

# Evaluation of the implementation of the “eAdministration Strategy of Provincial Authorities”

Milan Paroški\*, Vesna Popović\*, Dušan Surla\*\*, Zora Konjović\*\*\*

\* Government of the AP of Vojvodina/Office for Joint Affairs of Provincial Bodies, Novi Sad, Republic of Serbia

\*\*Faculty of Sciences/Department of Mathematics and Informatics, Novi Sad, Republic of Serbia

\*\*\* Faculty of Technical Sciences/Department of Computing and Control, Novi Sad, Republic of Serbia  
milan.paroski@vojvodina.gov.rs; vesna.popovic@vojvodina.gov.rs; surla@uns.ac.rs; ftznora@uns.ac.rs;

**Abstract**— Within the framework of methodology adopted for drawing up the document “Strategy of eAdministration of Provincial Authorities with the Action Plan until 2015”, the study was conducted with the aim to evaluate previous efforts and the adoption of the services, applications and infrastructure objects completed in the examined period (2007-2013). The purpose of this paper is to present several aspects related to defined methodology, as well as a part of the basic results of the study on evaluation of the eAdministration development at provincial level until 2013.

## I. INTRODUCTION

Pursuant to the Decision on the Provincial Administration Reform and Development (“Official Journal of the APV”, No. 14/2006), in September 2007, the Executive Council of the Autonomous Province of Vojvodina adopted the Decision on the eAdministration Strategy of Provincial Authorities (“Official Journal of the APV”, No. 18/2007).

The Government of the AP Vojvodina has engaged IT experts from the University of Novi Sad to prepare a document by means of which they would establish how the aforementioned Strategy was implemented by the beginning of 2013 and draw up a revision, for the purpose of continuing development of the eAdministration of Provincial Authorities according to the revised Strategy in the five-year period from 2013 to 2018.

The following methodology for drawing up the new strategic document has been applied:

1. During the drawing up of the document, a framework, goals and principles specified in the initial document titled “eAdministration Strategy of Provincial Authorities” (2007) were adopted.
2. As a basis for planning, data from two types of documents were used: planning documents and situation evaluation documents.
3. During the drawing up of the document, the Provincial Administration reorganization in the period from 2010 to 2012 was taken into account.
4. Methodology for managing continuous development of the eAdministration of Provincial Authorities was defined.

Evaluation should start together with the eAdministration initiatives, from the early conceptualization and design phase onwards. Evaluation must compare actual intervention results with original

intentions. Within the framework of preparation of this strategic document, the study was conducted with the aim to evaluate the previous implementation of the “eAdministration Strategy of Provincial Authorities” which was adopted in 2007. The recommendations from available literature on acceptance and adoption of eGovernment by its intended users were used in study preparation. [1], [2].

As the result of activities of the Working Group, the Decision on the “Strategy of eAdministration of Provincial Authorities with the Action Plan until 2015” was enacted in July 2013 (“Official Journal of the APV”, No. 26/2013).

## II. SURVEY RESEARCH

Several aspects related to the evaluation of the situation of eAdministration implementation in Provincial Authorities were examined in the survey. Working Group for the development of the document “Strategy of eAdministration of Provincial Authorities with the Action Plan until 2015” prepared and administered a questionnaire to participants by mail. The participants were chosen as a representative sample of IT experts, authorized employees of the provincial administrative authorities. It is important to note that this survey is based on a closed-invitation-only sample in each participating Provincial Authority. The completed questionnaires were returned by 17 provincial bodies:

1. Assembly of the AP of Vojvodina
2. Provincial Government
3. Provincial Secretariat for Economy
4. Provincial Secretariat for Culture and Public Information
5. Provincial Secretariat for Health Care, Social Policy and Demography
6. Provincial Secretariat for Education, Administration and National Communities
7. Provincial Secretariat for Interregional Cooperation and Local Self-Government
8. Provincial Secretariat for Science and Technological Development
9. Provincial Secretariat for Energy and Mineral Resources
10. Provincial Secretariat for Urban Planning, Construction and Environmental Protection
11. Provincial Secretariat for Sports and Youth

12. Provincial Secretariat for Labour, Employment and Gender Equality
13. Office for Joint Affairs of Provincial Bodies
14. Professional Service for Implementation of the Integrated Regional Development Plan of the APV
15. Human Resources Management Service
16. Provincial Ombudsman
17. Directorate of Commodity Reserves of the APV

The questions in the questionnaire are divided into several groups. The first group of questions covers issues related to the document "eAdministration Strategy of Provincial Authorities" that was enacted in 2007. The answers were predefined. The participants were asked to answer the following questions:

- Had employees at your administrative authority been informed about the document "eAdministration Strategy of Provincial Authorities" before you received it enclosed with this questionnaire?
- Which of the employees at your authority/ body had read the document "eAdministration Strategy of Provincial Authorities" before you received it enclosed with this questionnaire?

The second group of questions relates to the projects which were implemented in the period 2007 – 2013 according to Action Plan of the document "eAdministration Strategy of Provincial Authorities". The participants were asked:

- Please evaluate to what extent the projects proposed in the document "eAdministration Strategy of Provincial Authorities" meet the overall needs of all provincial administrative authorities/bodies.
- Please evaluate to what extent the projects proposed in the document "eAdministration Strategy of Provincial Authorities" meet the needs of Your provincial administrative authority/body.

The third group of questions is related to the frequency of use and significance of services, applications and infrastructure objects completed in the defined period. The participants were asked to assign independently marks from 0 to 5 to assess an impact of each implemented service. Furthermore, the participants were asked to evaluate to what extent implemented systems meet the needs of their provincial administrative authority/body.

Finally, the participants were asked to evaluate the importance of planned projects which were not realized in the period 2007 – 2013.

**A. Awareness of the strategic document amongst employees**

Firstly, the level of awareness of employees about the existence and content of the document "eAdministration Strategy of Provincial Authorities" was investigated. The results are presented in Fig.1 and Fig. 2.

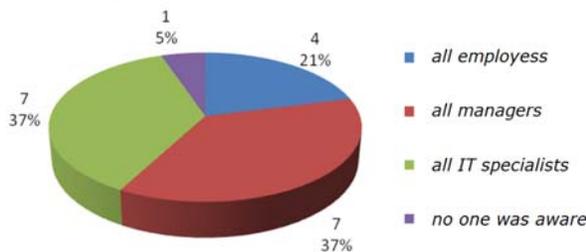


Figure 1. Previous awareness of employees about the existence of the document "eAdministration Strategy of Provincial Authorities"

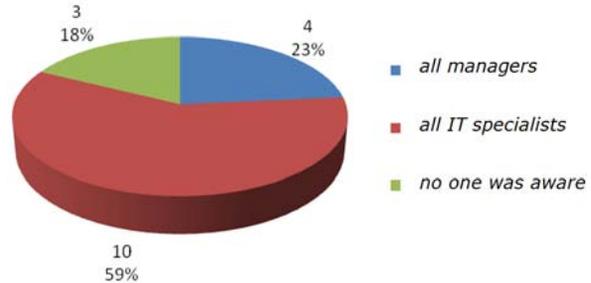


Figure 2. Previous awareness of employees about the content of the document "eAdministration Strategy of Provincial Authorities"

The study results are worrying. Even though the document was primarily focused towards the development of the IT support intended for the activities of the Provincial Administration, the content of the document before the conduction of the study was familiar mostly to those employed in ICT. Content of the document was familiar to the managers of only 23% provincial bodies who have participated in the study (Fig. 2). Also, response from 18% of administrative authorities covered by the study (Fig. 2), was that no one was aware of the content of the document.

Later on, the issue on how the projects proposed by the "eAdministration Strategy of Provincial Authorities" cover the needs of all authorities of the Provincial Administration, and in what extent proposed projects cover the needs of each individual authority of Provincial Administration, was examined. The obtained results are shown in Fig. 3. and Fig. 4. and they indicate that the projects cover only the basic needs (concerning over 80% of the provincial authorities).

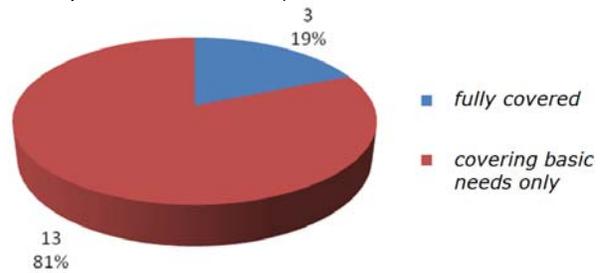


Figure 3. The estimate on the covering of needs of all authorities/bodies by projects proposed by the "eAdministration Strategy of Provincial Authorities"

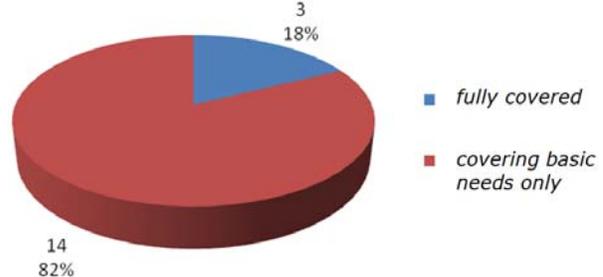


Figure 4. The estimate on the covering of the needs of individual provincial administration authorities/bodies by projects proposed by the "eAdministration Strategy of Provincial Authorities"

**B. Evaluation of eAdministration projects**

The second group of questions related to the estimation on the coverage of needs of the provincial authorities by the existing (already implemented) basic applications and infrastructure systems. The following applications, which were already in use, were selected as basic:

- *eDocumentus* system;
- *eRecordsManagementOffice* system;
- *eSessions* system [3];
- System for the *Inspection of the normative and legal acts of the Republic of Serbia*;
- System for the *Legal regulations and case law* (Ministry of Justice of the Republic of Serbia);
- System for the *Support for the organisation and conduction of exams*;
- *eLearning* system service (providing information and study material presentations);
- System for the *publishing of general information on the AP Vojvodina website*;
- *BISIS library service* system [4-9];
- *Online public procurement documentation* system;
- System for *Online information regarding subsidies and grants*;
- *eCompetitions* system [10];
- *Human Resources records* system;
- *Attendancy records (ID cards)* system;

- *System for the management of the use of the AP Vojvodina motor pool*;
- *Info-kiosk* system;
- *BISTreasury* integrated system for the preparation and performance of the budget and payroll accounting in provincial authorities.

The following infrastructure systems were selected [11]:

- Local computer network system;
- Internet access system;
- Video surveillance system;
- Electronic mail system;
- SMS system;
- Activities regarding the ECDL employees training programme.

The obtained results are presented in Fig. 5. and Fig. 6.

The frequency of the use of services, applications and infrastructure objects completed in the defined period was examined. The results are presented in Table I. The results show that the two most frequently used applications are *eDocumentus* and *BISTreasury*.

TABLE I.  
The frequency of the use of applications and infrastructure objects completed in the examined period 2007-2013

System	N/A	Not used	Less than once a month	At least once a month	At least once a week	Every day
<i>eDocumentus</i>	0 0.00%	0 0.00%	0 0.00%	4 23.53%	3 17.65%	10 58.82%
<i>eRecordsManagementOffice</i>	4 23.53%	7 41.18%	1 5.88%	2 11.76%	1 5.88%	2 11.76%
<i>eSessions</i>	4 23.53%	5 29.41%	2 11.76%	1 5.88%	3 17.65%	2 11.76%
<i>Inspection of normative and legal acts of the Republic of Serbia</i>	3 17.65%	3 17.65%	0 0.00%	6 35.29%	3 17.65%	2 11.76%
<i>Legal regulations and case law (Ministry of Justice of the Republic of Serbia)</i>	4 23.53%	5 29.41%	0 0.00%	4 23.53%	2 11.76%	2 11.76%
<i>Support for the organisation and conduction of exams</i>	5 29.41%	8 47.06%	3 17.65%	0 0.00%	0 0.00%	0 0.00%
<i>eLearning</i> system service (providing information and study material presentations)	6 35.29%	5 29.41%	4 23.53%	1 5.88%	0 0.00%	1 5.88%
<i>Publishing general information on the AP Vojvodina website</i>	6 35.29%	3 17.65%	3 17.65%	1 5.88%	1 5.88%	3 17.65%
<i>BISIS library service</i>	5 29.41%	1 5.88%	5 29.41%	4 23.53%	0 0.00%	2 11.76%
<i>Online public procurement documentation</i>	4 23.53%	7 41.18%	1 5.88%	3 17.65%	1 5.88%	1 5.88%
<i>Online information regarding subsidies and grants</i>	6 35.29%	8 47.06%	1 5.88%	1 5.88%	1 5.88%	0 0.00%
<i>eCompetitions</i>	5 29.41%	8 47.06%	0 0.00%	2 11.76%	0 0.00%	2 11.76%
<i>Human resources records</i>	2 11.76%	3 17.65%	5 29.41%	2 11.76%	2 11.76%	3 17.65%
<i>Attendancy records (ID cards)</i>	2 11.76%	4 23.53%	1 5.88%	4 23.53%	3 17.65%	3 17.65%
<i>Management on the use of the AP Vojvodina motor pool</i>	5 29.41%	8 47.06%	1 5.88%	0 0.00%	0 0.00%	3 17.65%
<i>Info-kiosk</i>	8 47.06%	7 41.18%	1 5.88%	1 5.88%	0 0.00%	0 0.00%
<i>BISTreasury</i> integrated system for the planning and managing of the budget and payroll accounting in provincial authorities	1 5.88%	0 0.00%	1 5.88%	1 5.88%	3 17.65%	11 64.71%

Based on these surveys, as shown at Fig. 5. and Fig. 6, it can be concluded that the needs are better covered by infrastructure systems (there were no interviewees who feel that not even the most basic needs are covered and 47% of the interviewees consider that their needs were

fully covered), while the coverage of the basic needs by applications is not satisfactory (only 23% of the interviewees feel that their needs are fully covered, while 6% consider the applications do not cover even the basic needs).

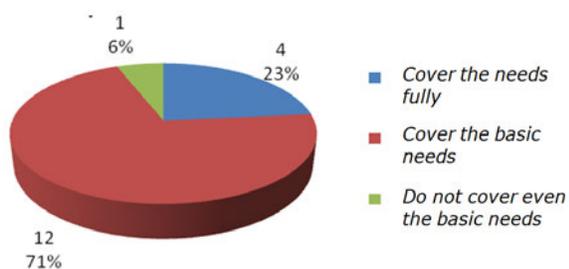


Figure 5. Coverage of the needs of provincial authorities by implemented basic applications

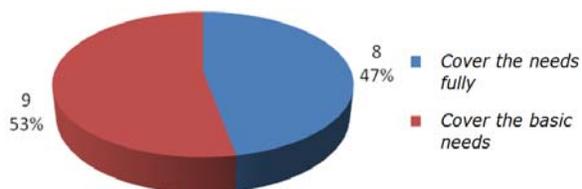


Figure 6. Coverage of the needs of provincial authorities by implemented infrastructure systems

In addition to the aforementioned, the importance of unrealized projects for the Provincial Administration authorities was examined. The possible answers were predefined. The interviewees were asked to rate the importance of the following unrealized projects in their everyday work:

- Introduction of the *eDocumentus* system in the Assembly of AP Vojvodina;
- *eArchive* system – recording and filing of cases;
- *eAdministrativeProcedeengs* system – Conducting administrative procedures and decisions regarding administrative affairs;
- *eAPVAdministrative practice system* – Administrative practice of the provincial authorities;

- *eCharging system* – collection of provincial taxes and service charges;
- *eDecisions* system – Monitoring the delivery and execution of decisions;
- Integrated system of provincial administrative registers;
- *eAPVEnrollement* system – enrollment into the higher education institutions in AP Vojvodina;
- *eCultureAPV system* – information system for affairs in the field of culture, within the competencies of AP Vojvodina;
- *eHealthAPV system* – information system for for affairs in the field of healthcare, within the competencies of AP Vojvodina;
- *eSocialProtectionAPV system* – information system for for affairs in the field of social policy, within the competencies of AP Vojvodina;
- *ePublicProcurements system* – 4th level service for the support in conducting public procurement procedures in provincial authorities;
- *Infrastructure of the spatial data of AP Vojvodina* – GIS system for spatial data in AP Vojvodina;
- *eEUCompetitions system* – monitoring the competitions of the EU;
- *Call centre* for provincial authorities;
- *eOrdering, eSituationMonitoring and eReporting systems* – storage facilities: distribution and archiving of materials, equipment and spare parts;
- *eTechnicalSystem system*– maintenance and security of the provincial authorities’ buildings;
- *ePublishing system* – preparation and publication of printed materials.

Among them, several projects were identified as critical, still not introduced systems. As ‘critical unintroduced systems’ were denoted systems that more than 25% of the provincial authorities have identified as critical or very important for their work. The results are shown in Fig. 7.

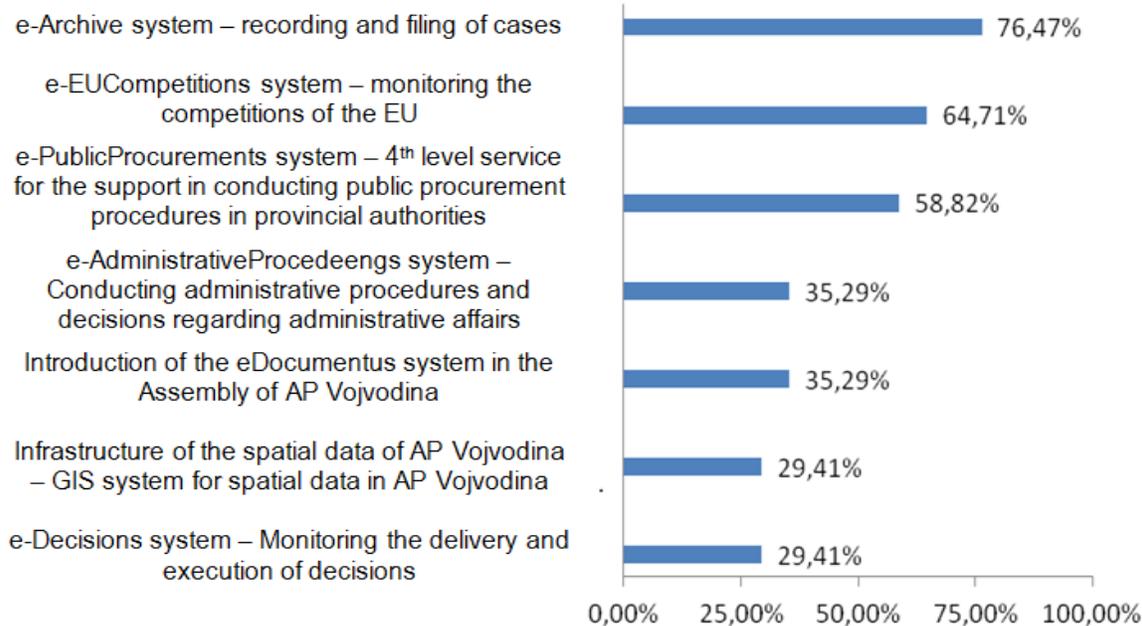


Figure 7. Critical unimplemented systems

The *eArchive*, *eEUCompetitions* and *ePublicProcurements* systems were identified as crucial for the activities of provincial authorities even though they were not introduced.

The results of the assessment of significance of all planned, but not introduced systems are shown in Table II.

Indicative is a high percentage of participants which are not aware of the importance of sectorial infrastructure systems for citizens and legal entities (*eHealthAPV*, *eSocialProtectionAPV*, *eCultureAPV*), as well as the stance that the implementation of such systems is not vital to the Provincial Authorities.

TABLE II.  
Estimation of the significance of unimplemented systems for the work of provincial authorities

System	Significance assesment					
	Unknown	No significance	Little	Medium	Great	Crucial
<i>eAPV Health Care system – health information system within the scope of competences of the AP Vojvodina</i>	7 41.18%	6 35.29%	1 5.88%	2 11.76%	1 5.88%	0 0.00%
<i>eAPV Social Protection system – social policy information system within the scope of competences of the AP Vojvodina</i>	7 41.18%	6 35.29%	2 11.76%	1 5.88%	1 5.88%	0 0.00%
<i>eCharging– collection of provincial taxes and service charges</i>	7 41.18%	3 17.65%	3 17.65%	2 11.76%	2 11.76%	0 0.00%
<i>eAPV Enrollment system – enrollment at higher education institutions in the AP Vojvodina</i>	8 47.06%	2 11.76%	3 17.65%	2 11.76%	0 0.00%	2 11.76%
<i>eAPV Culture system – culture information system within the scope of competences of the AP Vojvodina</i>	7 41.18%	4 23.53%	2 11.76%	2 11.76%	2 11.76%	0 0.00%
<i>eOrdering, eStockMonitoring and eReporting– storage facilities: distribution and archiving of materials, equipment and spare parts</i>	7 41.18%	2 11.76%	3 17.65%	3 17.65%	1 5.88%	1 5.88%
<i>eTechnical System – maintenance and security of the facilities of the Provincial authorities</i>	9 52.94%	2 11.76%	3 17.65%	1 5.88%	1 5.88%	1 5.88%
<i>Integrated system of the Provincial administrative registers</i>	9 52.94%	1 5.88%	1 5.88%	3 17.65%	3 17.65%	0 0.00%
<i>ePublishing– preparation and publication of printed materials.</i>	6 35.29%	3 17.65%	1 5.88%	4 23.53%	2 11.76%	1 5.88%
<i>eAPV Administrative Practice system– administrative practice of the Provincial authorities</i>	4 23.53%	1 5.88%	3 17.65%	5 29.41%	4 23.53%	0 0.00%
<i>Call centre for provincial authorities</i>	5 29.41%	1 5.88%	3 17.65%	4 23.53%	2 11.76%	2 11.76%
<i>eDecisions system – monitoring the delivery and execution of decisions</i>	7 41.18%	1 5.88%	0 0.00%	4 23.53%	4 23.53%	1 5.88%
<i>Infrastructure of the spatial data of AP Vojvodina – GIS system for spatial data in AP Vojvodina</i>	4 23.53%	5 29.41%	2 11.76%	1 5.88%	5 29.41%	0 0.00%
<i>Introduction of the eDocumentus system in the Assembly of AP Vojvodina</i>	2 11.76%	4 23.53%	2 11.76%	3 17.65%	5 29.41%	1 5.88%
<i>eAdministrativeProcedeengs– Conducting administrative procedures and decisions regarding administrative issues</i>	5 29.41%	3 17.65%	1 5.88%	2 11.76%	6 35.29%	0 0.00%
<i>ePublicProcurements system – 4th level service for the support in conducting public procurement procedures in provincial authorities</i>	3 17.65%	0 0.00%	1 5.88%	3 17.65%	8 47.06%	2 11.76%
<i>eEU Competitions system – monitoring the EU competitions for allocation of funds</i>	1 5.88%	2 11.76%	1 5.88%	2 11.76%	10 58.82%	1 5.88%
<i>eArchive system – recording and filing of cases</i>	2 11.76%	0 0.00%	0 0.00%	2 11.76%	11 64.71%	2 11.76%

### III. RESULTS AND DISCUSSION

The “eAdministration Strategy of Provincial Authorities” adopted by the Executive Council of the Autonomous Province of Vojvodina in 2007 is document in accordance with republic and European standards and values. It represents basis for government modernization and increase of efficiency of provincial administration. The integrated application of the ICT in provincial authorities is to enhance: efficiency, effectiveness, transparency, responsibility and economy in the work of Provincial Authorities and provincial civil servants. Simply put, the main aims are to improve the quality and availability of information and services provided to users by provincial civil servants.

The process of eAdministration introduction involves measuring actual progress and comparing it to planned, according to the adopted Action plan.

Data on the evaluation of implemented eAdministration projects were obtained by specified-purpose surveys. Results show that top management should provide more evidence of its commitment to the development and implementation of the eAdministration projects. Awareness of employees about the existence and the content of the document “eAdministration Strategy of Provincial Authorities” was not satisfactory. As a result, greater promotion of this strategic document emerges as a forthcoming task.

Based on these surveys, it can be concluded that the needs are better covered by implemented infrastructure systems (there were no interviewees who feel that not even the most basic needs are covered), while the coverage of the basic needs by introduced applications is not satisfactory (6% consider the applications do not cover even the basic needs).

The systems *eArchive*, *eEUCompetitions* and *ePublicProcurements* were identified as crucial for the activities of provincial authorities, even though they were not introduced and the relevant legal framework is not yet completed.

#### IV. CONCLUSIONS

The document titled “Strategy of eAdministration of Provincial Authorities with the Action Plan until 2015” was drawn up based on:

- initially set goals in 2007,
- data on status of implementation of eAdministration initiatives in the period from 2007 to 2013,
- re-organization of the provincial administration (carried out in the period from 2010 to 2012) and
- stated demands of provincial authorities.

Specifically for the purposes of preparation of the new strategic document “Strategy of eAdministration of Provincial Authorities with the Action Plan until 2015”, surveys were conducted to examine:

- level of awareness of top management and employees about the existence and content of the initial document “eAdministration Strategy of Provincial Authorities” (adopted in 2007),
- estimation on the coverage of needs of the provincial authorities by the basic applications and infrastructure systems implemented according to initial document “eAdministration Strategy of Provincial Authorities” (2007),
- assessment of significance of all systems which were not implemented according to plan adopted in 2007,
- current needs of the provincial authorities for ICT support.

Proposals from different provincial authorities regarding new projects were also collected.

The inevitable conclusion is that PDCA (Plan–Do–Check–Act), an iterative four-step management method for the control and continuous improvement and adjustment of processes, can be successfully applied in the process of implementation of eAdministration initiatives and adjustment of action plans [12], [13]. Data collected from conducted surveys were subjected to analysis, which gave important guidelines for preparation of the new Action Plan (until 2015).

This new strategic document will enable the Provincial Government to improve and facilitate development of information society in the AP Vojvodina and introduction of eAdministration at provincial level. The adoption of “Strategy of eAdministration of Provincial Authorities with the Action Plan until 2015” has confirmed Government’s commitment to specifying the use of ICT as a priority and as a basis for modernization and increasing the quality of work of Provincial Authorities.

#### REFERENCES

- [1] V. Kumar, B. Mukerji, I. Butt and A. Persaud, “Factors for Successful e-Government Adoption: a Conceptual Framework”, *The Electronic Journal of e-Government*, 5(1), 63–76, 2007.
- [2] European Commission, “eGovernment Benchmark Framework 2012–2015”, Method paper, July 2012. Available at: [http://ec.europa.eu/digital-agenda/sites/digital-agenda/files/eGovernment%20Benchmarking%20method%20paper%20published%20version\\_0.pdf](http://ec.europa.eu/digital-agenda/sites/digital-agenda/files/eGovernment%20Benchmarking%20method%20paper%20published%20version_0.pdf)
- [3] G. Rudić, B. Dimić-Surla and M. Paroški, “Public library service for accessing records from the AP Vojvodina government sessions”, *Journal of Mathematics*, vol. 43, no. 1, pp. 23-31, Novi Sad 2013.
- [4] B. Dimić, B. Milosavljević and D. Surla, “XML schema for UNIMARC and MARC 21”, *The Electronic Library*, vol. 28, no. 2, pp. 245-262, 2010.
- [5] D. Boberic and D. Surla, “XML editor for search and retrieval of bibliographic records in the Z39.50 standard”, *Electronic Library*, 27(3), pp. 474-495, 2009.
- [6] B. Dimic and D. Surla, “XML editor for UNIMARC and MARC 21 cataloguing”, *Electronic Library*, 27(3), pp. 509-528, 2009.
- [7] B. Dimic, B. Milosavljevic and D. Surla, “XML schema for UNIMARC and MARC 21”, *Electronic Library*, 28(2), pp. 245-262, 2010.
- [8] B. Milosavljevic, D. Boberic, D. Surla, “Retrieval of bibliographic records using Apache Lucene”, *Electronic Library*, 28(4): 525-539, 2010.
- [9] B. Milosavljevic and D. Tešendic, “Software architecture of distributed client/server library circulation system”, *Electronic Library*, 28(2), pp. 286-299, 2010.
- [10] M. Paroški, V. Popovic and Z. Konjović, “eCompetitions - secure common multilingual electronic public service for support of open competitions for funds in the Autonomous Province of Vojvodina”, Proceedings of the 4th International Conference on Information Society and Technology - ICIST 2014, Kopaonik, 9-13 March 2014, pp. 114 – 119, ISBN 978-86-85525-14-8.
- [11] M. Paroški, Z. Konjovic and D. Surla, “Implementation of e-Government at the local level in underdeveloped countries: The case study of AP Vojvodina”, *Electronic Library*, 31(1), pp. 99-118, 2013.
- [12] R. Moen and C. Norman, “Evolution of the PDCA cycle”, 2009. Available at: <http://pkpinc.com/files/NA01MoenNormanFullpaper.pdf>
- [13] A. Candiello and A. Cortesi, “KPI-Supported PDCA Model for Innovation Policy Management in Local Government”, *Electronic Government*, Lecture Notes in Computer Science, Volume 6846, pp 320-331, 2011.