

Development of municipal System as an instrument of planning approach transition toward integrated sustainable development– case of Serbia

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1 ABSTRACT

Major transitional changes can be recognized in Serbia in last ten years affecting all main sectors of society. Serbian firm political destination toward EU integration puts enormous challenges to the government reform processes due to comprehensive legislative and regulation harmonization. Even though many of new laws and national strategies have been adopted, their implementation is very hard and slow. Very specific challenges are faced in field of planning and governing sustainable urban development. Sustainability as a concept is introduced in everyday life of Serbia rather recently, with major delay comparing to the other European countries. In spite the fact the in academic circles sustainability was over twenty years the subject of planning approach redefinition argue, first important policy and regulatory documents were adopted last year. Now major problems are faced in planning practice due to very low level of understanding and knowledge about methods and techniques necessary to achieve sustainable solutions. The situation is even harder when planning practice is additionally challenged with the local political priorities that are generated from philosophy opposite from sustainable. Therefore, now Serbia is the challenged to find creative ways to speed up the planning and governance practice transition towards contemporary European sustainability concepts and in the same time meeting the current economic development needs. In past five years several international support programs were implemented, aimed to build municipal capacities for integrated strategic planning and governance using different ICT solutions. Experience of six Serbian municipalities where concept of Territorial Information Systems - TIS was introduced and implemented through pilot projects showed that it could be used as an instrument of planning approach transition supporting methods and techniques that foster integrated development and sustainable community solutions. This paper will give the review how two years implementation of six pilot TIS projects affected and improved planning and governance practice in Serbian municipalities introducing different new instruments and methods. The potential of TIS as a bottom up instrument for planning and governance improvement was recognized and fostered by National Strategy of Spatial Development adopted few months ago.

2 PLANNING TRANSITION IN SERBIA

2.1 Planning context

In this chapter we will try to outline some key points of current planning position in municipalities of Serbia aiming to provide the base for understanding why we tried to use concept of TIS as an instrument to foster planning approach transition toward integrated sustainable development.

„Sustainability got to Serbia recently, and with significant delay in comparison to other European countries. In spite the fact that we use the term for almost the two decades, we recently approached to develop some of the key documents regarding sustainable development or country sustainable status assessment. This situation is a result of insufficient knowledge and understanding of issues of sustainability, adoption or consideration of other priorities while the “transition” on sustainable development is delayed, insufficiency of economic resources for sustainable solutions, and very often due to negation of sustainability as an “sustainable“ development philosophy.” (Bajic Brkovic, 2009)

2.1.1 Transitional blind forces and abandonment of planning

General overview of urban and spatial development trends in last two decades gives us the picture of much more negative than positive issues. Urbanization process turned out to be more informal than planned and controlled. That is a consequence of overall Serbian society transition process, absence of adequate and clear policies of urban and spatial development and incompatibility of current planning model with the socio-economic changes. Planning system, previously established in socialistic society, is unable to follow changing processes initiated by fostered private sector at the beginning of nineties. Since then in Serbian cities

encounter enormous illegal construction and contempt of valid plans, decrease of quality and quantity of public spaces and communal infrastructure, endangerment of ecological natural values in urban areas. Restructuring of economic forces, working zones and overall decrease in social services investment fostered population migration toward urban centers, which as a consequence brought enormous imbalances in territorial development.

Planning and management practice started to change in last ten years due to two main groups of factors: 1) inner: numerous requests of investors for more efficient administration of investment procedures, legalization, communal commissioning of suburban areas, establishment of land legal status public/private etc., 2) outside – international community pressure to establish more efficient mechanisms in regional and economic cooperation in field of industry, agriculture, transport, energy, etc., in environmental protection and ecological vulnerability monitoring, informal settlement and social housing, which quite differ from Serbian practice so far.

2.1.2 Back to planning? – Deregulation and planning purpose change

Fostered investment activities, after ten year of stagnation due to unstable political situation in Serbia, initiated inner factors of planning approach change. Local authorities started to reevaluate existing plans and initiated development of “new” urban and spatial plans that will more suitable meet the current needs. Under the private sector forceful pressure and need for fast legal administration of investments, municipal planning become very active and at same time limited to numerous small “one parcel” urban designs or eventually communal general regulation plans. In most cases, direct implementation of general urban plans is enabled, due to their flexible reformulation and more stress to construction rules. In that way detailed regulatory plans, which were one of that main planning instrument so far, are put aside and almost abandoned. Among the disciplinary discussion that was usually justified with nature of market conditions, construction demand dynamics, and therefore the disability of planners to plan “precisely” urban development. Step by step planning becomes a service of “investment urbanism“, followed more and more often by very sharp public resemblance to “informal” planners-politicians-investors coalition.

It was clear that planning system started to transform, in spite the fact that legal planning regulatory framework didn't change, in direction of deregulation and problem oriented planning which was distinctive in liberal capitalism many decades ago. The purpose of planning is now interpreted as efficient administration of investment market and main infrastructure problems solving. In this sense, there is no substantial part of planning purpose such as urban development guided by fostered socialistic consensus on equality of rights on standardized living conditions, neither as urban development fostered by community collaborative visions of quality living.

„Construction process in Serbia is characterized with ad hoc decisions, absence of regulatory mechanisms, and unclear relation toward standards while the old ones were rejected or mostly denied and new ones still don't exist or are not accepted, and where the construction rules and regulation of city space are defined primarily by investment interest, and secondly by public interest. The rejection of planning and planning mechanisms is noticeable, and advocating of “market” commonly interpreted as context with no regulatory mechanisms, no respect of public interest and state role. However, in development and construction of cities in every regulated state, role of planning, policies, strategies and regulatory mechanisms is substantial and *conditio sine qua non* for qualitative urban development.” (Bajic Brkovic, 2009)

Market based urban development was actual in western countries in second half of nineteenth century during the industrial revolution. Consequences of market based urban development were so serious, especially in domain of environmental quality and social inclusion, which eventually lead to significant theoretical, conceptual and institutional change of western planning practice. From this point of view, the main question that has to be asked is whether Serbia will have to pass the whole development process from the initial stage of liberal capitalism, all together with the consequences of market based urban development, or it will find strength to consolidate their own knowledge and experience in comparison to other experiences aiming to define the planning system appropriate for the current situation and its own context?

2.1.3 Back to planning? – planning objective change and new planning instruments

Thanks to the previously mentioned “outside” factors of planning transition, i.e. more intensive international community inclusion in development processes in Serbia through initiated process of stabilization and EU

integration of Western Balkan countries, planning and management practice started to change more significantly. In numerous of cities and municipalities of Serbia, in past ten years large number of international donor programs were implemented, with aim to built national and local awareness, knowledge and institutional capacities in field of economy, rule of law, and also in all fields where negative influence of market driven urban development are expected, such as environmental protection, social inclusion of vulnerable groups, informal settlements sustainable solutions, civil society building capacities in a field of institutional organization and articulation of civil society participation in community development, cultural-historical heritage ambient and identity preservation and protection etc.

Therefore, under the influence of the international factors, except questioning of planning purpose, process of questioning of planning subject also started, along with process of knowledge propagation about new planning and management instruments. In last five years many municipalities in Serbia adopted different strategic plans: economic, sustainable, territorial, master plans for significant development projects, local ecological action plans, different social integration and inclusion programs, etc., which were aimed to redirect planning objective from problem solving toward strategic collaboration, and planning concept from physical planning toward integrated sustainable territorial development. International initiatives created on a local level atmosphere of openness toward utilization of new methods and instruments of urban development. Nevertheless, this openness is first of all motivated by the local authority's recognition that there are the potentials for access to the EU pre-accession structural funds, while in the same time there is still no clear consciousness and knowledge what these methods and instruments are actual for, why we create them in collaborative way and how they should be implemented now.

2.1.4 Current planning challenges

In this moment Serbia is still faced with the situation with no clearly defined policies of urban and spatial development, in spite the fact that the general necessary social fundament is much more articulated in Serbian determination to access EU. Ratification of Stabilization and Association Agreement (SAA) between EU and Serbia, committed bought sides, among else, to establish tight collaboration to contribute to the development and growth of the Serbian potentials thus the economic relations will be in generally fostered, and policies and measures will be formulated in a way to enable sustainable economic and social development of Serbia, in the same time taking in the consideration the issues of environmental protection (article 88., SAA, 2008). One of the most significant obligations that Serbia accepted by this agreement is to harmonize with the EU law. In last five years political focus in Serbia was on social development in rule of law and economy.

According the European Commission report about Serbian progress for year 2008., Serbia made almost insignificant, i.e. insufficient move in a fields of environmental protection, information society services, statistics, personal information protection, human and physical capital, education and research, in which more significant changes are expected in following period. If Serbia succeeds to implement adopted National program for integration by the 2012., it should be technically prepared to take all responsibilities that are derived from EU membership.

Nevertheless, there is still the question of Serbian essential and operative preparedness to implement obligations and regulations in practice. Integrated territorial development and actual policies of territorial cohesion in EU, where urban and spatial development have very important role, are very complex processes in which Serbia will not be able to actively participate unless serious effort is put in preparation of resources and capacities for this step. In that sense, the main question is how and with what instruments is possible to redirect and foster Serbian planning "transition" from actual toward collaborative communicative approach under the modern, organized and competent good governance, which takes into account principles of sustainability defined by EU and global development policies?

2.2 Directing the planning transition

Even though, as we could see from previous chapter, key disciplinary questions considering planning concept in Serbia started to be considered over a decade, more consistent institutional, legislative, regulatory and practical changes are still missing. On one hand, this situation is a consequence of still unclear social and political directions, and therefore unclear political determination on urban development strategies which remained on the margins of current political focus (Bajic Brkovic, 2009), and on the other, it is a

consequence of overall insufficiency in knowledge about nature, objectives and role of planning in new social conditions which will be actual in the moment of Serbian accession to EU.

„In the current conditions when in Serbia inclusion in global flows of capital and privatization is expected, planners have to adjust their own professional services to the reality dynamics” (Lazarevic Bajec, 1996). Upcoming law harmonization with the EU in a field of environmental protection, information society services, statistics, education and research, will not automatically put Serbia in a position of functional easy inclusion in EU regional development process. Current policies of urban and spatial development in EU member states are harmonized with numerous EU strategic documents, such as: European Spatial Development Perspective from 1999., Lisbon Sustainable Development Strategy 2000., revised in 2006 . in Goteborg, EU Territorial Agenda from 2007., Green Document on Territorial Cohesion from 2008. , and much more documents which are forming context for EU member states definition of national urban and spatial planning concept. In that sense accession to EU implies substantial changes in a field of urban and spatial development, especially in policy making, institutional arrangements and development of new instruments, methods and techniques. Except law harmonization, Serbia will have to position itself politically and strategically in context of EU and according to that finally redefine planning concept and system.

Considering the current development condition and available resources in Serbia and actual urban development trends in comparison to the EU member states, Serbian planning system should be very flexible in usage of variety of instruments and methods in order to follow up and manage inner change dynamics and in the same time to provide the capacities for development of Cities strategic visions as a part of EU network. That means that role of planners must be significantly changed in relation to the one defined in traditional planning. Planners must be competent and capable to analyze and recognize development mechanisms, choose different adequate approaches, creatively create and innovate process of planning and plans production, which cannot be any more limited to list of plans defined by current planning law.

These facts redirect the disciplinary consideration toward serious consideration of possibility to apply institutional model of planning in Serbia. „Institutional approach starts from the structure and action of different actors in urban development, reveals their interests and activities and places them in wider context of structural process. On the contrary from systems theory which produces idealized models of choice which are often divided from real interests, the ways how certain social processes produce events are considered. We are interested in structural tendencies which shape social process and in those above directly observable phenomena, such as for example heterogeneity of social groups, power misbalance among them and economic process within which groups are constituted and resources divided among them. Main question within this approach is how planners, which are employees of the state, collaborate with the representatives of social and economic groups in society. Knowing the socio-economic position of these representatives is very significant for understanding the scope of the influence that planner could have on their actions.” (Lazarevic Bajec, 1996).

The role of planner conceptualized in this way, especially of those which are employed in authorities, demands high awareness, very complex knowledge and skills. Knowledge is referred to quality information about administrative territorial phenomena and changes, inner and considering wider context, about subjects of change, their institutional position and power, socio-cultural specificities, preferences and interest, activities etc. Skills are referred to ability to use different methods, techniques and tools for fostering communication and collaboration of all development actors.

Accordingly, when we ask question how and with what are the instruments to foster planning “transition” in Serbia in order to be prepared for involvement into EU integrated territorial development policies, than certainly one of the answers can be find in intense knowledge and information capacity building of all development actors. The fact that SAA, among else, is focused on collaboration in a field of education and research, information society services and statistic, underlines the significance that Europe give to concept of the knowledge based society.

3 CONCEPTUAL APPROACH TO TIS DEVELOPMENT IN MUNICIPALITIES OF SERBIA

The idea to use the TIS as an instrument to foster transition of planning approach in municipalities of Serbia turned out during the preparatory phase of project document of SIRP - Settlement and Integration of the

Refugees Programme, lately implemented by UN-HABITAT in the period of 2005. to 2008. . The Italian government decided in 2004. to finance the programme aimed to help policy makers and local communities in adopting workable and lasting solutions, while getting up a grip on the human settlements and urban issues. Some of the main activities of this programme were: - improving, in most of the Municipalities, the skills to elaborate plans for local development, - developing, in six Municipalities, Pilot projects on Territorial Information systems, and - establishing a regional network for the exchange of experiences and lessons learnt. (Ramirez, 2008) That was the base for the conceptual development of the idea to use TIS in order to make more comprehensive and substantial influence on municipal planning approach. In following chapters the short overview of the key issues of this process, an also of achieved results will be given.

3.1 Concept of building up the awareness about new planning approaches by using TIS

Second SIRP component –Municipal component, was capacity building component and it was designed to enable six selected Municipalities to improve their effectiveness in their functions of governance and implementation of more complex development projects. The capacity building interventions set up methodology for the delivery of the technical assistance and to provide the necessary support to the other programme components. Each programme component interacted with others, i.e. housing one, profited from capacity building and the support to the integration of its beneficiaries. Integration between components activities was a leading principle in the project management cycle. Aside from integration, other important key words and concepts of SIRP methodology were: participation, enabling, confrontation, partnerships, didactic approach, bottom up, learning with others, knowledge spread, information flow, “acquiring skills, instruments and tools”, “exposure to EU good practises”, “key actors of the EU integration process”. (Ramirez, 2008)

“The challenge of decentralisation, transition and integration in Europe might imply looking at the European Union framework (policies and methodologies(, in which local governments not only contribute to the economic and social development of their territory but, due to their closer position to citizens, are often appointed to implement the EU legislation. In transition countries, Local Authorities are more and more becoming protagonist in the decentralization process and their role in promoting central reforms might be crucial. Local Authorities can be champions of change, taking up the role of transforming their territories being trainers /locomotive of development, from bottom to up. SIRP has experienced that applying the “bottom up“ approach can really make the difference.” (Ramirez, 2008)

During the preparatory phase of the SIRP project document, group of the national consultants altogether with major international support from Italian and other international partners, according the assessment of Serbian contextual resources came up with a conceptual principles that are to be followed during Pilot projects implementation.

3.1.1 Achieving integration

The integrated approach to territory (understood here as the scenario in which all actors play and actions take place), comprises different and important meanings when related to \local development: functional integration, which means providing unitary implementation and management of actions related to different sectoral aspects; financial integration (i.e. public, private funding); integration of actors and policies, which means that subjects, competencies and policies are coordinated towards a common strategy; horizontal integration of players actions, sectors and resources thus producing grater creativity and inventiveness; vertical integration of all levels of governance and planning : from community level and their action plans, trough municipal, district, regional and up to the central level with national development plans and policies. (Ramirez, 2008)

The implementation of the integrated approach to local development, as conceived throughout SIRP Programme, started with the integration of information necessary for effective and efficient decision making processes. Achieving the integration of information is a complex process because it implies not only integration of different, often incoherent, data bases, but also the integration of information activities between governmental, public and other non-governmental or private institutions and organizations, as well as integration of knowledge and technology resources that enable such integration.

In order to ensure that decisions in the process for local development are based increasingly on sound and integrated territorial information, it is necessary to develop a system that will improve data collection and

use, the methods of data assessment and analysis, the availability of information and the production of information usable for decision-making. Therefore, it was use the concept of TIS and experiences of good practices of the Italian partners. (Lalovic, 2008)

Concept of Territorial Information Systems –TIS is a new generation of decision support systems based on GIS technologies developed with aim to support integrated territorial sustainable development. Due to it openness to the all development actors, it represents also new planning and governance instrument. TIS concept comprises its scalable implementation from municipal up to the regional or national level and it is spatially correspondent to the territorial administrative division. It is structured in a way that first of all supports activities coordination and organization of different local institutions, public enterprises, non-governmental organizations, private sector in the process of planning and governance of integrated development. Therefore, it integrates data and information not only about the available resources but also on all activities that put them into function: economic, environmental, social, technological etc. (Lalovic, 2008,1)

The concept of Territorial Information System enables and supports integration in many ways:

- As a tool that provides efficient collection, storing, updating, sharing, publishing of data and information, enabling the integration of information activities among different local governmental and non-governmental institutions and organizations.
- As a tool that allows effective processing, analysis and displaying of all forms of territorially referenced data and information in order to produce accurate, appropriate, fast and integrated information on territorial resources: environment, society and economy. In that way it enables integration of scientific and expert activities, supports knowledge and technology exchange.
- As an instrument to support decision making processes in planning and management the development of the territory by providing integrated complex quality territorial information that reflect various interests and give the possibility of qualitative assessment of decision alternatives to all decision makers, increasing accessibility for all citizens to local development processes and supporting the implementation of the local community integrated development activities.

Territorial information systems are an instrument that initiates and foments integration of a very important part of local community life: knowledge and awareness of its territory and ongoing development processes. One of the main conceptual assumptions of TIS is also that it is developed as a tool which will provide wider territorial integration. For example, if TIS is developed in two neighbouring local communities following common basic rules and norms, it will provide integration of information activities between two local authorities enabling recognition of common interest and supporting development partnerships. In that way territorial “borders” divisions vanish. The assumption that all local communities have developed their local TIS provides the ground base for development of regional and national TIS. Data and information, which are in details collected and processed on a local level, can be integrated and processed to provide valuable information necessary to manage regional development and certify national development policies. Vertical information integration should be enabled by the established laws, normative and regulatory frameworks which define the common ground for data and technology sharing form local to national territorial levels.

3.1.2 Building up the awareness - information flow, knowledge spread, learning with others

A TI is structured in a way that should provide complex information derived from integrated package of very different data on natural and built environment, socio-economic resources and activities. It this way TIS integrates the information on community life and gives the base for rising the awareness of the citizens about specific details on available community resources, ongoing processes, about participating actors and the results of the actions taken. (Thomas, Humenik-Sappington, 2008) Integrated information on community life enables TIS to be an instrument of quality information production and therefore to support collective decision making. In this way, by activating the abilities of community to exchange knowledge and learn together, TIS stimulates integration of community activities and provides quality base for mutual communication and collaboration in decision making about local development. (O’Looney, 2003)

TIS should also support the community integration on higher territorial level, such as regional, by activating its ability to efficiently and effectively exchange knowledge and experience with partner communities. GIS technologies placed in a fundament of TIS, are providing the ability to join several local TIS in one and to

connect it vertically with higher territorial authorities. This ability of integration is not important only because the intention of vertical coordination but also to enable better territorial marketing or protection of the specific resources that several local authorities share. (Lalovic, 2010.)

3.1.3 Raising the public accessibility to local development processes

Functionalities of TIS are conceptualized in a way that supports public accessibility to local development process in a different ways. Firstly, concept of TIS implies the production of different kind of informative materials (e- publishing, interactive services, printed reports, books and brochures etc.), adjusted to different public needs, that enable public access to local development programs, policies, plans, projects and activities. Special potential of TIS is the ability to map and visually follow the impact of this documents or decision taken on across the community territory on the web in every moment. The main objective is to inform wide public on ongoing activities, and to enable citizens to involve more actively in the community development process.

Secondly, since concept comprises that TIS relies on different sources of data (public, private, civil society) in order to integrate different values in decision making process, it enables that all community groups have accessibility to public portal to express their own stands, opinions and needs on specific development issues.

Thirdly, since usage of TIS provides possibility to produce malty criteria reports and maps understandable and acceptable to all, it enables stakeholders' accessibility to decision making process in more effective way. Therefore, through its conceptual methodology of data acquisition, processing, reporting and dissemination of generated quality information, TIS is supporting local governance to develop its enabling competency.

3.1.4 Supporting the participation process

If we want to make certain decision, it is necessary to understand: what choice we have, what we all want, - what are benefits of our wishes, - what we will lose if we choose one or the other solution. So, in order to support decision making process TIS has to enable not only the overview of the territorial resources and the processes of changing during the past, but also to enable to "look" at the territory through the eyes of stakeholders and to evaluate the possibilities through their own value system or through the system of community shared values. In practice, this requires very often very hard, time and money consuming participatory process, especially in cases dealing with issues of high public interest and importance. (Healy 1997., Innes, 1994)

In these cases TIS can support participatory planning process by provision of complex but understandable and custom tailored information about community life, enabling the citizens to widen the knowledge of ongoing processes in community, raising the awareness of changes in the environment in development processes before they get to discussion arena. (O'Looney, 2003) It is very important that TIS, since collects and integrates data and information from all society levels, enables the stakeholders to built up the information base for specific decision making process in a way that they think is proper and necessary. In that case TIS becomes an instrument to build up the mutual trust and prepares the base for communicative action. In that sense TIS provides a possibility to increase efficiency of the participatory process. The community groups that are to be involved in participatory process can be with the support of TIS efficiently prepared for the collaborative process. (Greene, 2000)

Next, during the participatory collaborative process of alternative scenario definition, TIS with its abilities to process, analyze and simulate different territorial situations, can support generating the alternatives to decide upon. At the end, it has high operative and analytical potentials for establishment of malty criteria evaluation mechanism which will later on be used as a monitoring tool.

4 EXPERINCES OF TIS PILOT PROJECTS IN SERBIAN MUNICIPLAITIES

"TIS are instruments to support planning, managing and monitoring the territory, where "territory", as applied in European practice and conceived by SIRP, goes beyond its spatial connotations and it is understood to be comprised of all its spatial elements, all actors which constitute its communities, its socio-economic and cultural values, and the actions and dynamics that shape its form. The integrated approach to territorial development is thus intrinsic to its own definition, implying both vertical and horizontal integration trough coordinated planning of resources and the use of the territory."(Galassi, 2008)

Experiences from EU counties show the application of TIS to various fields and segment of planning. When considering the public administration and its governance functions, this translates into developing and improving the efficiency and effectiveness of a series of user-oriented services, enhancing the communication and information flow within the local administration itself and its segments, as well as cooperation within community and with state administration, enhancing services to the citizens and business and enabling their participation in decision making processes, through 1) the development and strengthening of capacities of an organized system of qualified experts and administrators, 2) the definition, rationalization and standardization of administrative procedures and 3) development of data services and appropriate technological infrastructures in order to provide access to data and information to execute administrative process. (Galassi, Lalovic, 2008)

4.1 TIS Pilot projects – key structural issues

Territorial Information System, by its structural complexity, is the system of highly qualified persons skilled in the use of ICT technologies, all forms of territorial data records, and the sets of activities for collecting, storing, updating, processing the data and information in a given institution and organization, supported by the process of elaboration of appropriate and efficient technology-aided tools. The main elements of TIS structure are:

- Territorial data and data base: usability and quality of data and information to form the knowledge base about the territory is achieved by its organization and integration in a Data Base. In real life, numerous records, data and information are collected on different administrative authority levels and within public and other organizations. Experience so far points out that a lot of records and data currently gathered on a local level can't provide high enough qualitative information to support good participative decisions. This means that sources of data and information have to be expanded to a wide range of new alternative sources (field surveys, "non-official" sources from civil society and public sector).
- Human resources: essential elements for developing, managing and using the TIS, carrying out activities for its conceptualization, organization and performance. The engagement of human resources can be structured according to the following roles: developers (urban planners, civil engineers, public administrators or managers), administrators (skilled IT technicians) and users (politicians, managers, entrepreneurs, businessman, unemployed, citizens, even children).
- Information and Communication Technology (ICT): TIS technological element is structured as a combination of hardware, software and ICT supported services. This combination can vary in each specific TIS case and depends on very different factors. The main one being the existing IC Technology level on local level, financial resources and institutional and human capacities to implement high quality ICT solutions. GIS technology is a very important part of TIS. GIS tools allow capturing, storing, analyzing and managing data and associated attributes which are spatially referenced to the earth, and to create interactive queries, analyze spatial information, and present the results of all these operations on thematic territorial maps. However, there will be data that cannot be processed in this way but still be part of TIS and processed by some other software tools.

In order for TIS to function, systematic relations between its key elements should be established and agreed upon:

- Modelling the TIS – integration of people and data: it is a complex process of choosing, structuring and integrating appropriate data on territorial resources in function of local communities' needs to decide upon something. In order to support group decisions in local development processes, data and information are needed, which will give us the best possible picture of the problem in the context that we have to address. The process of modelling the TIS, implies much more than simple collection and integration of existing data records. It implies the necessity of deep understanding of stakeholders needs and preferences. In order to model the TIS, a wide range of local community stakeholders should be engaged to select the specific data and meet their information needs. Only in this way data integrated in TIS can be processed and transformed in quality information for different users.
- Administering the TIS – integration of data and technology: it includes activities on coordinated TIS database development, maintenance and publishing, providing integration of information activities in

the local community. Contemporary solutions of TIS administration are centrally coordinated data sharing of distributed TIS data bases. That means that different local sectoral databases within different institutions and organizations, “owners” of specific set of data and entitled to collect, process and store them and having the responsibility to maintain the database and provide accurate and up to date information, are being shared and used by all community institutions and accessible to the public. In order to accomplish that, a TIS administration and management unit has to be established. The unit is usually placed within the local authority. It is entitled to establish and motivate inter-organizational data sharing and set up usability mechanisms through the establishment of data sharing and integration protocols, standards for data formats, standards for common ICT platform and metadata services. The administration and management of TIS at the local level can be set up in different ways according to the information, human and ICT capacities that the local community has. However, TIS administration should be also organized in a way that provides data and information that fit into norms and regulations that are usually set up on a higher territorial level (regional or national). This provides integration of information activities not only horizontally on local level but also vertically from local to national.

- Developing capacities for the TIS – integration of ICT and human knowledge: different TIS training programs should support the development of the necessary know-how to ensure sustainability of TIS and its proper efficient and effective development and usage. Since TIS by its definition means a permanent process of information services development, it should be matched with capacity building programs for different target groups organized by the unit entitled for TIS management and administration. Trainings should be tailored for different groups of people according to their role (public users, stakeholders, professionals, administrators) and usually scaled from basic trainings, which should provide common understanding on TIS basic concepts, raise awareness of benefits that TIS brings to the community and ways to use it, to advanced trainings, which should provide more sophisticated knowledge and skills necessary for further development of TIS information services. (Lalovic, 2008)

4.2 TIS Pilot projects – applied methodology

The methodology applied in Serbian Municipalities is based on a “step by step” approach, starting from thematic TIS Pilot projects, on an identified specific topic, specifically focusing on issues relevant to the development of the local context and as identified by any of local strategic documents and policies, in order to initiate the TIS and start up the ground for future upgrading and integration. Municipalities identified the implementation of Municipal TIS as an important tool to inform decisions and monitor development strategies and projects.

In each Municipality a Coordination body was formed, constituting from political and management representatives of the institutions and organizations related to pilot project topic. Their function was to support the development of the TIS project, to initialize and facilitate institutional collaborations for the implementation, evaluation and the assessment of achieved results. Technical working groups have been appointed by Coordination Body, comprised of members from different sectors, in order to ensure an integrated approach to setting up and developing the TIS.

Municipal working groups of experts and technicians have been following an iterative and incremental process for the development and further upgrading of the municipal TIS. The implementation process has been tailor made for each municipality and comprises several cycles of similar activities: - Designing and programming – conceptual definition and modeling of the database and identification of users’ needs, - Implementation, acquiring and processing the data and integrating the data records, - evaluation and dissemination of the results. Each of three cycles, have been carried out for each step and allowed the testing and upgrading of specific implemented technical solutions, quality appraisals of results. The final results of each TIS Pilot project have been published in Atlas booklets, on interactive DVDs, containing the geo-database accessible for consultations through interactive maps and specific query investigations and some of them on the web which. (Galassi, Lalovic, 2008)

4.3 TIS Pilot projects – short review

4.3.1 TIS for municipal land management in Valjevo

The Pilot Project was identified in order to address a series of problems the Public Administration of Valjevo was facing in managing municipal land properties and initiating the process of development of its territory. The development of an integrated information system was identified as a vehicle to upgrade the municipality's capacities to attract new investments and thus increase employment opportunities, especially for the poor and vulnerable groups of citizens.

Main problem to be addresses was the inefficiency and ineffectiveness in responding to the demands of potential investors since the Municipality could not provide public access, prompt and adequate information about possibilities of activating construction land. It happened that the same transaction over a real estate took place twice because of the lack of available and integrated information on performed procedures. Different administrative disintegrated systems of identification of lots in the land cadastre and ownership books make it hard to determine lots. Decision-making based on small number of correct data can be more reliable than decision making based on wrong data. In this context, the purpose of Pilot Project was mainly rising awareness of managers and other stakeholders in the local community about advantages and importance of using TIS.

The main goals of the Pilot Project are thus to support decision-making processes for management of municipal land at different levels and for different stakeholders; to integrate data from the cadastre and municipal land records in one integrated system oriented towards different users' needs; to provide access to diverse information on municipal land (current and planned conditions and land use, and infrastructure equipment) through the production of different interactive thematic maps and textual reports, and possibilities of multi-criteria search; to monitor effectively and efficiently the changes in the territory.

The TIS Pilot project in Valjevo has been realized by integrating different types and sources of data. In order to improve the quality of information to stakeholders in the area of management and development of municipal land, spatial data (digital orto-photo and land model, digitalized master plan and spatial plan, street network in digital format, cadastral maps) and alphanumerical data (land records) from various sources have been integrated. Data sources that have been used are: the Municipality of Valjevo, Cadastre–RGZ SKN Valjevo, Republic Statistical Office, Public Enterprise Directorate for town planning, construction land, roads and construction of Valjevo.

„Our vision for the development of TIS in the municipality implies the implementation of a distributed network of databases of municipal institutions integrated in a unique TIS. Therefore, further steps, based on existing TIS pilot project results, would be the following: presentation of TIS pilot project results to the public, local self government and experts with the aim to obtain the support for further development of TIS; expansion of inter-institutional co-operation by enhancement of already existing co-operation between Municipal administration, Public Enterprise Directorate for town planning, roads and construction, as well as by inclusion of other institutions that would have benefit from TIS; upgrading and further integration of the Pilot TIS through mapping of all planning documents, as well as integration of additional data related to public lighting, spatial and alpha-numeric (socio-economic) data.“, was stand of Valjevo TIS team at the end of project implementation.

4.3.2 TIS Pilot Project to support tourism development – „The Best of Čačak“

In line with the adopted City of Čačak Development Strategy and the action plans on tourism and ICT, the implemented TIS Pilot Project aims at (1) initiating the development of TIS in the municipality as an instrument to support strategic decisions, implementation and monitoring of different plans in the field of tourism development, (2) raising awareness about the advantages of using TIS in everyday work of the Public Administration, as well as (3) promoting touristic resources and potentials of the territory.

Specific objectives of the project ware to initiate an integrated database of tourism resources and potentialities, and to ensure accessibility, integration and quality of data and information through the use of GIS technology, and the elaboration of different interactive analytic and thematic maps.

The Pilot Project integrated spatial and alpha-numeric data from different sources: Public Enterprise Gradac, Tourist Organization, Autoprevoz Čačak, Hiking Association Kablar, MGI Beograd, Geokarta Beograd. The

data have been collected, archived and integrated in a geo-data base providing integral information about touristic resources in the municipality of Čačak.

Different users of the municipal TIS have been identified: - Citizens and tourists interested mainly in tourist resources and activities in Čačak municipality. The interactive tourist map published, is intended primarily for promoting and informing tourists on Čačak tourist offer. The TIS publications illustrate the diversity of information that an integrated information system can offer to them; - Municipal decision makers, public servants, experts, the private sector, and citizens interested in the analytical part of Čačak tourist TIS. This modern information tool enables territorial analysis, when sectoral resources necessary for tourism development are in question. It is possible to access complex information on Čačak tourist zones, evaluate the degree of their development and identify strategic directions for potential improvements. Decision makers and municipal officers can obtain complete access to information by consulting the interactive TIS geo-database, and which is being permanently updated and kept in the municipal IT department.

The Development of information services and co-ordination of information activities in the Municipality of Čačak have been particularly intensive in the last few years. The municipal administration invested major efforts and significant resources in technological modernization of the IT department and this way it set up the conditions for development of modern tools to support management of territorial development. The activities on integration and harmonization of municipal databases have started. From that point of view, the TIS pilot project "The best of Čačak" is one of very important projects because it introduces technological and organizational innovations to information services of the municipality – introduction of GIS technologies in the process of integration of municipal data, establishment of new procedures of intensive inter-institutional co-operation and strengthening the capacities of municipal officers.

"We truly hope that this project will contribute to the further development of tourism in our municipality, that the number of tourists, who find in Čačak and its vicinities their oasis of pleasure and leisure, will increase significantly and that the visibility of touristic potentials through the maps of this project will contribute to raising awareness on the significance of investments in tourism. The first next step in further upgrading and integration of our municipal TIS is to initiate the next pilot project in support to the management of economic resources and potentials of the municipality, as well as creating a digital address system on town and municipality level, and integration of additional spatial (first of all planning) and alphanumeric (socio-economic) data.", was stand of Čačak TIS team at the end of project implementation.

4.3.3 TIS to support rural development – „The ID card of rural villages,,

The City of Nis recognized the need to improve the quality of information about rural areas to inform and support plans and actions for their future development. Therefore, the City decided to develop TIS to support rural development aiming towards information accessibility to various users and integration of data from different sources to achieve quality. The focus of TIS Pilot was the Municipality of Pantelej due to the fact some previous field research was done, through the Project "ID of villages", and acquired data on different topics relevant to rural development. Furthermore, it was decided to improve database and additional alphanumeric as well as spatial data were captured.

TIS office was established within the Municipality of Pantelej and equipped with hardware and software. During the period of development of TIS Pilot data from the following sources were integrated: Municipality of Pantelej, PC Urban planning Agency, Clinical Centre Nis, Institute for cultural heritage and monuments protection, Serbian Orthodox Church, PC for Environment Protection, National Statistical Office.

In the final phase 18 interactive maps and reports were published that cover four aspects of rural territory: - Ownership structure – maps that give information on the size and type of the ownership of the farms, - Economic structure – different queries on the type, size, income of economic production on the farms. - Social structure – maps and reports with data on number, density, marital status, income, profession of the inhabitants, -Natural and built environment – different integral information with data on areas covered by forests, mountains, agricultural land, built areas with services, agricultural facilities.

A project for further upgrading and unification of the city Information System has been formulated within the City of Nis Development Strategy, adopted in 2008, under the Operative Axis 4 on Governance: strengthening vertical and horizontal governance and participation of citizens and stakeholders, implementing an efficient system for planning, formulation of policies, monitoring and evaluation.

4.3.4 TIS Pilot Project on Touristic Resources in Kraljevo

Main purpose of the TIS we developed is to provide an integrated database on tourism in Kraljevo. The conceptual model of TIS database was oriented to its different potential users: tourists, experts, entrepreneurs, decision makers and we tried to integrate as much data as it was possible in one year period. During the different phases of the project implementation great emphasis was put on collecting relevant data. Most of the data was collected during field visits, although already existing data was used as well. The institutions that provided data are: PC Directorate Kraljevo, VGI Belgrade, Republic Geodetic Institute, Touristic Organization Kraljevo, Museum of Kraljevo, Municipality of Kraljevo, PTT and Telenor, Public Enterprise Serbia Railways, Kayak organization.

As a result of integration of various sources of data, spatial queries and interactive thematic maps on promotion and development of touristic resources and potentialities in Kraljevo were created: - Touristic map of Kraljevo, -Level and type of touristic potentialities in Kraljevo, -Analytical maps on traffic network and transportation, natural resources, services, demography, -Touristic potentialities and planning documentation.

TIS was institutionalized through the establishment of TIS working group as part of the Project Center, established in 2007., within the Municipality. The Project Center is active in raising awareness and motivating different stakeholders in the municipality to provide support and involve them in the overall process of development and improvement of TIS in Kraljevo. On this matter the official collaboration with Technical university of Kraljevo was established. Next steps for upgrading of the TIS were in the field of development of industrial zones, support rural development and management of municipal land. Now TIS is used for decision making base for Kraljevo Development Strategy formulation.

4.3.5 TIS to manage the development of industrial zones in Kragujevac

The TIS Pilot Project in the city of Kragujevac is addressing management of the first phase development of working zone along the highway Kragujevac – Batočina. Intention was to explore and identify possibilities of providing quality information to support the process of urban investments and project management for different groups of users such as decision makers, public offices of the city administration, private sector investors and other stakeholders interested in specific site construction.

On order to achieve pilot project goals TIS working group made an effort to integrate as much data and information as possible, necessary for Kragujevac investment zones development, such as: Master Plan of the city of Kragujevac 2015, the city investment guide, cadastral maps, cadastral maps of service infrastructure network, orto-photo, street network, plans of detailed regulation, urban acts, geological map. Very close collaboration on data sharing and integration was developed between key local and national institutions and organizations: Public Enterprise Directorate for town planning, the city assembly, Cadastre Office, Republic institute for statistics, Geokarta Beograd.

Significant results were reached by provision of different interactive maps, textual and numeric reports, graphs and diagrams which refer to resources and potentials of the working zone giving the data on each construction site (spatial, type, structure, land utilization, geologic characteristics, planned building capacities, infrastructures). The Pilot Project has been expanded with integration in the overall map of all other working and industrial zones on the territory of Kragujevac. In the near future, They we plan to develop TIS on city land management using the experiences and models developed by the City of Valjevo.

TIS to support management of municipal housing stock in Pančevo

The municipality of Pančevo decided to support the development of the TIS tool to support municipal social housing programs implementation defined within the housing strategy of Pančevo with two main goals: raise awareness of local authorities and get necessary political support for further development of Pančevo TIS, and increase efficiency and effectiveness in management of the municipal housing stock.

Two attempts to activate the TIS project and setting up its organizational structure have been carried out during the year 2007, which successfully concluded with the involvement of the municipal administration, the IT Department, the Public Enterprise municipal Housing Agency, and the Public Enterprise Directorate for planning and construction. Significant amount of time was spent for the organizational preparation of the TIS Pilot Project, resulting in a short timeframe to be dedicated to operative work. In spite of the starting

difficulties we succeeded to establish an operative TIS team, which succeeded to reach significant results in a five months.

The geodatabase for social housing apartments records has been modeled and integrated with numerous spatial and alpha-numeric records. The focus of the pilot project has been the social housing building in Strelište, newly constructed with the support of the SIRP Programme. Spatial data and maps (Plan of Detailed Regulation, service network cadastre map, etc.) were collected and processed by the Public enterprise Directorate for planning and construction, and alpha-numeric data were collected from the Public Enterprise Municipal Housing Agency, and then integrated in interactive maps. This experience highlighted the need for development and introduction of standards and protocols for data sharing among institutions, further application and upgrading of TIS to support the implementation of social housing strategy.

5 CONCLUSION

Together with the cities of Cacak, Kraljevo, Kragujevac, Nis and Valjevo, UN-HABITAT has received the First Prize at the 16 Serbian Salon of Urbanism for the realization of Municipal Territorial Information Systems Pilot Projects in the category of “Application of Information Technologies to Planning”, which main theme was “Urban Challenges”, presented to the wide public the recent achievements in the sphere of urban and spatial planning, as well as innovative approaches to local strategic planning for development.

However, experiences of Municipalities that started TIS development showed that there are many problems that have to face during the implementation.

First of all, there is a problem of insufficient political support especially in the conditions when this activity is not regulated by national regulations or law. Comparing to the EU context, more regulated framework is given by numerous EU and national documents and policies that regulate and foster development of information activities of authority institutions, in spite of the fact that some of the member states still didn't put larger effort in their development. Insufficiency of political support is tightly linked to low level of awareness and knowledge about what the benefits of TIS are, and what is its role in the process of planning and governing the sustainable development, even in the context of development driven by market forces, described before. Still, in cases that we performed this experiment it was possible to acquire necessary support due to numerous activities that included not only the meeting with Authority representatives but also organizing round tables, specific trainings for a wider range of authority employees. In this process it was very important the fact of the presence of international support since there is higher trust in international authority than in national. Later on in the process in the phases of publishing the TIS results in each cycle, we succeeded to initialize to redirect focus on some questions of sustainability and to initialize public discussion on this meters. Thanks to the power of visualization that TIS has, we achieved this.

Secondly, the current institutional and organizational procedures in Serbia are mostly in conflict with the ones brought with concept of TIS. Institutions are very closed in their administrative and business performance and resist to a new forms of collaboration due to their fear that they will lose the share of power in community relations if they give and share the information that they have. Old administrative procedures are made in a way that is often very unclear what data is collected by which institution and they also don't have any protocols that oblige them to exchange the data or to share them. So often, we have the experience that there are many redundant and incorrect administrative data records depending on the fact which administrative body we address. The problem is more complicated in the moment when we face the fact that some of the data is owned by national institutions, since there is no efficient communication between local and national government levels. During the process of TIS pilot project implementation we succeeded trough work in practice to develop the atmosphere of trust between participating organizations and to in some of the municipalities foster institutionalization on a local level of these relations by establishment of protocols of data exchange and publishing. At the end this quality is also recognized on a national level, and now we have TIS recognized as important instrument of development within the National Strategy of Spatial development of Republic of Serbia adopted last year.

Thirdly, not all municipalities have the human and ICT capacities to develop TIS, i.e. the basic resources available in differen municipalities vary a lot. Finally, there is not enough level of e/services available to the public and the level of public e-knowledge is still low. This issue is vary serious and needs very creative strategies to find appropriate financial solutions to support further building capacities processes in

municipalities due to the fact that because of the current economic situation public investment in this field are not the priority.

In order to overcome these constraints it is necessary to organize comprehensive educational activities on raising the awareness and promoting the importance of TIS, building up the knowledge and disseminating the skills, aiming to: - acquire necessary political support on national and on local levels, - foster collaboration between authority and public institutions, nongovernmental organizations and private sector in sharing the data and information using contemporary ICT solutions, - built up local human capacities for TIS development, - foster regulatory and normative reform necessary for information activities organization and coordination, - building up the capacities of the wider public access to TIS, etc.

Experience of Serbian municipalities is that more efficient and effective way to implement TIS concept is step by step approach, because implementing starting up the idea from the stretch, also acquires consuming participatory and collaborative process followed by slow and time consuming process of attitude and values change of all actors involved. In order to initialize TIS development Pilot project topic must be agreed in participatory and collaborative way and through several criteria: - urgency of a problem that must to be meet, - knowledge and motivation of the people that are to be involved in process, - available technological and financial resources, - amount and quality of already available data which provides base of producing fast first results. Also experience of applied methodology showed that incremental process of implementation through several cycles builds trust between participating actors and also trust in their own capabilities to perform the task. So during the process when first results are visible after short period of time, also foster necessary political support.

At the end the most important thing that we achieved during the process is the fact that communication and collaboration techniques that we delivered during the pilot TIS implementation created the atmosphere of trust between the institutions involved in certain topic or sector, so their role and importance was redefined and recognized in new way. Now in many municipalities recognized partners from TIS pilot projects are also included in planning activities. Also this experience is also started to be applied in other topics of TIS expansion.

Almost one year after the closure of SIRP project four of the municipalities continued very intensively to develop TIS: Cacak, Karljevo, Kargujevac and Nis, relying on their own resources. In Valjevo and Pancevo due to unclear political conditions the activities continued but much less intense. Very important are also the activities of the municipalities in mutual collaboration and knowledge and experience exchanged since they worked on different topics. The collaboration is also expanded to other municipalities which started with applying the GIS technologies.

Ours, national team that followed this project, overall impression is very satisfying and a bit surprising. First, at the beginning of project we expected one of the municipalities to achieve expected results on much more modest level, yet we succeeded to implement the whole scope of the project in all municipalities. Second, for us it was surprising that preparatory phase, collaboration in participatory way and education and training, took twice longer time than the practical implementation of the project. From the point of view of the academic education and research that we represent, we gained valuable experience that we already incorporated in our curriculum.

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