IMPLEMENTATION OF AN ELECTRONIC SERVICE "E-CRIMINAL RECORD" ON PORTAL E-ADMINISTRATION

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Abstract: In order to exchange information more efficiently and faster, transparency in the provision of public services and simpler communication between citizens and the public sector, Web services for obtaining data and information are increasingly being used, which provide easier exchange of information in relation to traditional "paper" systems and therefore significantly accelerate the process and save the time of citizens and legal entities. Bearing in mind the public administration reform in the Republic of Serbia, which is primarily reflected in the utilization of the potentials offered by modern information communication technologies, benefits for citizens, business and the public sector, the Ministry of Internal Affairs (MUP) strives to digitize its administrative processes to contribute to these aspirations. In this paper a new web service "eCriminal record" was presented for obtaining data on punishment and impunity for the needs of State authorities, enterprises, other organizations or entrepreneurs, along with a reasoned request and justified interest based on the law.

Keywords: Criminal Records, ePortal, Web Services, MUP

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INTRODUCTION

In order to understand e-Administration, the development of administration and the reform of the Government and state administration in general must be understood. Re-designing and conceiving the process contributed to the realization that administration represents a dynamic mix of goals, structures and functions. E-Administration initiatives are complex efforts to introduce changes, with the aim of using new technologies to support the transformation of operations, as well as supporting the increased efficiency of reformed Government and state administration. A new challenge for public administration in the 21st century is the creation of e-Administration.

There are several definitions of e-Administration that are used. Some of them place more emphasis on aspects of the functionality of technology in state administration. This is not so problematic if the continuous development of technology, especially the Internet, the application of information and communication technologies would not spread to new aspects of society.

For this reason, we mostly use the most common technologically-neutral definition: e-Administration implies the application of information and communication technologies (ICT), and in particular the use of the Internet as a means of achieving good governance.

The reform of the state administration in the Republic of Serbia is based on five basic principles:[5] the principle of decentralization, the principle of depolitization, the principle of professionalization, the principle of rationalization and the principle of modernization. The principle of modernization is justified by ensuring that the traditional form of state administration, as much as possible, is translated into an electronic form using ICT, which leads to the concept of electronic administration, in which the creation and implementation of electronic services is recognized as the most important factor.

DEVELOPMENT OF ELECTRONIC SERVICES

In today's fast-developing applications world, the term distribution has a special meaning. Distributed applications are executed on a number of computers, and they communicate and synchronize each other over the network.

SERVICE ORIENTED APPLICATIONS

Service-oriented applications have been built with respect to the rules of service-oriented architecture, or using a "template" for software development that includes rules, procedures, and proven practices that allow the services to

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5 *http://www.mduls.gov.rs/doc/Strategija%20reforme%20javne%20uprave%20u%20Republici%20Srbiji.pdf*

be exposed and consumed efficiently. Such applications do not execute their business logic locally, but using multiple services, where one service is an autonomous system unit and provides support to other system components when accepting a request, and on the basis of it forming an appropriate response (Alonso, 2004).

Unlike traditional, firmly coupled systems, SOA implements a set of coupled services that together produce the desired result. Thus, this architecture is developed around services and messages which interconnect between applications and such services. Exactly one such system is shown in Figure 1.
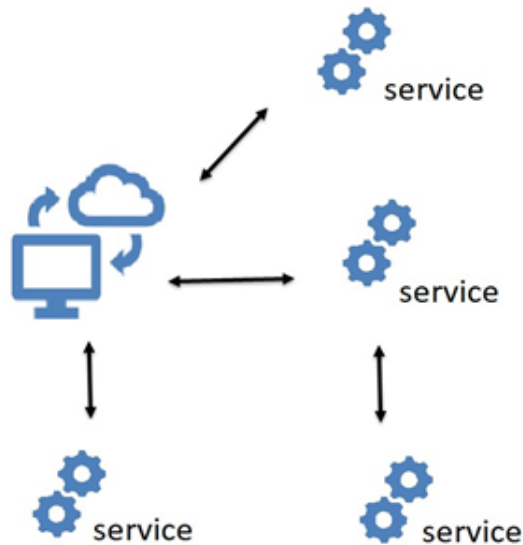

Figure 1. - *Distributed application based on services*

The service executes the business logic of the application by accepting the request and processing it. Service addressing is done on request. The request contains specific formatted data, function parameters, and its name. When a service accepts a request, it processes it by respecting the rules of the protocol, executes functionality and creates an appropriate response. Generated response, the service is packaged again in the form specified by the service protocol and sent back to the client. Regarding the service itself, in the context of program architecture, there are four rules (Steven, 2010):

1. Services have clear limits
2. Services are autonomous
3. Services expose contract and policy, and bot code
4. Service Compatibility is based on policies.

The use of the service implies clear rules, contained in its functions, addresses and security requirements. If these rules are not respected, the service cannot be functional, but it must clearly inform the client that there has been a violation of the rules and thus the improper functioning of the service. The service must be able to express in simple and standardized ways what can be done for the client and how to communicate with it. Therefore, the service must define the area of compatibility and the way interaction is performed.

TYPES OF SERVICES

The basic feature of the service makes it possible to execute some business logic on a remote computer. There are two types of services:

- SOAP, and
- REST.

SOAP (*Simple Object Access Protocol*) is an application communication protocol, but also a format for sending and receiving messages that allows applications to, regardless of the technology they write or the platform on which they are executing, exchange messages with each other using XML (the language for representing data in text format using tags) (Bill, 2007). Figure 2 shows the communication between the service and the client using SOAP.
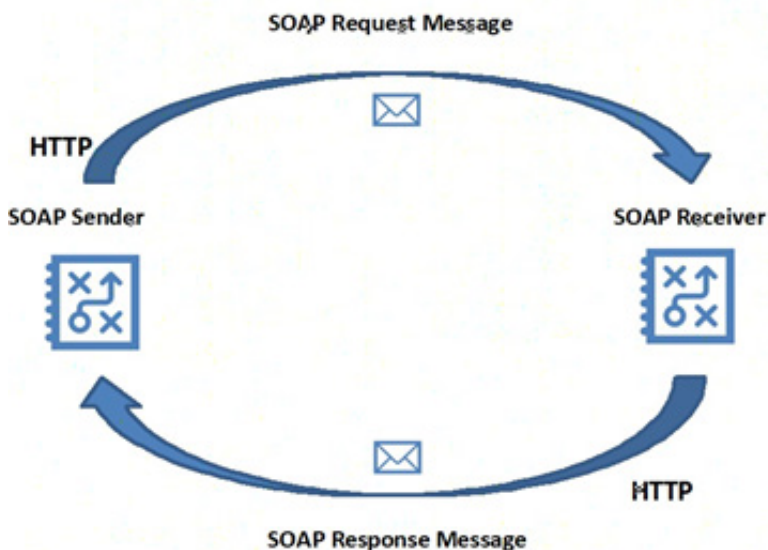

Figure 2 - *Communication between the service and the client using SOAP*

SOAP messages are simple XML documents, which consist of the following elements (Scott, 2006):

- **Envelope** – identifies an XML document as a SOAP message
- **Header** – contains header information
- **Body** – contains request and response information
- **Fault** – contains error and status information.

The XML basis of each SOAP message has the following structure:

```
1   <?xml version="1.0"?>
2   <soap:Envelope
3   xmlns:soap="http://www.w3.org/2003/05/soap-envelope/"
4   soap:encodingStyle="http://www.w3.org/2003/05/soap-encoding">
5   <soap:Header>
6   ...
7   </soap:Header>
8   <soap:Body>
9   ...
10   <soap:Fault>
11   ...
12   </soap:Fault>
13   </soap:Body>
14   </soap:Envelope>
```

Unlike SOAP services, REST (*Representational State Transfer*) services do not use a complicated mechanism for detecting and exchanging messages, but simple HTTP postulates. The basis of REST service are HTTP methods, as can be seen in Figure 3.
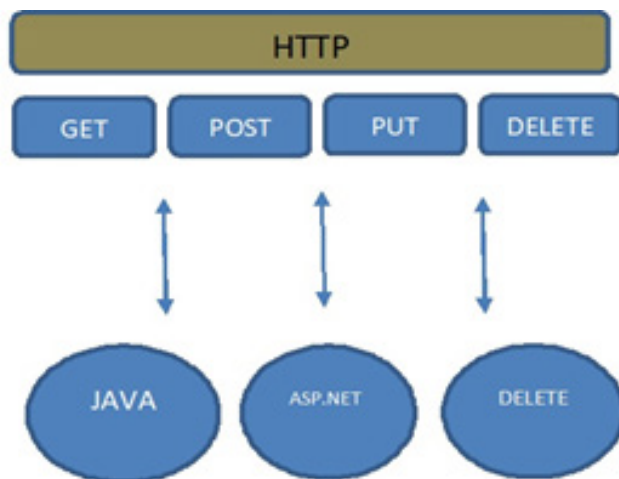

Figure 3 - *REST architecture*

When REST service is addressed using the GET method, it will return one or more data. If POST method is sent to the service, it will create new data. The PUT method tells the service that it is necessary to update the existing data or to create new ones, if the data do not exist. Finally, the DELETE method clears data.

As you can see, there is great freedom in implementing the REST service. In REST, the term contract is terminated, so that messages can be arbitrarily formed. The price of such freedom is that the service must be properly documented in order to be able to use it. Using REST service, sending requests is usually done using HTTP protocol, while the response of the service is delivered to the HTTP response body, most commonly using the XML or JSON format (An open standard for presenting data in a text form in the form of key pairs and values).

E-ADMINISTRATION

E-Administration can be defined as the use of information and communication technologies through an automated system to perform the necessary tasks in order to facilitate the faster and easier transfer of information in order to increase the accessibility and facilitate the functioning of state administrations and public services for the benefit of citizens, legal persons, as well as employees in these institutions (Bonson, 2012). E-Administration can be seen as a way in which the use of the latest ICT technologies, especially web-based Internet services, can provide the citizens and the business sector with a more convenient, faster and easier access to information and quality services of the public sector and state authorities according to the principle anywhere, at any time and in accordance with the requirements of equal access for all.

By using electronic administration, citizens can do their jobs without waiting in line, get timely and accurate information, or do a job for which it is sometimes necessary to spend several days visiting various state institutions. Entities from the business world, above all from the ICT domain, can use the electronic administration in order to open new market areas of work. State institutions can use the electronic administration in order to relieve pressure at counters, increase transparency of their work, lower their services and thereby raise the level of citizen satisfaction. Electronic administration means the use of the Internet or other electronic systems to simplify and facilitate the communication of the economy and citizens with e-Administration services that are available 24 hours a day, 365 days a year. Accordingly, users of electronic administration are: G (*Government*), E (*Employee*), B (*Business partners*) and C (*Citizen*). (Soliman, 2006).

E-Administration represents a continuous optimization of service delivery, management and participation of citizens and the economy, through the transformation of internal and external relations using new technologies, the Internet and newly developed media. This includes -Government relations towards citizens (*Government to Citizen* - G2C), Government to Employee (*Government to Employee* – G2E), Government to the business sector (*Government to Business* -

G2B), as well as mutual relations between Government and state administration (*Government to Government* - G2G) (Petrušić, 2013).

MODALITIES OF COMMUNICATION IN E-ADMINISTRATION

Within the electronic administration, there are the following modalities of communication between the users:

- G2G   intranet (Government communication subsystem, information, services)
- G2E intranet (Government officials, "chat room" notice board, learning)
- G2B Internet (supply, information, services)
- B2G Internet (Government communication with business partners)
- G2C Internet (Online Services, Digital Democracy)
- C2G Internet (Governmen*t* communication with citizens).

- **Government to Government - (G2G):** The efficiency of the state administration itself depends on other departments of Government within the state itself. G2G enables the exchange of different information and data, Government resources, and only the improvement of the efficiency of the initiated processes.

- **Government to employee - (G2E):** consists of communication and exchange of information among public sector employees, state administration, various ministries and state agencies. Civil servants, through various forms of communication, education, exchange and use of information and data in a simpler, faster and more efficient manner through cost reduction, improve the efficiency of the state administration.

- **Government to bussiness – (G2B):** It consists of the exchange of electronic data between the administration and the private sector, i.e. legal entities. Online communication with the administration reduces paperwork and simplifies regulatory processes, or helps businesses to become more competitive and more attractive to potential investors.

- **Government to citizen - (G2C):** deals with the relationship between administration and citizens. It allows citizens to access information and administration services, using more available systems.

ADVANTAGES OF E-ADMINISTRATION

High availability of information enables citizens to express free will and political views. This results in the consolidation of democratic principles. Citizens have the opportunity to access information on all legal regulations. They have the opportunity to be directly informed about the law and the by-law in preparation, who wants an amendment, or who of the councillors when and how they vote. Apart from visible advantages for the citizens and the economy of the state, the relief of the e-Administration for the republic authorities has one big advantage which is reflected in the reduced cost.

LEGAL REGULATION OF ELECTRONIC BUSINESS IN THE REPUBLIC OF SERBIA

The strategy for the development of electronic commerce in the Republic of Serbia is contained in the Strategy for the Development of the Information Society in the Republic of Serbia until 2020[6], and in the National Strategy for Sustainable Development and the Strategy for the Development of Electronic Commerce in the Republic of Serbia[7].

The Strategy of the Information Society of the Republic of Serbia until 2020, which provides reform and modernization of public administration based on the widespread use of information and communication technologies, is one of the key elements of the overall transition of the Republic of Serbia into a modern information society. According to the National Strategy for Sustainable Development in the Republic of Serbia, it is necessary to support the increase in the level of digital literacy among citizens and the introduction of quality education in terms of information and communication technologies at primary school level. It should provide conditions for further increase in the number of Internet users and access to ICT for all, natural and legal persons. The legislation of the Republic of Serbia adopted during the 1990s was conditioned by the degree of technological development and the standards in the field of information technologies. The current level of information and communication technology, the development of modern methodologies, tools, and orientation to object-oriented modelling, Web technologies, distributed systems, new operating systems and new generally accepted standards require the redefinition of existing regulations.

In addition to technology, legislation adopted during the 1990s was also outdated from the perspective of current social requirements for the implementation of the concept of e-business from the aspect of harmonization of our legislation with the EU and international standards. The laws of the Republic of Serbia that have passed in the past years and which are in accordance with the European

6 *https://www.paragraf.rs/propisi/strategija_razvoja_informacionog_drustva_u_republici_sr-biji.html*
7 *http://www.gs.gov.rs/lat/strategije-vs.html*

Union, especially refer to the Law on Business Registration on Access to Information of Public Importance and the Law on Electronic Signatures and relevant bylaws, consists of the concept of basic elements of e-business, such as the introduction of electronic signatures and digital certificates, the possibility of filing the application of natural and legal persons (users) and electronic provision of customer services via the Internet, communication of users and authorities by e-mail, sanctioning negligent and malicious acts, etc. Among the legal provisions of the Republic of Serbia, the most important is the implementation of the Law on Electronic Signatures[8] (adopted in December 2004). The use of electronic signatures should fulfil the basic legal precondition for moving from paper to electronic processes in all areas of life, in order to achieve one of the basic preconditions for further development of e-business in the Republic of Serbia.

ELECTRONIC SERVICES ON THE PORTAL OF THE ELECTRONIC ADMINISTRATION

The e-Administration portal is the national portal for providing electronic services to citizens, businesses and state authorities in the Republic of Serbia. As such, the Portal offers numerous electronic services of different complexities, some of which are integrated with the information systems of the state administration and local administration authorities, while other requests are downloaded through the e-Administration system envisaged for this purpose.

The e-Administration portal forms a central access point for electronic administration services. The users of the Portal are citizens, legal entities and employees in the state administration and local self-administration. The central point for the exchange of information between the information systems of state administration and local self-administrations is the ESB (*Enterprise service bus*) the solution that is called for its purpose *Government service bus.*

The system e-Payment is a special logical and physical entity intended for paying the envisaged fees. It is used by the e-Administration Portal as an integral component, but it is also used by the state administration and local self-administration authorities that offer their services independently and in this way provide the possibility of paying. E-Payment communicates with the information system of the Treasury Department in order to send announcements for expected arrivals and receive information on arrivals through payment transactions.

Published electronic services should be available to users of e-Administration. Finding a specific service is done according to the already offered modes on the e-Administration portal, i.e. through the appropriate area and situation, from the list of services sorted by alphabetical order or by the authority providing the service or by keyword search. (Marković, 2008). Regardless of the way in which the service occurred, after it has been selected, it is necessary to use the existing de-

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8 *http://ca.mup.gov.rs/zakon%20o%20elektronskom%20potpisu.pdf*

scriptive data presentation mechanisms, such as in the case of the existing e-Administration services (Figure 4).

Figure 4. *E-Administration Portal*

For the purpose of simplifying the implementation of electronic services, a mechanism should be provided which will be implemented by the user through the entire administrative procedure, and in accordance with the defined service. This implies showing the user an electronic form, defined with the help of a generator, in which he will input the required information, make inquiries into electronic records of external systems, and send relevant submissions to other authorities. It is necessary to require electronic signing when submitting a request from the system within the e-Administration portal (Nikolić, 2013). External systems return the required information at the same time, while for information based on submitted submissions, it will be necessary to wait for the deadline prescribed by law. Therefore, the solution must provide an opportunity for the user to see that the response (notification) was received by the submitted submission, as well as the content of the response itself (Figure 5). All responses received on the basis of

the submitted submissions must be presented in the form of a list for each authority individually. The user should be able to easily download the document from the response to the submission.
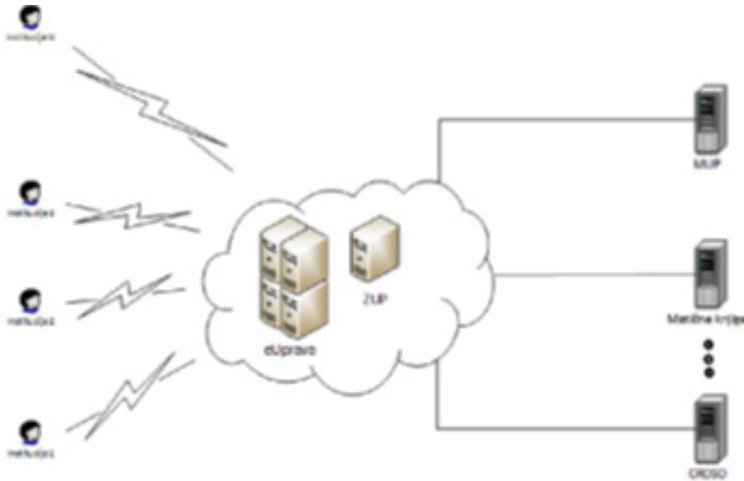

Figure 5. *Communication of citizens with e-Administration*

CRIMINAL RECORDS ON THE E-ADMINISTRATION PORTAL

The architecture of the system for the implementation of e-Services "Submitting a request for conviction of (non) punishment" is presented as a diagram in Figure 6.
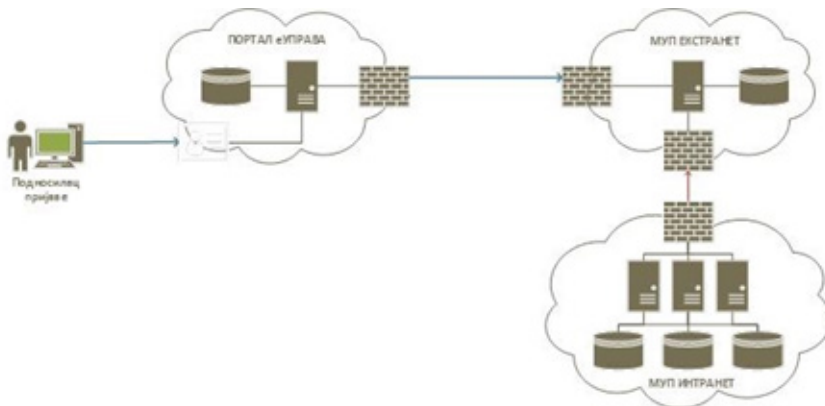

Figure 6: *System architecture*

The Criminal Code of the Republic of Serbia and the Code of Criminal Procedure regulate the content and manner of keeping the penal records, as well as the conditions and manner of providing data from this record. The by-law, i.e. the Rulebook on Criminal Records, has established the jurisdiction of this Ministry for conducting criminal records and providing data from this record.

Criminal records are kept according to the place of birth in the regional police administrations for all adult persons who are citizens of the Republic of Serbia, as well as for foreign citizens and stateless persons born on the territory of the Republic of Serbia, for the citizens of the Republic of Serbia born abroad who have been convicted by a final court verdict domestic court. Criminal records are also kept for foreign nationals who have been legally convicted of crimes committed in the territory of the Republic of Serbia and for the citizens of the Republic of Serbia convicted of criminal offenses by foreign courts.

Criminal records may only be given to the court, the public prosecutor and the police in connection with criminal proceedings against a person previously convicted, a penal enforcement authority and an authority involved in the process of granting amnesty, pardon, rehabilitation or deciding on the cessation of the legal consequences of conviction, as well as the guardianship bodies, when necessary for the performance of duties under their jurisdiction. Data from the criminal record can also be given to other state authorities that are responsible for detecting and preventing the commission of criminal offenses, when this is prescribed by a special law. Citizens may, at their request, be given information about their conviction or non-conviction. Deleted convictions are not given to anyone.

The Criminal Code prescribes Rehabilitation, which deletes the sentence and ceases all its legal consequences, and the convicted person is considered to be non-convicted. Rehabilitation is based on the law itself (legal rehabilitation) or at the request of the convicted person based on a court decision (judicial rehabilitation).

The procedure for legal rehabilitation of convicted persons in relation to rehabilitation has not been convicted or is not considered convicted by law, is initiated and carried out ex officio when, according to the information from the diary, conditions are fulfilled for the adoption of a decision on rehabilitation. During the decision-making process, there must be the necessary verification and collection of data on whether the penalty has been collected, sustained, forgiven or obsolete, whether the rehabilitation period for the second conviction is running, whether a person is undergoing a safety measure that causes an obstacle to rehabilitation and that criminal proceedings are instituted against a person for a new criminal offense committed before the expiry of the period prescribed for legal rehabilitation (obtained from the competent court by the place of residence). Following the procedure, a decision is made on legal rehabilitation based on which the information on conviction is deleted.

The following institutions of the Republic of Serbia are participating in the realization of the electronic service "Submission of a request for conviction on

punishment and impunity": Ministry of Internal Affairs and Office for IT and Electronic Administration of the Government of the Republic of Serbia.

From the aspect of the Office for IT and Electronic Administration, in technical terms, an application form was developed on the e-Administration portal, which is in integration with the Ministry of Internal Affairs web services, in order to enable secure electronic data exchange between the relevant systems.

From the aspect of the Ministry of Internal Affairs in technical terms, the upgrade of the software application "Criminal Records" was performed in order to submit applications submitted on the e-Administration portal's website, which could be processed and recorded in IS Ministry of Internal Affairs (Figure 7).

Figure 7. *Request for issuing certificate of (non) Punishment*

The implementation of the web service for filing the Request for obtaining a conviction and impunity certificate should enable the safe submission of data requests from the e-Administration portal, as well as the mechanisms for checking data from the application through the relevant records of the Ministry of the Interior. After processing the application to the applicant, a notification is sent via Portal to the mail or SMS about the processed request and the notice on the acceptance of the Certificate, as shown in Figure 8.

Thanks to the new electronic service, citizens will in the future be able to "proclaim" through the portal e-Administration the Certificate of (non) Punishment to take it to their regional police administrations. The service will be available to citizens residing in the territory of the Republic of Serbia.

The use of this service implies that a citizen is registered and also registered with the e-Administration Portal with his username and password or a qualified electronic certificate.

The electronic service "Request for issuing certificate of (non) Punishment" is intended for adult natural persons who are the citizens of the Republic of Serbia who wish to submit a request for obtaining data on (non) punishment by electronic means. The applicant selects the place where they exercise their right, or whether it is a certificate required for exercising the rights in the country or abroad.
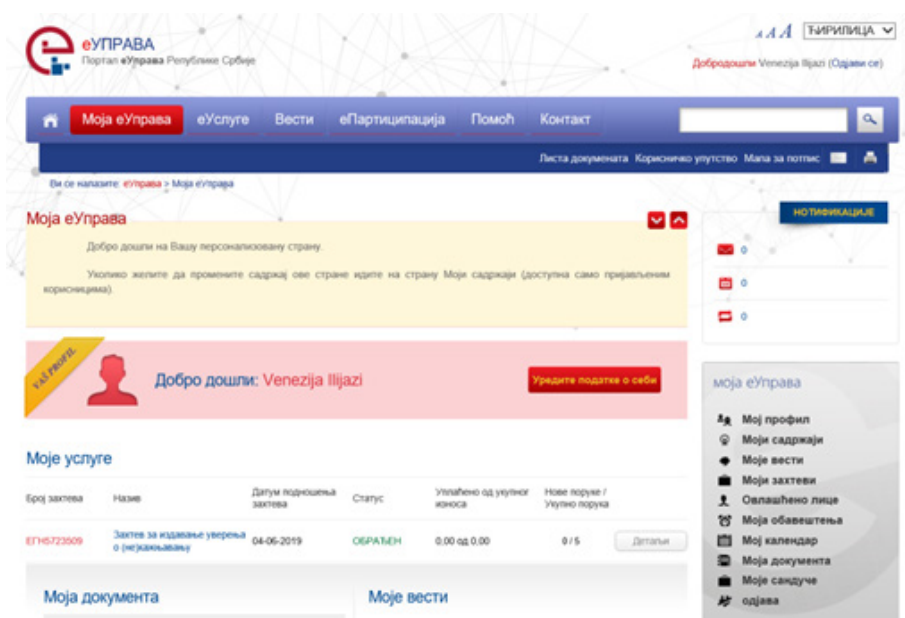

Figure 8: *Monitoring the service of issuing Certificates of (non) Punishment on the e-Portal*

The purpose of this electronic service is to enable the electronic submission of a request by a citizen of the Republic of Serbia to obtain a certificate of (non) Punishment, payment of necessary prescribed fees, fees and expenses, without going to the Regional Police Directorate or the Police Station, but via the Internet, and through e-Administration portal, completing the electronic request form.

The certificate of punishment and impunity shall be taken over by the relevant Police Directorate by the place of residence.

CONCLUSION

The development of new ICT technologies and their distribution largely affect our everyday life. Various electronic services offered to us in the form of electronic banking, e-mail, access to social networks, etc. have made communication, education, business management, information exchange simpler, faster and safer. The use of electronic administration significantly reduces administrative costs, as well as the reduction of corruptive activities, enabling greater transparency and openness.

The need for developing electronic services is becoming more and more diverse. The development of electronic administration through the introduction and use of new electronic services in recent years is in great expansion using the concepts G2C, G2G and G2B. Citizens and business users have been provided with simpler and greater functionality through the availability of various electronic services.

The Ministry of the Interior is the leader in the implementation of new electronic services on the e-Administration portal.

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