

E-government based on GIS platform for the support of state aid transparency

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Abstract – Authors of the paper present solution for the transparency of various types of state aid to the citizens. They are using ICT concept which consists of the geographic information systems (GIS) application incorporated within e-government platform for the geo-referenced presentation of the different types of financial supports. The use of GIS in this way is presented through the case study of the subsidies for self employment of unemployed persons given by the Provincial government of Vojvodina.

I. INTRODUCTION

Development of e government is a long lasting process enabled by the fast changes in the ICT sector. E government is focused on the services aimed to facilitate communication between government and citizens. A part of the e government should be review of the state aid delivered to the users. The significant part of the state budgets is spent to the various state aids. State aid serves to support realization of the strategic goals on different society levels. States have their national development programs in line with general strategic goals of the society. To reach them, they direct activities of many social groups like: public and private companies, entrepreneurs and civil society. Many specific social actors are under umbrella of the state aid. Some of them, like associations, NGOs are very dependent of the aid which they become. Some, like old handicrafts, remain working and saving old professions only due to this aid. State aid transparency is important and beneficial for the whole society. It provides an opportunity for citizens to be better informed about public policies. It promotes accountability as an essential factor within society. It also helps create more effective dialogue between citizens and government. It offers better policy decisions. Civil society and governments in all countries have made great advances in these efforts and increased transparency at local, regional and national levels, what happened in last few years. Spending of public resources is a very sensitive issue and it needs responsibility and participation in the terms how resources are allocated. Indeed, citizens have the right to know how their money is being spent [1]. A primary objective of the state aid modernization is to make the granting of a state more transparent. Transparency helps to improve the quality of public policy and strengthen the effectiveness of State aid control [2]. Technological progress is a base of the visible improvements of transparency.

This paper tackles the issue of the new ICT tools which make the state aid data available to the costumers.

The research object is the presentation of the state aid within e government platform.

Hypothesis: The GIS tool implemented within e-government platform contributes to the transparency of the state aid data.

Research tasks is to set up a new ICT tool which will improved presentation of geo referenced data within e-government platform and by this visibility and transparency of the governmental activities..

Authors used the following research methodology: Data collecting and analysis, geo referenced visualization of data.

The main goal of the paper is to ensure transparency of public data concerning to the state aid to the citizens. This will expand functionalities of the e government from the present functions related to " the utilization of information technology (IT), information and communication technologies (ICT), and other web-based telecommunication technologies to improve and/or enhance on the efficiency and effectiveness of service delivery in the public sector" [3] to the new attitude, to enhance visibility of the results of the state aid.

The specific goal is to present model which incorporates geographic information systems - GIS into the e government platform to enable clear presentation of the government activities, visually understandable to each consumer, especially those related to the state aid given to the different consumers groups, like: NGOs, SMEs, entrepreneurs, farmers...

Task of the paper is to present visualized data about state aid which financially supported self employment in the region of Vojvodina through subsidies to the users, for the year 2014. This is a good example which proves expanding possibilities of e-government by using GIS applications.

II. LITERATURE OVERVIEW

The geographic information systems are software which enables visualization of spatial data. Man is more sensitive to the visualized presentation of the data. He is easier solving problems which could be visually presented [4]. Geographic location is the element that distinguishes geographic information from all other types of information. Location as a data brings many benefits

of GIS like geographic presentation, planning, comparison, following time changes, overlapping of the spatial planes, cross cutting different data [5, 6].

GIS has a meaningful position within e-government service.

There are many discussions within literature about exact explanation of the e-government concept. Some definitions characterized e-government as simply the use of information and communications technology, like the Internet, to advance the processes within government activities. It aims to make government primarily responsive, than more efficient. It should enable transparency of public administration results. E-government offers a variety of new business opportunities.

E-government is having more functions. It is condition for reforming of the work processes among governmental institutions. It is improving services to enable collaboration not only with citizens, but with the business, and nonprofit organizations, too.

Very popular public service delivered to citizens is one-stop shop which can be used through the World Wide Web portals. These portals are aimed to provide a place which enables all the steps of a complex administrative process. It gives approach to the many government offices at one site. Users are not more running visiting offices, they have immediate, fast contact with the service [7].

Fast involvement of e-governance is closely related to the emerging development of IC technologies which basic added value is Internet platform. New level of the e-government processes is the involvement of the geographic information systems which facilitates interactions with the society in a user friendly way giving spatial information a visible reproduction. New Web sites with GIS services provide the following applications:

- Government-to-business: to present economic and land development, licensing.
- Government-to-citizen: to enable online service information.
- Government-to-government: to improve communication inside and among the government departments.
- To enable governments and citizens wisely exploitation of resources, be involved in planning actions and effectively respond to emerging situations [8].

Kumar (2012) presents his vision of the typical GIS architecture for the state implementation (Figure 1). It shows the strict links between government, private sector and citizens on a GIS platform design to support e government functioning. He stresses the big importance of the automatization of the government service by implementing of e-government framework with GIS inside.

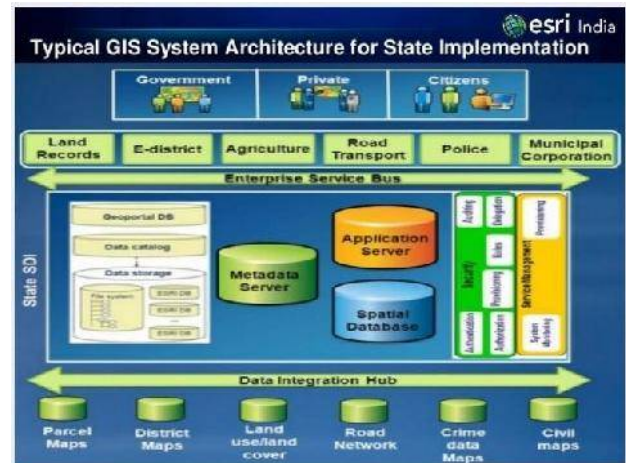


Figure 1. GIS architecture for the State implementation [10]

Participation of local community at different data inputs in GIS enable to produce a holistic and efficient output. GIS platform should be expanded with special software tools for group and individual decision support, geographic analysis and presentation. The specific tasks which can be realized with GIS are related to ownership problems, location problems, technical design, planning. With experts knowledge it helps in designing development plans, monitoring long-term changes and implementing corrections [10].

Why using GIS within e-government concept? Some authors explain this:

- “e-government involves GIS because the relationship between government and citizen is frequently geographically based
- e-government places a greater reliance on the robustness of information – geographic information has considerable scope for error
- e-government requires an e-geography i.e. a National Spatial Data Infrastructure [11].”

Geographical information systems has one additional role. This is to develop policy design and e-democracy. Some authors describe case studies which should have analyzed how use of GIS could be used to encourage participation of citizens in urban planning and redevelopment. They proved that potential of e-government is dependent on the citizens culture and knowledge, but that e-government can help bridge the gap between government and citizen and even reduce the scope of conflict between the two [12, 13].

Some authors [14] present the elementary requirements and the best technology for e-government information management. They propose a useful framework of unified e-government management platform based on the Web-GIS which could be easily implemented.

Web based economic development with GIS will qualify communities to compete with each other. Investment of private sector will be dependent on the spatial data which are presented on e-government platform. Investigations, analysis, monitoring, evaluation will be possible without visiting the place [15].

III. POSSIBLE SCENARIOS OF GIS IMPLEMENTATION AS TOOL FOR E GOVERNMENT TRANSPARENCY

Secretariat for Economy, Employment and Gender Equality, on the basis of the decision of the Provincial Government of Vojvodina set aside funds to support self-employment, employment, professional practice, and public works on territory of Vojvodina. The funds has been allocated since 2009. The goal of such financial support is to reduce unemployment through fostering entrepreneurship and to increase number of jobs within existing companies. The target groups are two groups of unemployed people:

1. Those who have entrepreneurial potential to set up their own business
2. Those who already have consensus of entrepreneurs to be employed.

This paper analysis subsidies for self employment. The authors present the possibility to enable that data about donations would be available to everybody who is interesting to have insight into results of public open competitions. They create visual presentations by using GIS which enable every person who has interest to have clear picture about activities of the provincial government.

Also, such spatial mapping of the results enables analysis of different data by comparing them from year to year, reached outcomes of the given subsidies, appeared problems, visible political influences etc. And, what is the most important, it gives bases for the improvement in many ways.

The following text contains maps of spatial data which were made to show some possibilities of GIS.

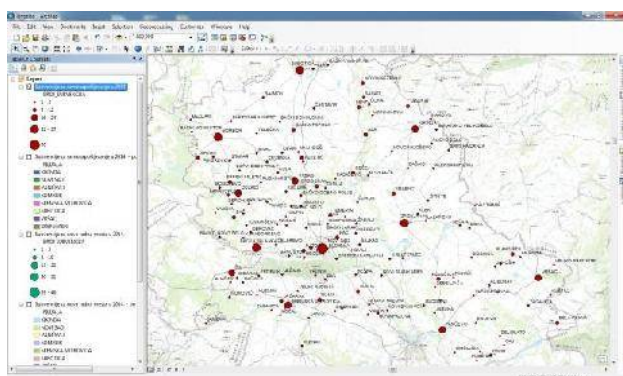


Figure 2. Subsidies for self employment in 2014 (source: authors)

Figure 2 represents results of the competition which refers to the subsidies for self-employment in 2014. In the table of contents located at the left side of the Figure is marked appropriate layer. Graduated circles were used to symbolize outcomes due to the locations. All circles are red and represent self employment. The size of the circle reflects the number of subsidies. The green color is used for the number of subsidies for new employment within existing companies.

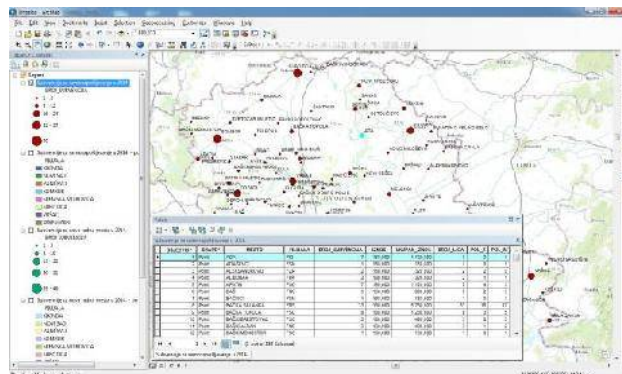


Figure 3. Subsidies for self employment in 2014 with attribute table (source: authors)

In the Figure 3 could be seen the attribute table which appears when one town is selected, in this case, Ada. Its circle changes color (into yellow) and the program opens the table with data. The table contains data with:

- The name of the local office
- Number of subsidies
- Sum of each
- Total sum for this local office
- Number of persons who got it
- Number of female
- Number of man.

When an object in the table is selected, this object is automatically selected on the map and visible.

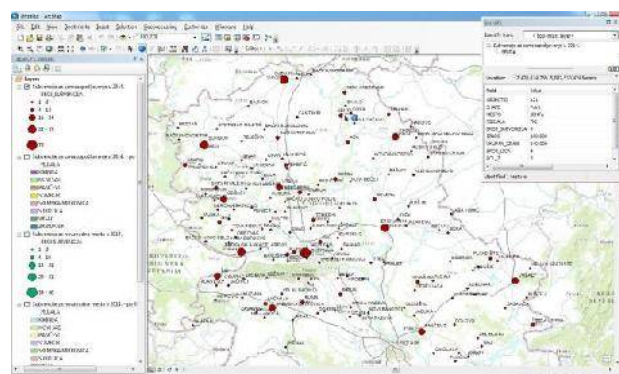


Figure 4. Subsidies for self employment in 2014 with identification of one town (source: authors)

Figure 4 illustrates the use of tools, in this case: Identify. It the user clicks on the desired place he gets all information like in the previous table, but this time only for the selected town and without opening the table.

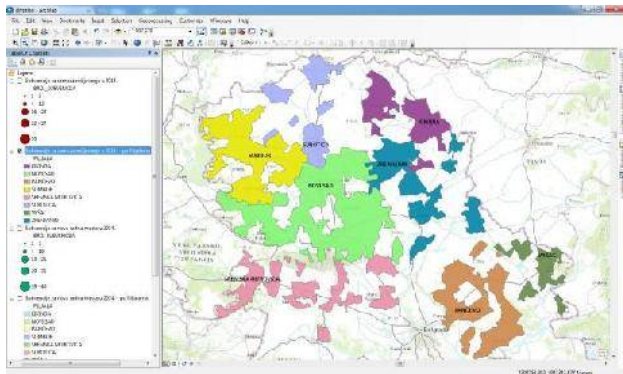


Figure 5. Subsidies for self employment in 2014 within branches of National Employment Agency (source: authors)

Figure 5 shows the subsidies for employment by branches. In table of content on the left side of the Figure is marked appropriate layer. Different colors were used to mark 8 branches of the National Employment Agency (NEA) in Vojvodina region.

All possibilities with presentation data from the table and data for each selected branch of the NEA are available also for the branches.

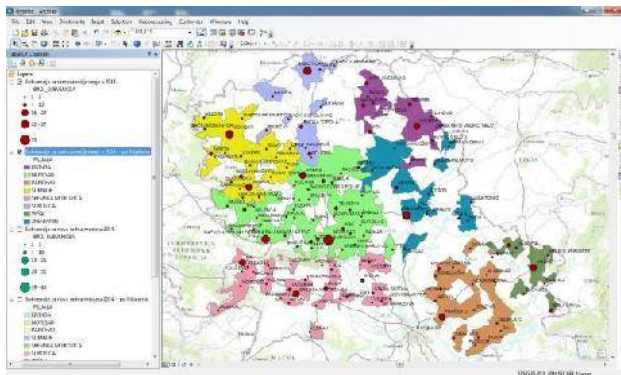


Figure 6. Subsidies for self employment in 2014 with overlapping of NEA branches with locations of villages (source: authors)

Figure 6 shows simultaneously two layers of the same public call - competition. By using overlapping tool option of the GIS superposition can be seen which shows which villages in each branch received grant and the size of the each grant in each village corresponding to the size of the red circle.

Figure 7 displays the zoomed branch of the town Sombor with belonging settlements that have received subsidies. It was also used a tool called: Identify for the selected town Sombor. The same procedure can be used for each town or settlement. The table in the right corner contains all details about total subsidies for the whole branch Sombor.

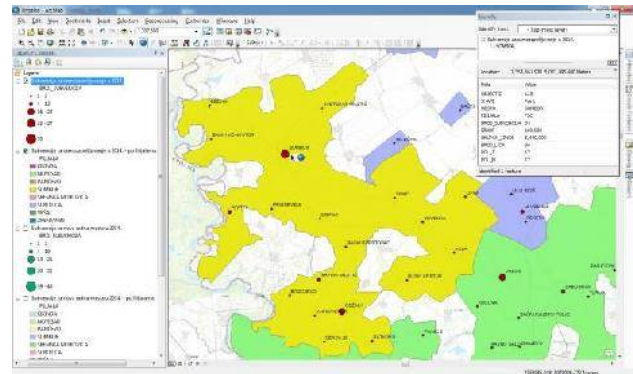


Figure 7. Subsidies for self employment in 2014 within zoomed branch of town Sombor with settlements (source: authors)

V. CONCLUSION

The authors of the paper showed one possible scenario which presents geographic information systems as a useful tool for the development of such e- government which will foster e-democracy. Such approach which enables citizens complete insight into the state decisions which must be independent and made according to previously set up criteria should be vision of the e-government development. The visualization in figures 2 to 7 prove the hypothesis that GIS tool implemented within e-government platform contributes to the transparency of the state aid data.

Such a platform should be further developed to an interactive tool which users could use to investigate, analyze, overlap layers with various data and request new state actions based on the conclusions made by GIS tools implemented. The authors already presented in articles few possible uses of GIS in different sectors of human activities, like at telecom market [16], postal service network [17] and new urban transport systems [18]. This paper is adding new value and an innovative approach dedicated to such an important social area, such is democratic decisions and human rights.

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