

Development of e-processes concept in the Real Estate Cadastre within the quality improvement project

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Key words: quality improvement, real estate cadastre, e-business, data exchange, Serbia

SUMMARY

Republic Geodetic Authority (RGA) is a special governmental organization, responsible for Real Estate Cadastre, utility cadastre, state survey, basic geodetic works, address registry, topographic and mapping activities, real estate mass valuation, geodetic and cadastral information system and National spatial data infrastructure.

Today the Real Estate Cadastre (REC) in Serbia, a unique and singular real estate and real estate rights registry, is done for the whole territory. It represents a well-functioning integrated system, still there is a large space left for quality and efficiency improvement in a process of maintaining. The rapid development of Information and Communication Technologies has increased the demands on such a system as REC.

Demands regarding data availability and dissemination from the private and the public sector have pushed on the development of e-business processes within the Real Estate Cadastre following the trend of e-government.

Within the Republic Geodetic Authority, a project „Development of Quality Assurance and Quality Control Concept” is being implemented through the SIDA founded capacity building project. This paper gives an overview of completed project activities and achieved results in the introduction of web applications for data exchange between the RGA and private geodetic organizations which includes the submission of application and documents as well as browsing and retrieval of data as a part of the processes improvement in the Real Estate Cadastre which is also to be described in general.

1. REAL ESTATE CADASTRE

Cadastral and property information and other information obtained or distributed by the institutions such as cadastres and land registries are the constitutive part of national and European spatial data infrastructure. Institutions responsible for property registration and information are the very picture of major challenges induced by technical development around the world and political changes present in Europe. Development of legislation covering operation of cadastral and land registry organizations is often being drafted by the European Union. Assistance for these organizations is provided through their strategies, for the purpose of accountability towards challenges, through visions for cadastres and land registries formed in the Europe.

Implementation of the cadastral system reform in the Republic of Serbia through "Real Estate Cadastre and Registration Project in Serbia" is in its completion phase. The project had been financed from the World Bank credit and supported by numerous donor projects, financed by the European Union Member States. The project had been successfully implemented by the Republic Geodetic Authority, covering competences in the field of state survey, Real Estate Cadastre, utilities cadastre, basic geodetic works, address register, topographic cartographic activities, real estate appraisal, geodetic-cadastral information system and National Spatial Data infrastructure and geodetic works in engineering-technical fields.

Presently, the Real Estate Cadastre in the Republic of Serbia is a unique, public register of real estate, which contains data on: land, buildings, and separate parts of buildings (apartments and offices, other constructions) and property rights. Real Estate Cadastre is also a quality infrastructural base for accelerating and implementing numerous transitional processes, providing for establishing of a more efficient system of real estate and property rights management.

2. MODERN INFORMATION AND COMMUNICATION TECHNOLOGIES AND ELECTRONIC BUSINESS PROCESSES

Modern society, new technologies and new business and data users' requirements imply the need for ever-increasing quality and quantity of spatial information and possibilities to use space, especially in urban areas. Accelerated development of electronic communications and greater share with which this sector participates both in national and global economy is one of the trends that had managed to maintain positive results, in spite of global economic crisis. In the European Union, information and communication technologies had been recognized as influential factor regarding economic growth and innovations¹, with one of the seven leading

¹ "i2010 - Annual Information Society Report 2007" - Communication from the Commission to the European parliament, the Council, the European Economic and Social Committee and the Committee of the regions), SEC(2007) 395, Brisel

initiatives within the economic strategy Europe 2020² being “Digital Agenda for Europe”, indicating the significance held by ICT in development of modern economy and society as a whole.

All of the analyses indicate that the information and communication technologies, serving electronic communications and business, are integral part of all sectors of economy and one of the basic factors covering not only economic, but also social development. Overview of electronic business processes status, as an important economic and social incentive, i.e. availability of various forms of communications and services, are one of the very important indicators of societal development. Investments in the field of electronic business directly influence the Gross Domestic Product growth, competitiveness of all sectors of the economy and improvement of citizens’ quality of living. During the recovery period after global recession, the European Union predicts that the investments in the electronic communications sector will be one of the most important incentives of Gross Domestic Product growth, decrease of unemployment rate and modernization of the society³ (according to the research conducted by OECD, 8 % increase of investments in this field indicate Gross Domestic Product growth for 1 %).⁴

2.1 Strategic Significance

The Government of the Republic of Serbia had recognized importance and potential of this sector and therefore adopted a set of strategies, such as *Strategy of E-government development in the Republic of Serbia for the period from 2009 to 2013*, *Strategy of electronic communications development in the Republic of Serbia for the period from 2010 to 2020*, *Strategy of information society development in the Republic of Serbia by 2020*, contributing to implementation of basic principles of the Strategy for state administration reform, such as modernization and rationalization.

Successful realization of the cadastral system reform within the “Real Estate Cadastre and Registration Project in the Republic of Serbia” by the Republic Geodetic Authority had resulted in recognizing the priorities in the *Strategy of e-government development in the Republic of Serbia*, which, among the other things, includes introduction of the **electronic Real Estate Cadastre**.

In line with the components given by the Strategy of e-government development of the Republic of Serbia, the Republic Geodetic Authority is in charge of the issues of quality and distribution of real estate cadastre data and basic spatial data, establishing and maintenance of databases and provision of functional electronic services for accessing information.

3. IMPORTANCE OF SPATIAL DATA AVAILABILITY

² Europe 2020 - A strategy for smart, sustainable and inclusive growth - Communication from the Commission, COM 2020, Brisel, 2010

³ Strategy of electronic communications development in the Republic of Serbia from 2010 until 2020

⁴ The Role of Communication Infrastructure investment in economic recovery, OECD

Modern society needs information on space to much greater extent than ever before. Information from the Real Estate Cadastre are necessary in many fields for making clear and fair decisions on local, regional and national level. These data are important for many aspects of social actions, such as environmental analysis, planning, infrastructural development, health, education, protection, transport, energy, agriculture, climate changes and crisis management. Those are bus a few fields where spatial information, together with the infrastructure, provide for locating, access and use of these information within the decision-making process. The majority of information necessary for making the appropriate decisions in such cases is based on spatial and cadastral data.

For that purpose, the European Union, with its Member States and accession members, had developed and adopted the INSPIRE Directive (Infrastructure for SPatial InfoRmation in Europe initiative⁵) in 2007. The purpose of this directive is to define basic rules towards establishing Spatial Information Infrastructure in the European Union for the purpose of environmental policies of the Community and policies and activities with potential influence towards the environment. The need for the INSPIRE Directive had risen from general situation and undefined rules regarding spatial data in Europe.

The intention was for the relevant and quality geospatial data to be made available, as a foundation for gradual establishing of harmonized spatial data structure, in order to formulate, implement, supervise and appraise during the decision-making on the European Union level, from the territorial influence standpoint.

3.1 National Spatial Data Infrastructure

It is known fact that there is a constant pressure to achieve balance between users' requirements and capacity of public sector to provide geoinformation, together with the imperative for the conditions to use and exchange spatial data to be clear and unambiguous. In that sense, the common framework for cooperation and exchange of information based on the spatial elements has the objective to achieve balance between provision of data and privacy protection and requirements of users for easy access to the wide range of geoinformation.⁶

The Republic Geodetic Authority, in line with the European initiatives and tendencies, adhering to the INSPIRE Directive principles, is successfully implementing the activities on *Spatial data infrastructure of Serbia* establishing, which is an integrated system of geospatial data, providing the users with the options to identify and access spatial information collected from various sources, from local, over national to the global level, in a comprehensive manner. That is an attempt to respond to the very important goal of competent public institutions for the official data to be available in a simple and efficient manner, which includes using modern information and communication technologies. Establishing spatial data infrastructure also satisfies the need for common framework for cooperation and exchange of spatial-based information of numerous institutions in charge of geoinformation provision, as well as various levels of users.

⁵ Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE) was published in the official Journal on the 25th April 2007. The INSPIRE Directive entered into force on the 15th May 2007

⁶ Strategy of Spatial Data Infrastructure establishing in the Republic of Serbia from 2010 to 2012

4. IMPORTANCE OF QUALITY MANAGEMENT AND IMPLEMENTATION ON SPATIAL AND CADASTRAL DATA

Evolution of the term quality, developmentally speaking, is differentiated through three phases:

- Quality control
- Quality assurance
- Total quality management

Quality control is a traditional approach, according to which a product or process is submitted to the control either in mid-phases or at the end, to determine if the subject is in line with the prescribed specifications.

Quality assurance is moving towards active approach, with elements of quality planning and development. Passive technical control is being replaced by handling quality in all phases of inception, development, production and utilization of product or service. A quality system is being established in the manner to include all relevant factors influencing the quality of product or service, with delegating duties and responsibilities among the actors. In this segment, particular attention is being paid to the ISO standards. Total quality management involves integration of all functions and processes in organization, for the purpose of permanent quality improvement for products or services.

Total quality management starts from the fact that it is necessary to establish a good prevention, predict and prevent possible problems and errors before they actually occur.

Influence of information technologies on business success is reflected through quality of informing, control, planning, up to the management and decision-making. It is important to note two types of information technology influence on business quality, namely:

- Direct influences, which include savings of resources, savings of time through simplification and rationalization of business process, i.e. upgrading quality of processes in organization.
- Indirect effects are more important, but harder to monitor, i.e. measure. New technologies are the foundations for new products and services, providing better connection with the user. The main role is in changing business relations and improving business activities within the organization.

New forms of information services, i.e. e-business and e-government, provide for enforcement of quality business policy. One must have in mind that information technologies bring numerous advantages obvious in:

- Business processes modernization
- Better financial dealings
- Rational use of capacities, resources and energy
- Quality distribution of data and services

Modern quality assurance and quality control systems based on ISO standards and accepted international practice are being successfully implemented on spatial data, as well as cadastral data. These types of quality control and quality assurance systems may be the key for the Real Estate Cadastre system sustainability. Quality assurance and control system is also important for migration of the existing cadastral and legal data in the Real Estate Cadastre and system maintenance using data from the cadastral-legal procedures.

5. QUALITY IMPROVEMENT PROJECTS IN THE RGA

Business processes related to the transactions processing, registration function and provision of information are rising; therefore users are becoming more demanding regarding data contents and quality. The Republic Geodetic Authority, as modern state institution focused towards the citizens, had recognized that structure and form of data delivery are just as important as data contents, and therefore had initiated numerous project activities. Within the projects funded by Swedish International Development Cooperation Agency (SIDA) “Capacity building in Serbia: Real Estate Cadastre and Registration Project” and Norway donation project “RGA – Statens Kartverk Twinning”, the Republic Geodetic Authority had built new methods for providing services through upgrading processes in the Real Estate Cadastre and harmonization of services provided in the field of geodetic and geographic information. For that purpose, the Republic Geodetic Authority had implemented numerous modern electronic processes and technologies within its existing systems. As part of these integrated activities, special attention was paid to upgrading availability and data exchange process within the competence of the RGA with the external users and various stakeholders through utilization of modern information and telecommunication technologies.

Goals of these projects are comprehensive upgrading of *quality* through development sustainable land administration system in Serbia, upgrading capacity and development of professionalism within the RGA, for the purpose of effective and efficient service provision and offering products on the real estate market, establishing functional search services, together with motivating and development of cooperation among stakeholders in data exchange.

5.1 Standardization of Data Exchange with External Users within the Real Estate Cadastre Maintenance Procedure

Nearly all organizations, regardless if commercial or in public administration, achieve strategic part of their missions in communication with the environment – users of its services, buyers, partners, citizens and regulators. In that, complex business processes are being developed, both through interaction with the environment and within the organization itself, usually with voluminous accompanying documentation. Those processes are a great challenge in the field of efficiency and economic operation. Having that in mind, in the field of Real Estate Cadastre, special attention within the “Development of quality assurance and control concept” had been paid to standardization of data exchange with the external users, such as private geodetic companies, within the Real Estate Cadastre maintenance procedure, using the

Internet application. For that purpose, a special application was developed, connecting work processes in the Real Estate Cadastre, using functional solutions of various Web services of the Republic Geodetic Authority.



Figure 1 New web application

Within cooperation with the external service users, it was determined that it is possible to use all data available on the Internet by defining access rights within the registration process itself, data download on GEOSRBIJA portal, available in all formats in line with the existing international standards, such as **excel, txt, xml and shape**.

Using the existing IT structures as foundation for data exchange upgrading, connecting the available links in data download procedure, a web service had been created, dedicated to the external users, which may directly download official data necessary to perform all kinds of works.



Figure 2 Possibilities for browsing and retrieval of data

This Web application provides the users with smooth, fast and reliable method to submit a request or some documents, as well as to obtain quality and credible data:

- On property rights holder on subject real estate, area of subject parcel and parts thereof, encumbrances and limitations (encumbrances including mortgage, annotation of unresolved cases, etc), i.e. data kept in alphanumeric database – i.e. real estate sheet
- Data on subject parcel position, with detail points coordinates, graphical and vector presentation of parcels kept in graphical database

- Data on geodetic base – trigonometric, polygonal and reference network points, transformation parameters
- Orthophoto map and digital terrain model.

Within the quality control upgrading, special attention was paid to the issues regarding epoch of data available on the Web and possibility of updating, followed by the method for registration of downloaded data and control of purposeful use, payment options and fee amounts for downloaded data.

6. CONCLUSIONS

The Republic Geodetic Authority, as state institution, after implementation of the Real Estate Cadastre project, had defined a priority in its strategy to upgrade and assure quality of data in the Real Estate Cadastre and to contribute to sustainable economic development and poverty alleviation, better environmental management, security of property rights and active real estate market through efficient land administration.

Defined goals through upgrading and comprehensive quality control of land administration impose obligation of the Republic Geodetic Authority to strengthen its institutional capacities, making them sustainable for the future; to implement its competencies and responsibilities as its developmental goal and to achieve expected results, as defined on the national level, in line with the international community and European Union standards.

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8/10

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BIOGRAPHICAL NOTES

Ivana Stankovic, Working in the Republic Geodetic Authority of Serbia (2009-2012)
March 2010 – present: Project coordinator "Capacity Building for Serbia: Real Estate Cadastre and Registration Project, phase III" and International Cooperation activities within the Department for Inspection and International Cooperation
August 2009 – March 2010: Digital orthophoto quality control, Department for Real Estate Survey, Photogrammetry unit, RGA
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Stojanka Brankovic, Working in the Republic Geodetic Authority of Serbia (1995-2012)
2008-present: Director Assistant for Technical and Administrative Supervision
Previous positions at RGA: Head of organizational unit for Land Surveying Technical Supervision within Sector for Technical and Administrative Supervision, Supervision officer, Head of organizational unit for Land Consolidation within sector for Real Estate Surveying and other.
1986-1995 was working in the Photogrammetric Authority of Serbia as leader of geodetic works in land consolidation and geodetic project engineer.

Nenad Tesla, Working in the Republic Geodetic Authority of Serbia (1996-2012)
July 2008 - Present: Director General of the Republic Geodetic Authority, Serbia
Previous positions at RGA: Mart 2008 – July 2008: Assistant Director for Real Estate Cadastre
2003 – 2008: Assistant Director for Real Estate Survey
2002 – 2003: Advisor to the Director of the Republic Geodetic Authority
1996 – 2002: was working at various jobs within different Cadastral Offices, 2000-2001 was working with private geodetic organisation in Libya as Chief Geodetic Engineer.

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9/10

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