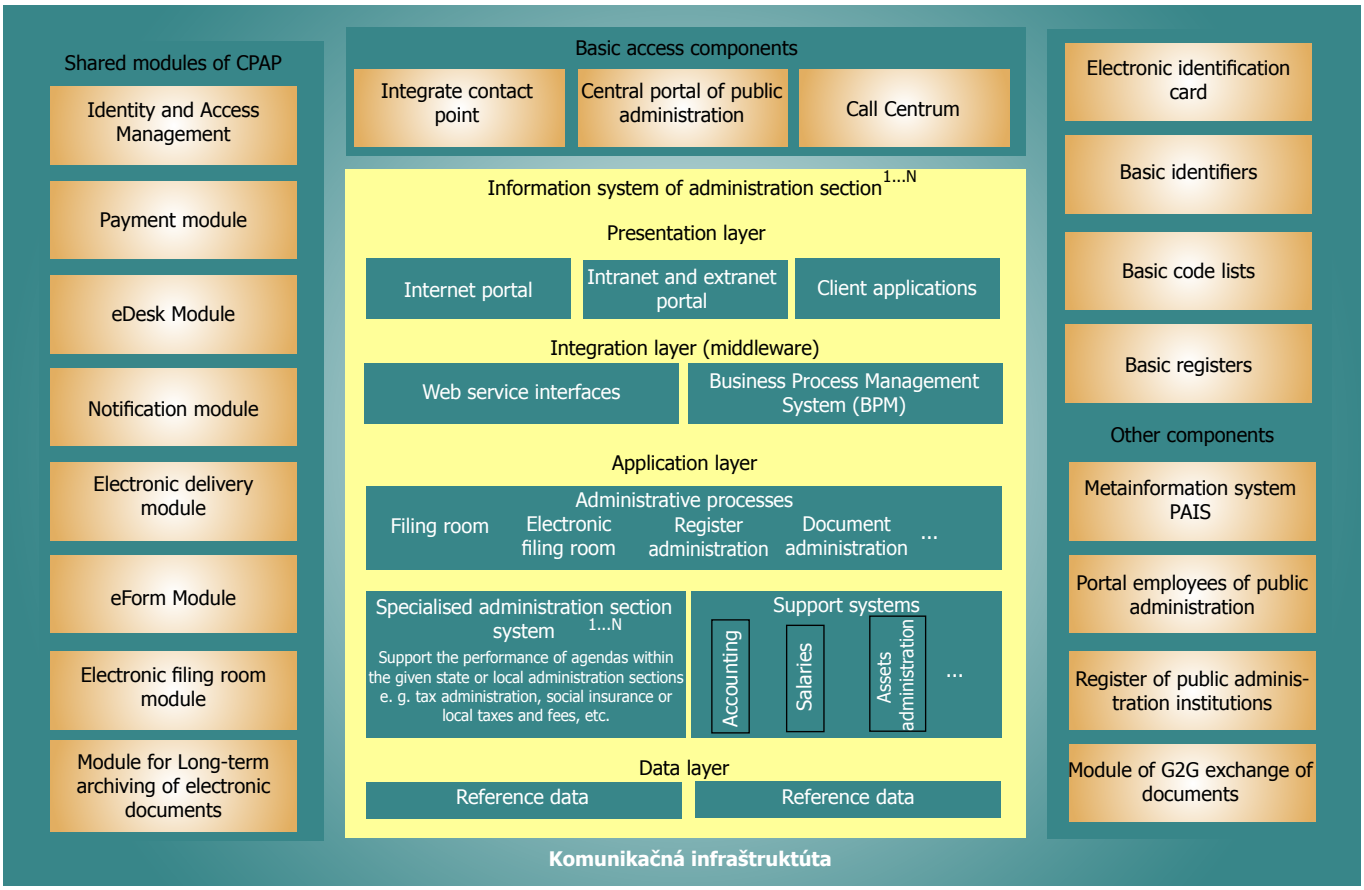

Fig. 14 – Architecture of administration section information systems

- **Other production data** – other data necessary for internal system operation.

The above described components of administration section IS need to be seen as a complex set. Therefore, not all section IS need to contain all its parts. If several section IS are the responsibility of one administrator, it is possible to join components of several IS into shared components, the so-called sector, or department components. Should one entity be the administrator of several section information systems, it is in its competency to decide that the systems may have a common electronic filing room or a common portal shared by several sections, the so-called sector portal. Currently, several such systems exist. However, it is necessary for such systems to be adjusted to be able to provide services (in line with the SOA concept) and enable their integration with other PA systems. Systems with architecture or technology preventing their modification will have to be replaced by solutions meeting the above-stated criteria.

4.4 Sample Electronic Service Provision Process

The following chapter describes the process of mutually interlinked activities using the proposed architecture components.

Public communication may take place over various communication channels, such as the WorldWide Web (WWW), telephone, e-mail, personal contact or mail. Depending on the character of a provided service, or applicant preferences, it is possible to select the input communication channel.

The applicant will use it to request a service, as well as an output channel for the delivery of service output. An output channel may be selected regardless of an input channel. For example, a citizen will file an application via the CPAP, but the service output in the form of a resolution may be delivered via mail.

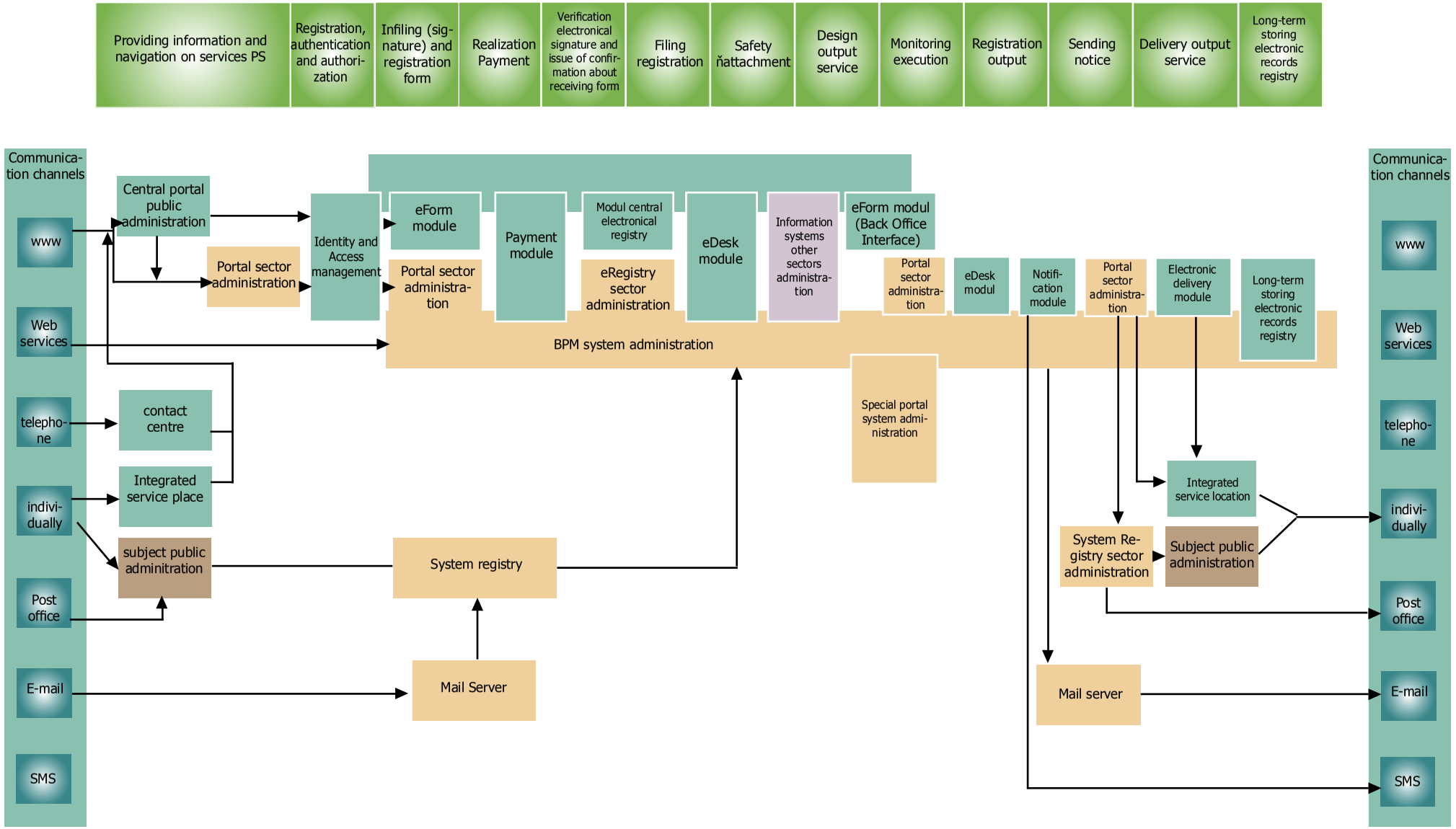

Fig. 15 – Process of public service provision using architecture components

Incoming Communication

www

In cases of WWW communication channel, it is possible to communicate via the following systems:

- **Central Public Administration Portal**
- **Administration Section portals**

System Registration (Authentification)

Each of the public administration portals requiring user authentification will include the authentification functionality mediated from central Identity and Access Management. Should the user already have authentified himself/herself in another portal (CPAP, other public administration portal), which re-routed him/her to the given portal, such authentification data will be transferred automatically, and the client will not be forced to register repeatedly. This will implement the SSO principle. Public administration portals will also enable anonymous access (without authentification), but without the possibility to receive personalised information and file forms.

Central public administration portal – represents a unified portal system enabling the client to do the following:

- **System Registration** (Authentification)
- **Obtaining the necessary information and navigation** – the portal will enable the client to obtain the necessary information and navigate (direct) the user to the requested service, which may be provided by the CPAP, or portal of a given administration section.
- **Completion of forms** - electronic forms of the eForm module will be automatically pre-completed with data identifying the authentic user (name, surname, address …) and client will complete the additional data. The form will automatically monitor form completion accuracy at the level of automatically performable control (validation rules).
- **Signing using the qualified electronic signature** – should legislation require a signature for the relevant type of service or form, the system will enable its electronic signing using the GES.
- **Form filing** – based on the accurately completed form data signed with the GES, if applicable, the relevant web service of the relevant system processing the given form will be initialised.

Administration section portals - information and services provided under the competence of a given public administration section may be provided via separate administration section portals. However, identical information and services also need to be delivered to the CPAP, e.g., in the form of hypertext references. It is an application providing the user with the necessary information and possibly also containing forms for user electronic communication with the relevant service provider. It may provide the user the following functions:

- **System Registration (Authentification)**
- **Obtaining of the necessary information and navigation** – the portal will enable the obtaining of the necessary information and will direct (navigate) the user to the requested service form.
- This form may be located directly within the given portal, but also central forms from the eForm module may be used.
- **Completion of forms** - electronic form will be automatically pre-completed with data identifying the authentified user (name, surname, address …) and client will complete the additional data. The form will automatically monitor form completion accuracy at the level of automatically performable control (validation rules).
- **Attachment of qualified electronic signature** – if applicable, the system will enable the attachment of GES to a form.

- **Form filing** – Form data will be transferred to the system responsible for the filed form processing.

Web Services

To integrate eGovernment services into public information systems (especially IS of business entities), selected eServices will be made available via web services. To name an example, we can mention integration of eService providing business register extracts for banking information system, or ERP applications of business entities. It is the so-called primary provision of services G2B.

Telephone

Telephone communication will be used for public administration central call centre. When using the phone to place applications for services requiring applicant authentification, following such authentification, the caller identity will be delegated to the Call Centre staff. The operator will then be able to access electronic services via public administration portals on behalf of the caller. Based on caller instructions, the Call Centre operator will perform the relevant operations. This will make services available, except for services requiring the use of GES.

Personal Contact

Personal communication of citizens or entrepreneurs with public administration staff is natural. It may take place with the personnel of integrated service points, or directly with the employees of the relevant public administration organisation.

Mail

Mail also may be used to communicate with public administration. Following mail delivery, the delivered documents will be processed just as if delivered in person by the applicant directly to the public administration authority.

E-mail

E-mail communication will especially be used for communication services and not for transaction services.

Outgoing Communication

Communication channels for the delivery of a service output are identical with the channels used for applications filing. These include www, phone, e-mail, personal contact and mail.

WWW

In cases of WWW channel use, it is possible to deliver service output via the central electronic delivery system, possibly via a portal of the given public administration section responsible for the service provision.

The central electronic delivery system will notify the client on electronic mail or requested service output delivery. This may be delivered in the form of an e-mail or SMS message. Following log-in (authentification) into the system, the client may then take over the delivered electronic mail. Should it be necessary to procure a document confirming delivery, the system will make the addressee electronically sign an electronic mail delivery confirmation prior to reading the mail.

Web Services

When requesting a service via web services, the service output will be delivered via communication protocols for the use of web services, so that such output may be processed by the information system of the subject requesting the provision of a given service.

Telephone

Telephone communication represents one of the possible methods for a service output delivery to the applicant. It is suitable, if the service output is only a piece of information.

E-mail

An outgoing electronic document may be delivered to the client via electronic mail.

Personally

Service output in the form of a physical document or documents may be delivered to the client personally by the personnel of the integrated service points, or directly by staff of the given public administration authority providing the requested service.

Mail

The outgoing physical document or documents are delivered to the client via mail.

SMS

This is used as an auxiliary form of communication, e.g., to inform the applicant on the processing of the given service.

4.5 Infrastructure

Infrastructure represents technological and communication conditions for administration sections digitalisations and for electronic services development. It establishes conditions stimulating offer and demand for such services. It is a set of technical-system means and technologies of data collection, processing, archiving and distribution, as well as provision of information services, i.e., operation of information systems within the digitalised administration sections. It especially provides for:

- Implementation and operation of information systems within administration sections
- Provision and development of public administration eServices.

Communication-technological infrastructure represents a technological environment sustaining the operation of the respective information systems within the given administration sections (or of public administration integrated information systems). It needs to build on technology enabling the establishment of mutually interlinked and cooperating PAIS respecting user (public administration, citizens and businesses) requirements for the provision of efficient and quality services.

Communication infrastructure represents a physical implementation of communication means with the purpose of safe communication and data transfer between the respective IS parts and between the IS themselves, as well as between IS and the users. A typical physical implementation is represented by fibre-optic or metallic cables, radio connection, microwave connection in licensed and unlicensed bands, etc. Further, it also includes technical communication equipment, such as routers, switches, interfaces, transmitters, receivers, etc. Communication networks infrastructure needs to secure sufficient capacity for the performance of the requested services considering information safety and increased requirements coupled with future service extensions.

Technological infrastructure is another infrastructure component. Its aim is to provide an environment for application-software components operation within the respective administration section IS. These are the computing systems supporting application-software components operation and their associated systems (data archiving systems, systems providing information security, etc.), as well as support infrastructure necessary for such computing systems operation (the physical data centres themselves).

Currently, the following exists at the department infrastructure level:

- Inefficiency (both economic and technological),
- Individual and uncoordinated principle,
- Unsuitability for the provision of transaction services.

The goal is to build cheaper and more efficient infrastructure, which will be safe, sufficiently powerful, reliable, flexible and enabling the efficient provision of on-line eServices at publication, communication and transaction levels. It should be built on technology enabling the creation of mutually interconnected and efficiently cooperating information systems

within administration sections.

This chapter especially aims to present a framework for the establishment of integrated technological and communication infrastructure on safe and robust enough networks with guaranteed application availability.

Such infrastructure development especially builds on Act No. 369/1990 Coll. on municipal system as amended and Act No. 275/2006 Coll. on PAIS as amended, which define the legal framework.

Integrated communication-technological infrastructure may be divided into the following components:

Integrated communication-technological infrastructure may be divided into the following components:

- Integrated technological infrastructure of state authorities
- Basic integrated communication infrastructure for state administration services – at WAN level
- Basic state administration communication infrastructure – at LAN level
- Basic local self-government technological and communication infrastructure

4.5.1 Integrated Technological Infrastructure of State Authorities

Integrated technological infrastructure of state authorities represents a coordinated system of mutually interconnected technical and technological means of IS within administration sections' implementation and operation.

Public administration technological infrastructure needs to be flexible, i.e., requiring financially undemanding modifications in case of public administration structure changes, especially at the performance level and the level of application innovations. It needs to build on technology enabling the establishment of mutually interlinked and efficiently cooperating information systems of administration sections respecting all user requirements (public administration, citizens and businesses) for the provision of efficient, quality and financially undemanding services.

Development of an integrated technological infrastructure aims to create a mutual logical state data centre enabling the operation of modules of repeated administration process modules (especially administrative and standardisation) for all state administration authorities, as well as information systems of identified internal administration services[35] and provide the opportunity to operate other public administration IS depending on the relevant administrators' decisions. Hence, the goal is to develop a partially shared infrastructure and central basic architecture components, whereby each obliged person will have the opportunity to develop their own specific IS and registers with the relevant accountability.

The data centre should include the computing and associated system means, as well as telecommunication systems and data archiving systems. As a rule, it includes redundant, or back-up, energy sources, environmental systems (such as air-conditioning, fire prevention systems, etc.) and special security systems. Technologically, such a data centre may be implemented in the form of a joint data centre consisting of several physical locations. In such a configuration, redundant systems are created when locations cannot mutually backup various provided functionalities. Such integrated infrastructure also includes disaster recovery mechanisms, which may be activated in cases of specific situations. Such mechanisms are transparent for all infrastructure users with respect to the use of integrated communication and technological infrastructure.

Actual technological and organisational details of such infrastructure development and provision exceed the scope of this document and will be included in the feasibility study.

[35] Internal administration services – enforcement of competencies, duties and tasks by obliged persons that are related to their institutional functioning; their scope and method of enformcement are defined in law (e.g.: Act No. 431/2002 Coll. on Accounting as amended, Act No. 583/2004 Coll.)

4.5.2 Basic Integrated Communication Infrastructure for State Administration Services –WAN

A key principle of basic integrated communication infrastructure for state administration services at WAN level (networks interconnecting remote locations within the respective involved public administration authorities) is the fact that it should be fully state guaranteed, since it represents state administration services, or transferred state administration services.

Mutual interaction of PAIS will follow defined and approved rules and standards for data exchange between PAIS and using such communication infrastructure. The communication infrastructure should be closed and especially reserved for the mutual safe communication of these systems with the environment and for their mutual communication mediation.

Within the entire public administration system, the following three specific groups may be defined with respect to infrastructure requirements:

- Science, research, education
- Armed forces, police, intelligence service (power forces)
- Other public administration

This division especially results from the character of applications to be operated by the relevant infrastructure. Science, research and education are characterised through the processing of large data volumes in the form of worldwide databases (nowadays, especially with the emphasis on Internet information sources). State armed forces, police, intelligence service have high demands in the field of security, multimediality and connection to armed forces, police, intelligence service (power forces) of other states. Other public administration is characterised by prevailing data communication within public administration and with the public, especially within the national territory and EU countries.

This document, i.e., basic integrated communication infrastructure for state administration services at the WAN level, aims to deal with issues of the relevant integrated state administration communication infrastructure completion. The issue of infrastructure completion for academics or armed forces, police and intelligence service (power forces) is not the subject of this document, but it is necessary to stress their mutual interoperability and provision of mutual redundancy.

The current status in communication networks development is quite complex and mutually uncoordinated, even including many cases of multiple connections within one public administration entity, since the respective agendas often have their purpose-bound communication infrastructure developed. It may be evaluated as inefficient in technical and economic terms and unsuitable for the transaction level of eServices provision. The inefficiency is especially in the individualistic approach to infrastructure development. As a result, for example, the number of public administration institutions based within one building may be equal to the number of physically independent LANs (structure cabling, servers) and often also an identical number of connections to individual WAN type networks. State authority LAN type computer networks are interconnected via leased circuits to several departmental VPNs with transmission speeds between 128kb/s and approximately 10 Mb/s.

From the point of view of organisational responsibility, the existing communication infrastructure may be divided into two levels:

- Interdepartmental networks (e.g., network interconnecting central state administration authorities – Govnet; or communication infrastructure for information systems of public finance management);
- Departmental networks (currently, there are about 40-50 networks administered and operated by the respective state administration authorities, which are provided by various providers, as per MI SR data).

In a target situation, communication infrastructure should be integrated to provide logical virtual units in the physical infrastructure for the needs of respective state administration organisations. In part of the integrated communication infrastructure, the network interconnecting ministry offices and other central state administration bodies - the GOVNET network - is administered by GO SR.

Technologically, the physical layer of such communication infrastructure should consist of a high speed backbone network (with respect to development in this area, it would be best for it to be based on fibre optics – direct use of a fibre optic transmission network), to which the access layer will connect for various organisations providing state administration services, or transferred state administration services. Above the physical layer, there should be a technological platform enabling the provision of high added value services. This platform should open the possibility of closed functional groups establishment, i.e., virtual private networks, as well as of high quality data, video transfer and voice operation.

When building such infrastructure, it is possible to select a model, whereby the physical state-owned infrastructure could be used as the backbone network in combination with access layers possibly owned by other entities and subcontracted by several telecommunication services providers. Actual technological and organisational details of such infrastructure building and development will be the subject of a feasibility study. This topic should elaborate the already existing documents prepared on this issue[36] and especially consider best practices from other states[37].

4.5.3 Basic Integrated Communication Infrastructure for State Administration Services – LAN

Currently, LAN, just like the WAN infrastructure of departments, is inefficient and many times inconvenient. The inefficiency is especially in the individualistic approach to this infrastructure development. For example, following district offices dissolution and establishment of specialised state administration, in many cases, if public administration institutions are based in one building, each one of them has its physically independent LAN (structure cabling, switches, servers).

LAN, especially its passive part, i.e., structured cabling, in fact just like electrical wiring, is part of a building's technological equipment. Therefore, the provision of such wiring should be part of the services provided by the building manager.

It is desirable to satisfy state administration LAN infrastructure demands centrally in state-owned structures. For example, via the state immovable assets management responsibility of one organisational unit[38], the state would provide LAN infrastructure services.

If several public administration institutions are based within one building, the state immovable assets manager would provide such institutions with virtual LANs up to the connection point, i.e., a structured cabling plug. However, the provision of communication means (e.g., routers, etc.) remains the competency of the given departments.

With respect to evolution in the provision of telecommunication services, LAN infrastructure may also include the provision of voice services. Voice communication may be implemented via call solution for internal and external communication within public administration institutions. Centralised management would result in a group of state administration users engaging in voice communication, without the need for external tarrifs (calls within one large branch exchange).

To make the position and operation of various LAN infrastructures more efficient, it is advisable to consider a coordinated approach, i.e., harmonisation of applied communication solutions variety and definition of a clear communication network and related IS management and operation rules from a state point of view. It is necessary to focus on the definition of joint parameters and standards for the operator, as well as rights and duties for the LAN infrastructure manager with respect to solution functionality and information protection.

36 For example, Government Resolution No. 199/2006 on the possibility of efficient use of electronic communication infrastructure owned by entities with majority state stake,
37 For example, communciation infrastructure implementation in Greece – Syzefkis, finanaced from OPIS funds.
38 For example, by Agency for Immovable Assets Management.

Respective state administration bodies would have no need for support activities outside their core business. This situation will result in the following:

- Efficient operation of LAN infrastructure;
- Optimising of state administration staff counts in support activities;
- Minimising of financial costs spent on the development and operation of infrastructure.

Actual technological and organisational details of such infrastructure building and development (such as security requirements of LAN users, speed of justified changes required by users and guaranteed by LAN operator and method of operating costs financing, etc.) will be the subject of a feasibility study.

4.5.4 Basic Local Self-Government Technological and Communication Infrastructure

Basic Local Self-Government Technological and Communication Infrastructure has two solution levels:

- Operation of transferred state administration services;
- Operation of local competencies, which may have an individual or joint solution (data centre of towns and municipalities and other joint data centres).

Operation of infrastructure for the performance of transferred state administration services should be state guaranteed, so this level should be solved similarly to state administration services respecting the fact that responsibilities are with the respective ministries.

Currently, towns and municipalities proceed independently in procuring and operating SW applications necessary for the handling of their agenda. There are many suppliers providing APV and public administration services on various platforms and with various levels of quality. Despite limited budgets, especially in smaller municipalities, in each individual case it is necessary to deal with administration services provision, i.e., implementation, operation support, protection, changes, etc. of IS supporting such agendas. This results in serious compromises between the office needs and reality of the available IT level. There is minimum coordination in infrastructure development or competencies implementation.

Since such digitalisation of administration sections ranks among the crucial conditions of successful eGovernment introduction in the SR, even the development of such infrastructure could be partially state guaranteed. For example, to provide eServices, local self-government should also have available the technological infrastructure for the provision of a safe communication platform and guaranteed services availability.

The aim is to build a specialised Municipal Data Centre (MDC) or a similar platform providing local self-government authorities and self-governing regions the necessary applications as a service. Selected applications will be certified. Alternatively, it will also provide high-speed Internet access. The principle of certified applications for respective agendas will be applied. Application certification authority will be the generally relevant state authority (e.g., MF SR for accounting, MI SR for registry agenda, etc.).

Technologically, one virtual data centre will be built (possibly within several physical locations) to provide towns and municipalities with the necessary APV support in the processing of their agendas (application software for their back office agendas – salaries, accounting, human resources, registry, management agenda within the municipal competence, etc.). The given centre will be connected to other shared CPAP modules.

The above stated vision of IT support solution for towns and municipalities fully respects the current trends of IT use. With continuously declining prices for quality data connection and lack of highly qualified staff, central provision of generic, but also specialised applications will be ever more attractive.

The proposed solution will result in the following benefits:

- Possibility for significant improvement in standard solutions for selected contractors to be motivated for further long-term development.
- Limited costs for towns and municipalities resulting from the use of standard solutions; a limited number of contractors on one hand and increased number of offices using the given solution on the other hand will create space for lower unit prices.

General eGovenment Priorities

- Provide local governments with alternative solutions that offer services, costs, guaranteed quality and service posing a solution to their current problems with the procurement and operation of information systems.
- Better provision of central services which will be able to invest in the improvement of technical equipment, call support, methodology, processes and procedures in service provision.
- HW, infrastructure and telecommunication service cost savings.

5. General eGovernment Priorities

eGovernment prioritises primary development areas based on strategic objectives and the current eGovernment status in the scope of eGovernment pillars:

- Legal Framework Formation
- Infrastructure Formation
- Digitalisation of Administration Sections

Respecting the above-stated principles, implementation of integrated PAIS architecture and eGovernment priorities under efficient political, institutional and implementation support are prerequisites of the target situation, namely eGovernment. Electronic administration services will provide for efficient quality change not only in public administration public services provision, but also in the services of public administration bodies and institutions themselves.

The following scheme presents an overview of priorities:

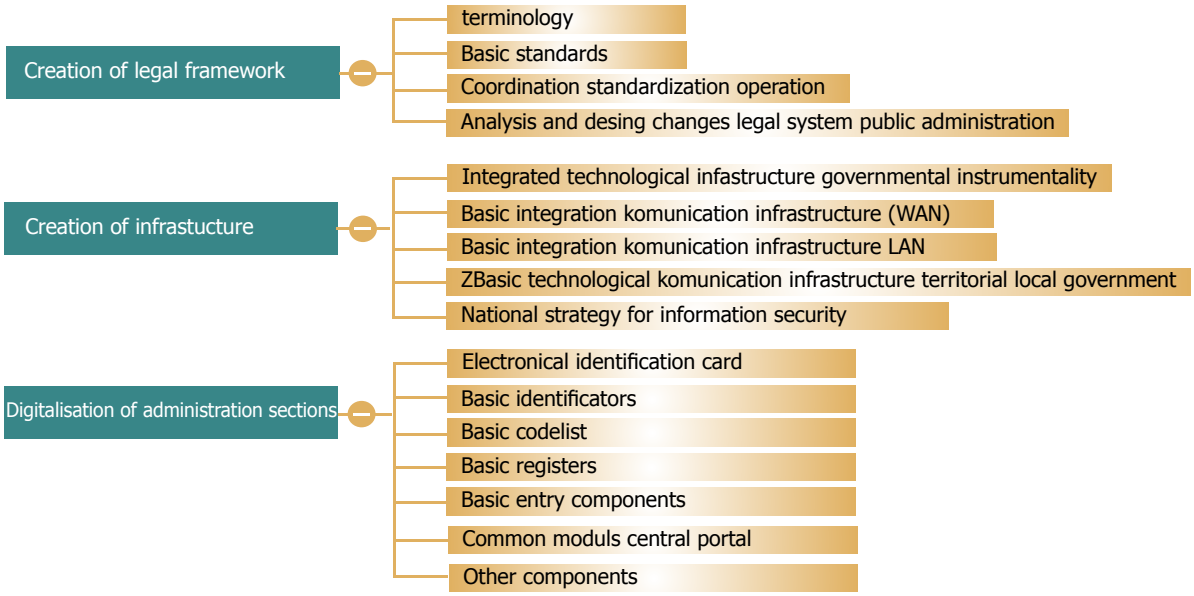

Fig. 16 - General eGovernment Priorities

5.1 Legal Framework Formation

State authorities may only act in the scope and way defined by law. This suggests the crucial role of public administration legal system formation in light of eGovernment. Therefore, the eGovernment process needs to be merged with the formation of the public administration legal system, which needs to form a conflict-free part of the entire legal system. The system of public administration legal standards generation and application forms a necessary part of the legal code, as well as the system of legal regulations and legal doctrine. Therefore, it is necessary for it to

General eGovenment Priorities

be included in the information system within the legislative process, as well as in everyday efficient law enforcement by public administration authorities. In this, the existing EPI system needs to be used. It is a Ministry of Justice SR verified database of legal regulations and legal doctrine of the Slovak Republic. It is also used in the electronic legislative process.

A conceptually and systematically formed legal framework represents a functioning system of legislation, methodology and standards generation and application. In the form of a mutually interlinked system of regulations, it defines the conditions and rules of eGovernment. Its contents cover the following:

- Institutional framework includes regulations defining stakeholders, their roles, competencies and duties in the field of eGovernment ;
- Regulatory framework includes legislation, methodology and standards defining conditions and methods of ICT application in public administration, as well as the provision of eServices.

Legal framework formation is especially the responsibility of central state administration authorities in line with their functional competencies.

Without a conceptually and systematically formed legal framework of eGovernment and concurrent solution, integration, optimisation and coordination of administration service processes, it is impossible to reach maximum efficiency of eGovernment investments.

Formation of a eGovernment legal framework is a complicated and time-intensive process based on existing legal framework analysis, realistically functioning responsibility and formation system. Improvement of the existing system will start with the consistent application of the above mentioned principles and implementation of the following priorities in the field of legal framework formation:

- Terminology – the aims are to introduce uniform, clear and binding terminology harmonised with the EU recommended terminology and its inclusion into the terminology of the SR public administration legal system. Without the existence of clear and binding terminology, it is impossible to form an eGovernment legal framework. Clear terminology is the condition of unambiguous interpretation and consistent application or regulations
- Basic standards - basic standards represent an important data integration tool in public administration databases. These are especially the natural person identifier, identifier of legal entity and entrepreneur, address and others resulting from the feasibility study.
- Standardisation activity coordination – standards are a tool for reaching interoperability and the necessary level of information protection. There is no access to prepared international standards and coordination of standards issuing is worse in the SR. It is necessary to define competencies and provide coordination of standards creation and issuing in crucial organisations such as SSO, MR SR, NSO SR, MC SR, MH SR and GCCO SR. When accepting the approved standards, it is necessary to have Slovak representatives in international standardisation organisations.
- Analysis and proposed changes in public administration legal system in terms of efficient ICT application in public administration represents a condition for the definition of public administration legal framework architecture and adoption of its formation concept, as well as its practical creation and application in day-to-day practice. The analysis should result in a legal framework architecture draft, legislative changes recommendations and new regulations supporting integration and optimisation of administration service processes. The legal framework will represent a complex system of interlinked regulations regulating the process of ICT application conditions generation, as well as ICT application itself in public administration. Regulations need to be formed to clearly enable mutual provision and use of electronic data within public administration, as well as eCommunication between the public and public administration in handling various matters.

Legal framework formation will be the subject of a feasibility study, which should build on the existing documents and analyses dealing with the issue of necessary legislative changes in the field of eGovernment (such as Transparency in Functioning of State Administration and Public Self-Administration, etc.).

General eGovenment Priorities

5.2 Infrastructure Formation

Infrastructure establishes technological and communication conditions for management and operation of IS within digitalised administration departments.

The formation of technological and communication infrastructure will enable the building, operation and development of the necessary information-communication technology based on safe, robust networks, guaranteed availability of critical applications, and integrated navigation, including workflow. Infrastructure can be "imported, ordered and purchased", i.e., subcontracted. It needs to secure sufficient capacity for the performance of the requested services considering increased requirements coupled with future service extensions.

The following are key priorities of infrastructure formation:

- Integrated technological infrastructure of state authorities – the building of one logical state data centre, which would operate identical joint administrative agendas for all state administration authorities and provide the operation possibility for other specific IS resulting from the feasibility study.
- Basic integrated state administration communication infrastructure – WAN - Basic public administration communication infrastructure is state guaranteed. It is formed by three network types respecting application specifics: science, research and education; state special forces; and other public administration. This concept deals with efficient solutions for an integrated, sufficiently robust, high-speed public administration network securing communication services from all state administration and local government authorities, as well as public access to public administration eServices.
- Basic integrated state administration communication infrastructure – LAN – Technological and communication background providing state administration with active and passive LAN infrastructure parts.
- Basic local government technological and communication infrastructure – the building of a specialised Municipal Data Centre (MDC) providing towns, municipalities and self-governing regions the necessary certified applications of service. The solution will establish conditions for PAIS efficient management and operation and provide public services on the basis of client access and web services with guaranteed availability for, at the least, critical applications. Since local government technological and communication infrastructure is significantly underdeveloped, its completion represents one of the key priorities.
- Slovak national strategy for information security – develop a basic framework of state information security as the first step in the solution of information security issue. Define the principal distribution of competencies, resources, tendencies, and priorities, as well as a basic description of respective tasks with the aim of providing for cyberspace protection. Reliable information systems functioning, information exchange and the related information security represent a certain guarantee of basic human rights and freedoms for citizens and the growth of competitiveness for each state. Practical implementation of information safety in the SR will also increase the trustworthiness of electronic services, electronic business, competitiveness and esteem of the SR towards other countries.

General eGovernment Priorities

5.3 Digitalisation of Administration Sections

The digitalisation of administration sections represents the actual ICT application into administration service processes (managing, decision making, standardisation, administration, expert, etc.). Such applications in a given time and within a given administration section results in an administration section information system with all agendas digitalised, i.e., performed via PAIS. To digitalise administration sections, it is necessary to provide online communication in the entire scope of matter handling, i.e., covering all communication types through efficient means and methods using the maximum possible scope of basic architecture components mentioned in chapter 4.2.

Currently, public administration operates many autonomous information systems at varying architecture and quality solution levels with management and operation based on a special regulation.

The Act on PAIS authorises an Administrator to select PAIS, which Obliged Persons should be obliged to use; this results from Section 2 Letter d) of the Act on PAIS saying that "administrator defines the means of information processing". Hence, the Administrator may tell Obliged Persons by which means (i.e., which PAIS) they are obliged to use in the processing of certain information in a given public administration sphere. Therefore, within certain administration sections, obliged persons are obliged to only use PAIS identified by the PAIS administrator of the given section.

Further, administration services of public administration authorities may not be provided electronically without any support in the laws, which regulate the process of administration services provision within the respective administration sections. Central state administration authorities are responsible for basic public administration areas defined in the act on competencies[39], i.e., in line with their functional competencies, they produce legislative and methodological conditions for ICT application, as well as for ICT application itself within the given state administration service sections – that is, they are directly responsible for PAIS management in the state administration service section.

The state suggests that public administration authorities, as obliged persons, will only use PAIS selected for the given administration section services and activities by the PAIS Administrator. Within the relevant administration sections, central state administration authorities act as PAIS administrators with functions supporting state administration services and transferred state administration services.

Local government services are formed in direct conformity with state administration sections. If CSAA forms the standardisation for local government sections, it is efficient for CSAA to be the administrators of PAIS for the enforcement of such formed local competencies. If CSAA does not form standardisation for local government authorities, PAIS administrators should be the relevant municipalities, or higher territorial units in line with their local competencies. One of the local government priorities is the separate completion of local government internal information systems for towns and municipalities.

The PAIS administrator should secure the administration section IS, enabling the target solution to use eGovernment for the complex support of administration section activities. To the maximum possible extent, it should use basic architecture components of integrated PAIS. An object-oriented (section-process) approach guarantees the integrity and efficiency of IS development, solution complexity, functional areas (administration sections) stability and is in line with Act No. 275/2006 Coll. on PAIS as amended.

Therefore, digitalisation of administration sections prioritises implementation of the following integrated PAIS basic architecture components (described in chapter 4.2). **Basic components represent key building stones of administration section IS. Without them, the eGovernment process will be unable to continue efficiently:**

[39] Act No. 575/2001 Coll. on Government Activities Organisation and Cetral State Administration Organisation as amended.

General eGovenment Priorities

- Electronic ID card
- Principal Identifiers
- Principal Code Lists
- Primary Registers
- Basic Access Components
- Common CPAP Modules
- Other Components

The process of public administration sections digitalisation may only be successfully implemented with quality human resources. Therefore, one of the administration sections digitalisation priorities is the provision of training to all state administration and local government staff working with ICT. Such training should focus on specific IT skills. The priority also focuses on human resources within IT departments, adequate remuneration and position for public administration IT specialists.

In digitalisation of sections and overall architecture, development will follow defined priorities. Principal priorities are ranked in Chapter 2 "Further Steps". Prior to the stated key procedure of priorities identification at the time of this document submission, there are known priorities resulting from approved documents such as Government Program Resolution, eGovernment Strategy of Slovakia and OP Information Society, or 20 basic service categories defined by the EU in the assessment of objectives observation. The mentioned priority tasks need to be destributed to the respective projects as quickly as possible. In implementation, they need to be prioritised with indicated implementation time horizon by 2010.

The following chart lists categories of public administration services evaluated by EU Council with their respective administration sections.

General eGovenment Priorities

Citizen Services

Service Category	Service Description	Administration Section
Natural person – citizen income tax	Filing of natural person income tax return	Taxes and fees
Personal documents	Obtaining of ID card, passport and driving licence	ID cards, travel documents, driving licences
Vehicle registration	Registration of vehicles designated by technical qualification authority for registration and attachment of a licence plate, or of vehicles of the relevant type, at district licensing authority	Registration of road motor and towed vehicles
Police notices	Notices to prosecutors, investigators or police authorities on facts suggesting the commiting of the crime of theft. A crime is an act dangerous to society as defined by law.	Law enforcement, personal and property security
Notices on change of address	Notification of location, beginning and end of residence of a citizen within the territory of the Slovak Republic.	Registration of citizens
University applications	University applications.	Universities
Social benefits (unemployment benefits)	Payment of unemployment benefits. Unemployment benefits are a social benefit the state pays citizens to provide income in times of unemployment.	State social benefits, social help
Social benefits (children's allowances)	Provision of children's allowances. Children's allowances are state social benefits representing state contributions paid to citizens for the upbringing and care of children.	State social benefits, social help
Social benefits (student allowances)	Provision of state budget scholarships for university students.	Universities
Social benefits (cost of health care)	Payment of health care costs.	Health care and health protection
Construction permits	Obtaining of construction permits for projects of all types, regardless of their structural-technical form, purpose and duration of construction, in cases of structures' modifications, especially with respect to additions, extensions and structural changes.	Building Code and local planning except for ecological aspects
Official registry extracts (birth certificate, marriage certificate and other registry events)	Obtaining of official registry extracts on certain registry events (e.g., upon birth or marriage) and other facts decisive for the identification or verification of personal standing, especially data on adoption, determination of parenthood and divorce ("Registry Events")	Registry matters

General eGovernment Priorities

Citizen Services

Service Category	Service Description	Administration Section
Job search	Provision of information on free jobs for job seekers.	Labour market policy and coordination of employment policy
Public libraries	Search and reserving of specific information media (CD, book ...) in public library catalogues.	Librarianship
Health services	Interactive consulting on provided health care with the possibility of making appointments with health care providers.	Health care
Cadastral services	Provision of electronic services from real estate cadastre for citizens.	Real estate cadastre

Services for Businesses

Service Category	Service Description	Administration Section
Customs declarations	Customs declaration filing.	Customs
Corporate income tax	Filing of corporate income tax return	Taxes and fees
Value added tax	Filing of value added tax return	Taxes and fees
Environmental certificates	Permit for the performance of business activities issued by state administration authority in areas impacting the environment	Environmental impacts assessment
Legal entity registration	Legal entities registration in the Business Register	Courts
Employee social benefits	Filing of employer insurance and benefits statements to the Social Insurance Company	Sickness insurance, injury insurance, pension benefits
Public procurement	Procurement of goods, work and services via the methods and procedures of public procurement used by procurers in public contracts.	Public procurement
Statistical data presentation	Provision of data to Statistic Office of the SR required for statistical research included in the program of state statistical research.	State statistics
Cadastral services	Provision of electronic services from real estate cadastre for businesses.	Real estate cadastre