Implementing an Effective Public Administration Information System: State of PAIS in the Czech Republic and its potential application in the Republic of Serbia

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Abstract—As part of the Smart Administration strategy of the Czech Republic, Czech government has adopted a unique solution to centralize and to keep actual, most common and widely used information. The basic registers are the central information source for information systems of public authorities in the Czech Republic. Along with the Czech Point as the interface to all administrative requests and Data box as the electronic mail box the three projects represent a cornerstone of the effective public administration in the Czech Republic. This paper describes the current status of Public Administration (PA) in the Czech Republic and gives the characteristics of the optimal PA Information System (PAIS) and guidelines for its possible implementation in the Republic of Serbia.

I. INTRODUCTION

The Czech Republic, as a unitary state with a parliamentary system and decentralized and de-concentrated government has three basic levels of public administration – central, regional and municipal. Fourteen regions and more than 6200 municipalities represent self-government units [1]. This put a stress on capacities of central government to coordinate and evaluate the practices of municipalities and to provide state administration services in the uniform and proficient level across the state territory.

Information Strategy is the principal document governing the implementation of information and communication technologies (ICT) in Government and thus it encourages the development of electronic Government. The aim of the Information Strategy is to create a solid conceptual foundation for adoption of strategic documents and become a management tool for development of Information Systems (IS) and managing data across organization. Implementing new technologies in the legacy systems does not always bring positive effect, i.e. many investments in these areas may be unprofitable. One of the main reasons why this happens is unclear or poorly defined Information Strategy, which is an integral part of the strategic objectives of the Government. Even in cases where Information Strategy is designed correctly, it is necessary to plan its implementation in a way to achieve optimum functioning of the systems and the expected positive effect.

When designing the Public Administration Information System (PAIS), there should be two guiding principles:

1. Guiding principle #1 - A citizen may no longer circulate authorities
2. Guiding principle #2 – Circle data not people

When a person requests some document from PA body or when he wants to renew a passport, or register a vehicle he often has to submit some other document confirming his identity, or document related to the task he wants to accomplish. Instead to circulate the authorities in order to finish a task, person should be able to accomplish the task in one place, because the data he needs is usually already in some PA body’s information system. Having this in mind, the first principle of building a successful Information Strategy should be that citizens should not circulate authorities. This principle rises from historical performance of the public administration, when large paper piles were kept by individual PA bodies, and people were circling among them in order to obtain all necessary documents. Nowadays, even the data are held in electronic form, the PA information systems are inflexible and inefficient, and they do not exchange the data.

Public Administration bodies hold large amount of data about the people, companies, registrations, licenses, vehicles, etc. The common problem that occurs is that most of these data are not connected. This raises the issue of data redundancy. For example person’s name, residence and unique identification number can be found in pupil’s records, in pension and health insurance’s records or in the records of real-estate registrations. Mostly, there is no central register or database from which PA bodies can acquire data. The second principle brings in the first plan creation of a unique data registries that would connect fragmented information and allow all PA bodies to access redundant data. This will dramatically reduce the number of situations where people need to submit documents to the authorities, because the authorities will have the ability to access data from centralized registers.

II. E-GOVERNMENT IN THE CZECH REPUBLIC

The development of ICT enabled information system for the Public Administration in the Czech Republic began in the early 2007. Prior 2007 the Czech Government was
facing many challenges, among which we can highlight the following:

- lack of integrated communications infrastructure;
- lack of interconnectedness between individual registers;
- low digital literacy and competence levels among public sector workers;
- fragmentation and multiplicity of data in key public administrations’ databases;
- inability to share data held in current registries;
- lack of reliable mechanisms for accessing and utilizing public authorities’ data;
- redundancy of citizens’ personal data.

As a response to these challenges, in early 2007 the Czech government approved the establishment of basic goals formalized through the “Effective Public Administration and Friendly Public Services” strategy (also known as the Smart Administration Strategy) for the period 2007-2015 [2]. The overall purpose of this policy instrument was for the Public Administration to achieve effectiveness comparable to that of the European Union. Another important document leading the development of e-Government in the Czech Republic is the “Strategy for the development of Information Society services for the period 2008-2012”, published in March 2008 by the Government Council for the Information Society. This document sets out a vision for the Czech Republic to become one of the top five EU countries in terms of e-Government development. One of the tasks outlined in the Strategy is the Public Administration reform in such way to provide modern and simplified public services and assure comfortable, secure and reliable electronic communication across all levels of Government.

The Smart Administration strategy presupposes extensive ICT use in the Czech public sector, which can be achieved through the goals stated in the strategy:

a) establishment of functional Basic registers

b) improvement of practice of interoperable government by relying on standardized management of public administration information systems.

c) guaranteeing the possibility to use e-government channels in service-delivery.

d) promotion of e-communication channels within public administration.

e) promotion of civil servants education.

Some of the aims of e-government policy have been already supported by e-government legislation, such as the Act on Free Access to Information, the Act on Information Systems of Public Administration, which currently prescribes not only the new accessibility requirements, but also general duties of “long-term management” of information systems within which also the certification of information systems and related information strategies is required, the new Administrative Procedure Act, the Act on Electronic Transactions and Authorized Conversion of Documents and the Act on Basic Registers.

As part of the successful PA Information Strategy implementation in the Czech Republic, we can highlight the following outcomes:

A. Basic Registers

Basic registers are one of the cornerstones of the Czech e-government. The basic objective is to facilitate citizens, companies and other entities to establish contact with the public administration and to minimize the number of visits to the offices by utilizing the opportunities and technologies of the 21st century. At the same time, public authorities have to ensure a safe, efficient and transparent exchange of accurate and up to date data. The basic registries will eliminate fragmentation, disunity and multiple data occurrences in critical databases of public administration.

There are four types of basic registries:

1. Registry of Inhabitants - stores data on Czech citizens and foreigners who reside in the Czech Republic and other physical persons related to Czech Republic.

2. Registry of Persons – stores data on legal persons and individual entrepreneurs.

3. Registry of Territorial Identification and Real Estates - based on the data of Land Register and on the data of territorial units created for statistical, administrative or local authority purposes.

4. Registry of Rights and Obligations - information for controlling access to other basic registries’ data, overview of agendas carried out by public authorities, information about decisions that have made changes to the data.

Each type of basic registry represents a safe database that provides relevant and unquestionable data, the so-called reference data stored by public authorities. Introduction of basic registries have led to the increasing efficiency of the state administration. The PA officials do not have to find out which data are relevant and updated, since the basic registries hold only valid and relevant data. There is also an evident acceleration in processing the citizen’s applications and thus decreased bureaucratic burden.

B. Czech Point

The Czech Point project was launched in 2007 with a goal to deliver contact points, as focal points of public services that would be situated in PA institutions. Through the contact points citizens would be able to request public administration documents that would be produced from basic registers [3]. In 2008 the Czech Point was fully operational. The project resulted with the guaranteed service that can be used by citizens and businesses in order to communicate with the state via single contact place. Through the contact point they can: obtain and authenticate data from public and non-public information systems, authenticate documents, converse paper documents into authorized electronic form and vice versa and obtain information about the progress of administrative proceedings and to initiate administrative proceedings [4].

By visiting any of the contact points in the Czech POINT network any person can quickly and comfortably get certified extracts from a number of public and non-public registers of the public administration without having to visit several different state administration authorities.
C. Data Box

Data boxes were introduced to unify communication and to increase efficiency in public administration. They represent an electronic storage for delivery of official documents and for communication with public authority bodies [5]. They are determined for individuals, self-employed individuals and legal entities and for public power bodies. The public power bodies are obligated by the law to use the data box, while citizens and private individuals who carry out business activities does not need to have a data box account.

III. ENSURING EFFECTIVE PAIS: POTENTIAL APPLICATION IN THE REPUBLIC OF SERBIA

A successful Information Strategy odd to be fully in line with the strategic objectives of the state and local governments. It needs to define steps for developing and implementing strategic targets and goals. It has to define means for the effective use of information and documents as they are the intangible assets of every organization’s business processes. The Information Strategy is not a one-off and unilaterally created document, but a living structure of knowledge and information that are adequately compiled and are regularly reviewed in accordance with the development of superior strategic objectives, development environment or development of legislation.

Information Strategy brings significant value since it provides guidelines to avoid inconsistencies and errors in information systems and in the usage of information and communication technologies (ICT). This is achieved by setting strict standards and quality requirements of new tasks and technical solutions in terms of documentation, stability and integration into the existing organization’s infrastructure. The Information Strategy should be consulted in moments of decision when deploying new or modifying existing business processes, when introducing new or changing existing Information System in Public Administration. The potential application of the Czech PAIS on the e-Government in the Republic of Serbia can be achieved by adopting the following quality management and security management goals, with the assumption that there exists a proper hardware and software infrastructure and that there are human resources capable to install and maintain the PA Information System. Also there must be a compliant Information Strategy that will set out the similar goals as given in the Czech Republic Smart Administration Strategy.

To ensure the quality of the PAIS, Serbian Government must set long-term goals in the following areas of quality management:

- Ensuring the quality of data that are processed in the Information System (QoT01- QoT05)
- Ensuring the quality of services that are provided by Information System (QoT06- QoT10)
- Quality assurance of hardware and software (QoT11)

These goals can be further disseminated as given in Table I. For each goal we can define a set of targets that need to be accomplished.

Having a good understanding of what is already functioning effectively and being practiced and what procedures are required with immediate effect hinders the development of successful security management strategy. The Serbian Government must pay attention on PAIS security management and assure long term objectives of Information System's security concerning four aspects:

- Security of Information System in general (ST01)
- Security of data processed in the Information System (ST02-ST05)
- Security of services provided by the Information System (ST06-ST10)
- Security of hardware and software components of the Information System (ST11)

The aforementioned mentioned aspects are elaborated in more details in Table II. For each aspect there is number of targets defined in order to track implementation of the corresponding security attribute.

<table>
<thead>
<tr>
<th>Quality target</th>
<th>Target name</th>
<th>Description</th>
<th>Quality attribute</th>
</tr>
</thead>
<tbody>
<tr>
<td>QoT01</td>
<td>Timely update of data</td>
<td>Ensure that all data has been timely updated; new data should appear in information system with a minimum of delay.</td>
<td>data timeliness</td>
</tr>
<tr>
<td>QoT02</td>
<td>Data control against the primary data registers</td>
<td>Perform control of data in information systems against data in the primary data registries.</td>
<td>data correctness</td>
</tr>
<tr>
<td>QoT03</td>
<td>Control of data content</td>
<td>Perform internal control of stored data in all information systems.</td>
<td>data correctness</td>
</tr>
<tr>
<td>QoT04</td>
<td>Data integrity check</td>
<td>Check integrity of data on all information system levels.</td>
<td>data integrity</td>
</tr>
<tr>
<td>QoT05</td>
<td>Record changes in data</td>
<td>Store audit records of data changes.</td>
<td>responsibility for data</td>
</tr>
<tr>
<td>QoT06</td>
<td>Guarantee functionality of provided services</td>
<td>Ensure the services' functionality by performing testing based on the requirements defined for the services.</td>
<td>services' functionality</td>
</tr>
<tr>
<td>QoT07</td>
<td>Increase clarity of services</td>
<td>Create uniform rules for the user interface and ensure their practical implementation in all information systems.</td>
<td>services' clarity</td>
</tr>
<tr>
<td>QoT08</td>
<td>Improve clarity of services</td>
<td>Propose improvements in the logic of services and propagate their implementation in individual information systems.</td>
<td>services' clarity</td>
</tr>
<tr>
<td>QoT09</td>
<td>Increase services efficiency</td>
<td>Search for services' weaknesses and improve services efficiency through optimized implementation.</td>
<td>services' efficiency</td>
</tr>
<tr>
<td>QoT10</td>
<td>Increase interoperability of services</td>
<td>Gradual transfer of services on the open platform to achieve maximum usage with minimum requirements.</td>
<td>services' interoperability</td>
</tr>
<tr>
<td>QoT11</td>
<td>Test purchased components</td>
<td>Develop a uniform methodology for purchasing third party information systems' components and apply the methodology when acquiring these components.</td>
<td>technical tool</td>
</tr>
</tbody>
</table>
According to the Strategy for the Public Administration Reform (PAR) in the Republic of Serbia, adopted in November 2004, Serbian Government planned to achieve the following objectives through the PAR: creation of a democratic state based on the rule of law and creation of a public administration directed towards the citizens. The Strategy defines general guidelines for ICT usage for accomplishment of public administration reform. The PAR Strategy marks the first official use in a governmental document of the term “e-Government”. This document identifies e-government as one of the main instruments for the increase in efficiency and accuracy of public administration, as well as an instrument for the rationalization of public administration measures. Four years after, in 2009, the first e-Government dedicated strategy was introduced. Since then the Government of the Republic of Serbia made noticeable efforts to bridge the gap in e-Government development compared to the rest of Europe [6].

IV. CONCLUSION

An Information Strategy as an approach to information management that best supports the goals and strategies of the organization is necessary to implement in public administration bodies. The Information Strategy needs to be aligned with business strategy and imperatives of the organization and it needs to offer a solution on coherent information infrastructure and information governance.

Good Information Strategy is a prerequisite for implementation of new, or for modification of the existing Information System of Public Administration. Smart Administration Strategy adopted by the Czech Government has resulted with a number of projects that affected the modernization of PAIS and it's transformation into an effective information system. As outcome of the successful Information Strategy, the Czech Republic has promoted the Basic Registries that have led to better use of information and hence the reduction of administrative procedures. The introduction of basic registers is an important and positive milestone for both the citizens and PA officials. An official, who works with data received from registers, is sure in the data validity, so he does not need any other proof of data validity from citizens. In this way he can provide faster and better services in a shorter period of time. The former rules and concepts of public administration are being substituted with a more user-centered and user-friendly PA services. In this way citizens are building their trust in PA agencies.

Another building stone of electronic PA reform in the Czech Republic is the development of data boxes that are intended to unify communication and increase efficiency in the public administration. By using data boxes citizens or legal entities can apply for documents, track their submissions and get requested documents in electronic form.

Serbian Government is on a path of transformation and modernization. It is mainly focused on establishing of e-Government according to the European Union standards. Series of measures have been taken for the introduction of more proficient e-government, which will increase efficiency in public administration and improve communication with citizens and businesses. Although there are efforts to unify data registries on the regional and on the state level, the process is taking off slowly. Some of registries have been raised on the state level, i.e. they are being centralized. For example, there exists centralized registry of people and registry of business entities. Citizens who can renew a vehicle registration on one place or taxpayers who can submit forms electronically and track the status of their submissions are sensing the impact of the reformed e-government. Still, there is a lot of work remaining so that Serbian Government can be conformed to the EU practices. The Czech government sets an example of successful e-government reform and information system modernization. Following the guidelines for Information System's quality and security management, the Government of Republic of Serbia can estimate the efforts needed for the transformation of the current state of public authorities' information systems into more effective, transparent, cost resilient and more user-centered information systems.

<table>
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<th>Description</th>
<th>Security attribute</th>
</tr>
</thead>
<tbody>
<tr>
<td>ST01</td>
<td>Risk analysis</td>
<td>Implement organizational measures to ensure regular updating of risk analysis for major changes in Information System.</td>
<td>analysis</td>
</tr>
<tr>
<td>ST02</td>
<td>Data availability</td>
<td>Implement mechanisms to minimize the risk of data loss, provide regular data backup</td>
<td>availability</td>
</tr>
<tr>
<td>ST03</td>
<td>Data confidentiality</td>
<td>Implement mechanisms to protect data from unauthorized access.</td>
<td>confidentiality</td>
</tr>
<tr>
<td>ST04</td>
<td>Data integrity</td>
<td>Implement mechanisms to ensure data integrity in terms of safety.</td>
<td>integrity</td>
</tr>
<tr>
<td>ST05</td>
<td>Data provisioning</td>
<td>Implement mechanisms to ensure provisioning data.</td>
<td>provisioning</td>
</tr>
<tr>
<td>ST06</td>
<td>Availability of services</td>
<td>Implement mechanisms that ensure the required service availability.</td>
<td>availability</td>
</tr>
<tr>
<td>ST07</td>
<td>Reduce unavailability of services</td>
<td>Ensure automatic and continuous services' availability monitoring and define actions in the event of unavailability.</td>
<td>availability</td>
</tr>
<tr>
<td>ST08</td>
<td>Ensure confidentiality of services</td>
<td>Implement mechanisms that minimize the risk of breach of confidentiality.</td>
<td>confidentiality</td>
</tr>
<tr>
<td>ST09</td>
<td>Ensure billing of services</td>
<td>Ensure billing for services requiring non-repudiation.</td>
<td>billing</td>
</tr>
<tr>
<td>ST10</td>
<td>Availability of resources</td>
<td>Ensure the availability of hardware and software components depending on the availability of the stored data and services.</td>
<td>availability</td>
</tr>
<tr>
<td>ST11</td>
<td>Confidentiality of resources</td>
<td>Ensure confidentiality of hardware and software according to the required confidentiality of the stored data and services.</td>
<td>confidentiality</td>
</tr>
<tr>
<td>ST12</td>
<td>Integrity of resources</td>
<td>Ensure the necessary level of hardware and software integrity.</td>
<td>integrity</td>
</tr>
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</table>
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