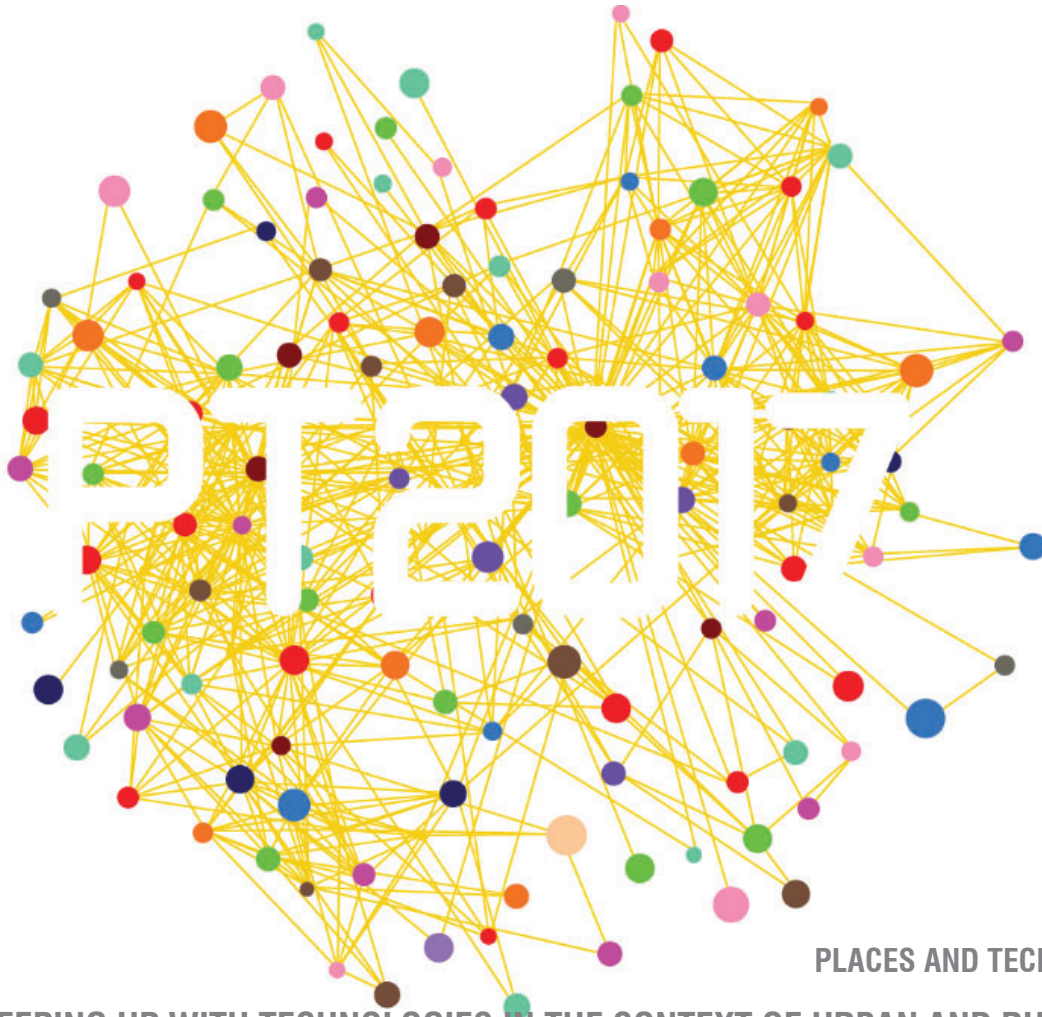


4th International Academic Conference



PLACES AND TECHNOLOGIES 2017
KEEPING UP WITH TECHNOLOGIES IN THE CONTEXT OF URBAN AND RURAL SYNERGY
Book of Conference Proceedings

Sarajevo, Bosnia and Herzegovina, June, 08th - 09th, 2017

4th International Academic Conference
PLACES AND TECHNOLOGIES 2017

KEEPING UP WITH TECHNOLOGIES IN THE CONTEXT OF URBAN AND RURAL SYNERGY

08 & 09 JUNE

SARAJEVO

BOSNIA AND HERZEGOVINA

BOOK OF PROCEEDINGS

PLACES AND TECHNOLOGIES 2017
KEEPING UP WITH TECHNOLOGIES IN THE CONTEXT OF URBAN AND RURAL
SYNERGY

BOOK OF CONFERENCE PROCEEDINGS

Editors:

Dženana Bijedić, Aleksandra Krstić-Furundžić, Mevludin Zečević



Sarajevo, Bosnia and Herzegovina

Title :

**PLACES AND TECHNOLOGIES 2017 - KEEPING UP WITH TECHNOLOGIES IN THE CONTEXT OF URBAN AND RURAL SYNERGY
BOOK OF CONFERENCE PROCEEDINGS**

For publisher:

Prof.Mr.Sci Mevludin Zečević

Chef editors:

Prof.Dr Dženana Bijedić, Prof.Dr Aleksandra Krstić-Furundžić, Prof.Mr.Sci Mevludin Zečević

Editorial board:

Prof.Dr Eva Vaništa Lazarević, Prof. Dr Aleksandra Djukić, Dr Milena Vukmirović

Publisher:

Arhitektonski fakultet Univerziteta u Sarajevu

Year of publishing:

2017

CIP - Katalogizacija u publikaciji
Nacionalna i univerzitetska biblioteka

Bosne i Hercegovine, Sarajevo

711.3/.4(063)(082)

INTERNATIONAL Academic Conference Places and Technologies (4 ; 2017 ; Sarajevo)

Keeping up with technologies in the context of urban and rural synergy [Elektronski izvor] : book of conference proceedings / [4th International academic conference] Places and technologies 2017, Sarajevo, June, 08th - 09th, 2017 ; editors Dženana Bijedić, Aleksandra Krstić-Furundžić, Mevludin Zečević. - El. zbornik. - Sarajevo : Arhitektonski fakultet, 2017. - 1 USB fleš memorija

Sistemski zahtjevi: Nisu navedeni. - Nasl. sa nasl. ekrana

ISBN 978-9958-691-56-0

COBISS.BH-ID 24131590

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ORGANIZATION

Organizers:

University of Belgrade, Faculty of Architecture, Serbia

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TOPIC III:
SUSTAINABLE COMMUNITIES AND PARTICIPATION



THE SCIENCE OR ART OF MAPPING? - ELABORATING THE PROCESS OF TIS CREATION IN CITY OF NIŠ

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ABSTRACT

Mapping the territory has always been an instrument to plan the actions towards it. Nowadays mapping has a wider meaning in regards to our cognition of its complexity in physical, socio-economic, natural, institutional and cultural aspects. Sustainability has opened plenty of meanings on city development from participation to systematic management of city development. The question on who decides on city development opens a discussion on ways and disciplines on its mapping. In other words the main issue is related to the source of knowledge, information and data we collect, systematize and form into our cognition of the city in whole: Is it social or scientific? Maybe both? The research will consult two dominant paradigms in city development: collaborative and positivistic-rational in order to track the ways on its mapping in Castell's network society. The main hypothesis is that mapping today is an artistic thing in regards to Forester's dilemma on future of urban planning and development. Hence, we need art to integrate different, more particular, worlds of the city using technology as an instrument of the process of integration. The hypothesis will be elaborated using theoretical comparison as well as case study of TIS development in City of Niš developed and implemented during UN-Habitat Settlement Integration Refugees Programme in Serbia, which was developed over the five years together with relevant stakeholders.

Keywords: Mapping, GIS, Collaborative planning, Sustainability

INTRODUCTION

The process of mapping will be elaborated in regards to urban and spatial development considering territory as a main subject of mapping. Territory has a wider meaning than administrative boundaries. Today, especially in line with sustainable development, territory considers integrative space, that acc. to Mrdjenovic bounds socio/economic, natural, built, cultural and institutional space including all stakeholders (Mrdjenovic, 2013). Therefore, the process of mapping should memorize fragmented pictures of our reality as well as ideas and visions of our future using both social and scientific knowledge. Following the theory of collaborative planning the main instrument of integration is Habermass's communicative action which on the other hand is criticized by Faucault in regards to it normative

conditions that are too idealistic in global society that is colored by different power relations. Most of authors claims that this limitation defines the end of planning, however Forester thinks that we can reach consensual future using art as tool for integration. Here art stands for cognitive development of individuals and groups to reach different levels of self-awareness, creating own power of identity (as Castells says) (Habermas, 1984). The paper will discuss the power of mapping in developing cognitive elements in group decision making, where art stands for cognitive and science for structural development of group and its social capital. Therefore, the research will mostly rely on social capital theory and its development using mapping as artistic process of rewriting/rememorizing/mirroring present cognition of self and spatial environment into virtual one in order to reach higher level of awareness.

TYPE OF RATIONALITY AND MAPPING

Mapping has variety of meanings in regards to role and topic we consider and decide are crucial for urban development. In general „mapping is creation of maps, a graphic symbolic representation of the significant features of a part of the surface of Earth. The mapping as a process comes from Cartography (from Greek *xap* papyrus sheet of map, paper; and *y* *επιτε*) or graphic study and practice of making maps. Combining science, aesthetics, and technique, cartography builds on the premise that reality can be modeled in ways that communicate spatial information effectively. In computing and data management, data is the process of creating data element mappings between two distinct data models. Data mapping is used as a first step for a wide variety of data integration tasks. On the other hand a mind map is a diagram used to visually organize information. A mind map is hierarchical and shows relationships among pieces of the whole.“ (www.wikipedia.org)

Tijl khar tēs

Here is important to outline that mapping is:

- Scientific, artistic and communicative process,
- Cognitive process of putting data sets into hierarchical system.

Therefore, we can say that the decision what should be on the map is a process of cognitive development of a group or community in order to understand better the reality and estimate their future urban, spatial and territorial development using scientific methods and techniques as well as art to represent what is agreed. Art here stands not only for aesthetic reasons, but also for making sense together or as an instrument of overcoming barriers in communicative process. So, mapping is a decision making process both instrumental and incremental.

Seen as a communicative process it is strongly related to the traditions of urban decision making when it is more rational (“top-down”) or collaborative (“bottom-up”) process. The key factor in this dilemma is the type of rationality that is practiced in wider social context. Rational paradigm is based on objective rationality and positivistic approach to development. It means setting and evaluating all possible solutions and forming defined scope of action. „It is based on instrumental rationality, namely on expert’s analysis which enables setting of goals, identification of alternative courses of action, evaluation of the means by which the goals would be achieved and the creation of systems of implementation” (Bajec, 2009). In urban planning and design theory it is mostly supported with Faludi’s



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model of planning agencies where they practice systematic and rational approach to urban development integrating different levels of governance into coordinated multi-planning system (Faludi, 1984).

The main critique to rational paradigm comes from Simon's rational constrains where it is not possible to generate and evaluate all possible alternatives because of constrains of human thinking. On the other hand Lindblom in his theory of "muddling through" says that rational approach to development is not realistic in the real politics with complexity of different interests and stands for generating solutions in incremental approach (Lindblom, 1959). Both systematic and incremental approaches have their positive and negative side. We can't for sure perceive reality in positivistic manner, and on the other hand if we lean on incremental approach we can be in situation without any developmental options.

Healy in theory of collaborative planning sees urban development as putting fragments of viewpoints and interests into common picture through communicative process of bottom-up participation in different social arenas. She argues rational paradigm saying that it is not applicable in plural society and its complexity of different interests and thoughts. On the other hand, Bajec identifies main risks for collaborative / communicative paradigm, especially in domestic context. The risk is that participants can be in situation when they do not decide based on their interests, when collaborative decision making becomes a field for manipulation. According to Habermas it means instrumental action that focuses of gaining success of individuals in contrast to strategic and communicative action that are socially oriented (Habermas, 1984) providing developmental social capital in process of strategizing development.

Healy stands for Habermas's communicative action through argumentation and sees strategic development as defining framework for action, more than defining final set of actions. She says that process of urban decision making should frame development through socio-sensitive decision making, developing "hard" and "soft" infrastructure as a base for creative milieu (Healey, 1997). "A creative milieu is a place... that contains necessary preconditions in terms of "hard" and "soft" infrastructure to generate flow of ideas and inventions. Such a milieu is a physical setting where a critical mass of entrepreneurs, intellectuals, social activists, artists, administrators, power brokers or students can operate in an open-minded, cosmopolitan context and where face to face interaction creates new ideas, artifacts, products, services and institutions and as consequence contributes to economic success." (Landry, 2005).

Creative milieu can be an arena that makes preconditions for communicative action, integrating actors from different developmental sectors, as well as from public, private and civil sector through building bridges and partnership in fragmented societies. By my opinion both paradigms rational and collaborative are in line with sustainable and integrated development in plural society. Rational paradigm provides vertical and systematic integration while collaborative horizontal mediating different pictures of reality into coherent whole. Also, in plural society where interests should be recognized at all levels, integrated approach in urban decision making integrates positive factors of rational and collaborative paradigm, providing sustainable framework for development. Therefore, mapping needs

art and creative milieu to connect fragmented cognition of space into integrated one, using both mental spaces, social knowledge and scientific one.

THE PROCESS OF MAPPING IN TIS CREATION OF NIŠ SETTLEMENT PANTELEJ

Territorial information system will be elaborated as an instrument in the process of cognitive and structural integration, as well as horizontal and vertical as it was elaborated previously. The attribute territorial gives to this info system the socio-spatial dimension, as the territory is seen as the space bounded by common interests. So, territory is the space that integrates different spatial dimensions that are relevant for the urban or spatial issue, and we can say it is a platform where the spaces of interest should be linked and integrated towards common interests. In line with this the territory is not something which is given by nature; it is a phenomenon that is created by people, their interests, networks, trust, and collaboration. We can say that richness of the territory is reflected by the richness of social capital developed in the process of dealing with the issue.

In line with this Territorial information system in contrast with GIS is the instrument that uses GIS to integrate data to produce new information that carries developmental arrow to social capital. Therefore, the cognitive and structural elements of TIS go beyond the boundaries of one institution or organization, and initiate integrative processes of building trust, partnerships, collaboration and collective action, using creative milieu and art as a tool for integration. The question is how to start, manage the process towards horizontal and vertical integration? The following text will elaborate the process of implementation of TIS pilot project in City of Nis, Serbia in the framework of UN-Habitat Settlement Integration Refugees Programme.

Process of cognitive and structural development in the community

The situation in Serbia when the process of TIS implementation has started was that selected local communities had awareness of using GIS and some of them has started implementation of it inside the boundaries of one institution, digital data and data bases existed in different public companies, departments, institutions. Therefore, the approach was to start with implementation of TIS pilot projects that should integrate minimum three institutions in local community. The period of implementation was one year.

The structural elements of TIS development during the period of implementation was in the constitution of two groups in local communities that was relevant for implementation of TIS. The first was coordination body, on the level of decision making which task was to bring political support to TIS development. The members of coordination body were managers of public companies, local representatives, directors of LA departments, etc. The second one was the working group, which had technical task to work on TIS development. The members of working groups came



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from the different institutions relevant to the common issue. Both of the groups were appointed by the authority in the municipality.

Before the constitution of any structural elements the first cycle of raising awareness of TIS was implemented in the municipalities in the form of interactive trainings delivered to beneficiaries of interest. The aim of the trainings was to establish common understanding „common mind map“of data and information sharing can bring to the win-win solutions in the local community as well as on the raising knowledge on TIS concept, structure and implementation. The mission of the trainings was to promote benefits TIS can bring to the community.

This structural element on local level was the frame for cognitive development of social capital, as well as future structural development in the form of institutionalizing TIS after the pilot project is finished. The first element of cognitive development was the TIS Pilot Project document which was done by the members of working groups in consultation with coordination body. The Project document was consisted around the selected issue that will be dealt with in the process. The issue was elaborated on the workshops were the members of both structural elements from each municipality was present. The workshop was aimed to develop acceptance of the issue among the people in the TIS team. Methods and techniques used in the workshop were brainstorming, nominal group technique, problem tree, active listening. As an outcome from the workshop municipality selected a common issue to be dealt, defined objectives and results that will be achieved during the implementation of TIS. The issues was: Rural Development.⁷⁴

The first cycle of TIS implementation was aimed to data integration and resulted in the integrated geo-database model - conceptual and physical. The integrated data was from different sources and on cognitive level it established cooperation between institutions, departments and public companies, managed by coordination body. On structural level it resulted in metadata as well as in model diagram and personal geo-data base. The results of each municipality was presented, discussed and evaluated on the workshop. The techniques for evaluation in order to improve quality of geo-data base model were a form of group questionnaire when each team should answer and give suggestions in the group discussion. After the group elaboration the proposals for improvement were presented and discussed between WG from each municipality. (Figure 1)

⁷⁴ After the acceptance of the TIS Pilot Project the series of trainings on how to use TIS software was organized for the members of the working groups when they gain knowledge and skills how to model data base, fill it with data, create and traduce maps, reports, diagrams. The trainings delivered technical knowledge to the people, members of th

working group in the mur

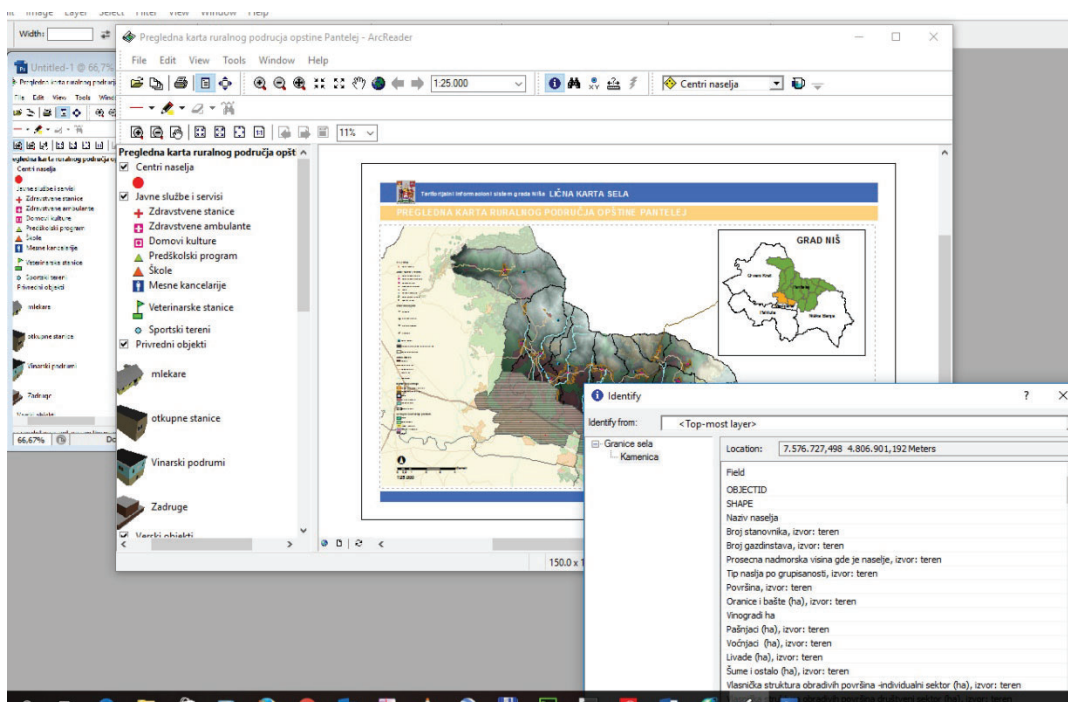


Figure 1: Interactive territorial map with data structure

The second cycle of implementation was aimed to develop thematic maps that will emphasize benefits of data integration through its visualization. Besides factographic maps showing territorial resources, the thematic maps had developmental attribute, providing integrated 'new' information that will enable smarter decisions in managing the territory. On cognitive level it promotes partnerships to tackle common territorial problems that go beyond boundaries. The thematic maps was created in the process of on the job training in each municipality were members of TIS working groups using technique of brainstorming, nominal group technique, elaborated themes that will be relevant to the issue as well as additional data needed for their creation, together with alpha-numeric reports, charts and diagrams. (Figures 2, 3)



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Figure 2: Average size of agricultural land per village in MU of Pantelej

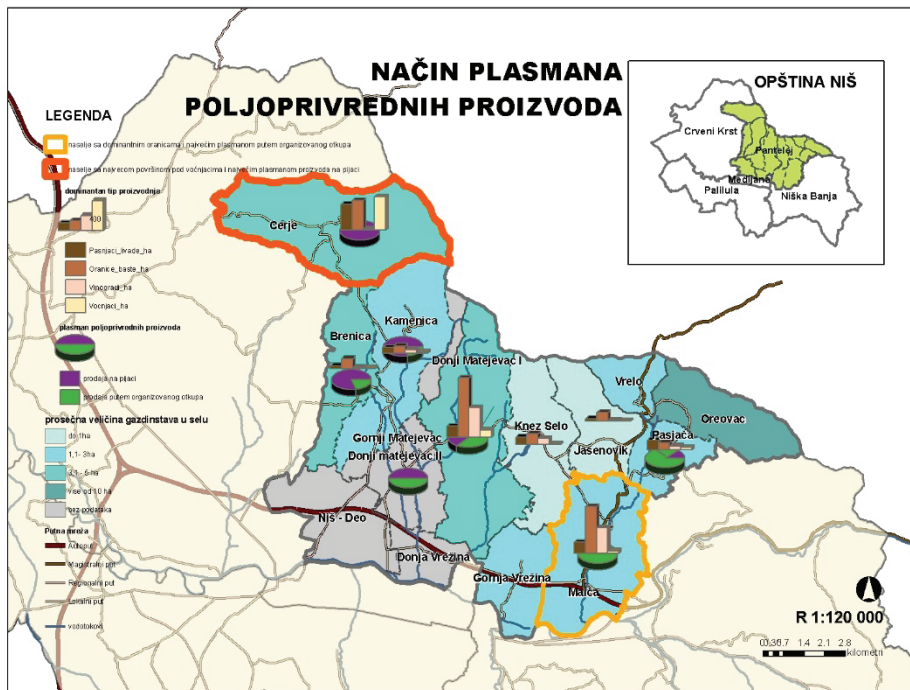


Figure 2: Way of sale of agricultural products

The results of the second cycle of implementation were presented on the conference where besides the members of coordination body, working group from each municipality the representatives of relevant ministries, regional associations and other municipalities that started working on data integration was present. The conference was aimed to open dialogue on the achieved results so far and to initiate systematic work on TIS development in Serbia. The conference initiated linking dimension of social capital development, in the form of dialogue, workshops on topic of institutional and technical arrangements that should be developed in the form of norms, rules, procedures, policies and laws.

The third cycle of implementation was to finalize the projects and to publish thematic maps and territorial data base in interactive manner on DVD, web and in the form of the brochure. In each form of publishing the results emphasized the benefits TIS and integration of data, visualization, and reports can bring to the community. Also, through publishing



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the dissemination of the concept of TIS to the public has been done. Furthermore, some of the municipalities has presented their results in the form of workshop inside the community, emphasizing benefits of TIS.

Mediating and facilitating the process, cognitive and structural elements

The developmental dimension of social capital in the process of developing TIS was in the space dimension of its mediation and facilitation. The period of this process lasted much longer than its implementation, actually two years before the start of implementation and one year along of its process. The mediating and facilitating space was managed under the umbrella of UN-Habitat and in partnership with consultant team from the Faculty of Architecture University of Belgrade⁷⁵. The whole process of designing the approach for the implementation and developing different dimensions of social capital was prepared and tailored to the conditions in Serbia both on cognitive and structural level.

Each workshop, conference and training was fully prepared and tailored to the specific conditions in each municipality. On cognitive level the process was mediated and facilitated through communicative action using methods and techniques most appropriate to the existing level of social capital in each municipality. Each form of dialogue was designed towards its outcomes and inputs for the second phase of developing TIS. The facilitating and mediating team was constantly trained by UN-Habitat on the subject during the whole process. So the team was educated on cognitive techniques such as improved communication, conflict management, participatory planning, and good governance.

On structural level the process was designed in the form that it was supported along the development of TIS. The development was constantly followed and guided in the communication process by consultants. Therefore, it was possible to monitor the development towards expected results. Furthermore, the break points in the form of workshops, conferences, and trainings were designed and positioned in time to reinforce developmental dimensions of social capital in form of better collaboration, integration, communication and partnerships. Trainings were on the different level from basic to advance and on the job. They had developmental characteristics in building human capital as well as social through interaction, bounding the team.

Beside the structural elements for each break point and social arena, the structural elements were developed to follow in line process of TIS development in the municipalities. Structural elements along the process were rules of

⁷⁵ National consultants for TIS within UN-Habitat SIRP: Ksenija Lalovic - senior, Tatjana Mrdjenovic - junior, Uros Radosavljevic - junior

communication, tools designed by consultants, intranet and forum. Each structural element reflected cognitive values to be achieved, such as transparency, information flow, accessibility, inclusiveness.

The tools was designed as a support to the step-by-step elaboration of results and to follow the incremental cycles of implementation of the TIS development process. Each tool carries its cognitive elements such as purpose of the tool, how to use it, which steps to follow and related techniques to be applied, which equipment/materials are necessary, how to document achieved results. The set of TIS tools included: conceptual database model table; matrix of data sources, users and typology of data; data sharing protocol; database model diagram; rules of acquisition, digitalization, and storing of data; rules for the elaboration of maps and layouts; metadata structure. The tools focus on roles each member of the team had and support interaction, participation, team-work throughout the process of implementation.

Intranet provided accessibility to the relevant documents and materials during the process of implementation. Each member of the working team had its own accessibility with different permissions. The intranet provided structural platform for sharing support materials provided by consultants, documents produced by municipality working groups, etc. On the other hand forum was designed to share experiences between TIS municipality working groups on different topics during the implementation period. As a support in using the platforms TIS consultants developed guidelines how to use it.

CONCLUSIONS

The research showed that mapping isn't either scientific or artistic discipline. However, in regards to definition of territory which is an integration of all developmental factors (economy, society, environment, culture, institutions) and actors that comes from public, private, civil sector, mapping is a process of raising awareness where we are through development of basic maps, and where we want to be using ICT tools and instruments for data integration and representation on which the community has agreed and achieved common sense on where they want to be. In that manner mapping is also the art of cognitive development of individuals and groups on the reality and future development. The case study showed that art in modern mapping stands for cognitive development, using both face-to-face an on-line communication for defining the space for common understanding, which will be further mapped using TIS or Collaborative GIS in order to provide incrementalism and integration of different pictures of the world. „Collaborative GIS can be defined as an eclectic integration of theories, tools, and technologies focusing on, but not limited to structuring human participation in group spatial decision process.”(Balram and Dragičević, 2006:3).



TOPIC III:
SUSTAINABLE COMMUNITIES AND PARTICIPATION

REFERENCES

Book:

Balram S., Dragičević, S. (2006), Collaborative Geographic Information Systems, Idea Group Publishing, Melburne

Faludi, A. (1984). Planning Theory. Oxford: Pergamon press.

Habermas, J. (1984). *The Reason of Communicative Action*. Boston: Beacon Press.

Healey, P. (1997). Collaborative Planning: Shaping Places in Fragmented Societies. London: MACMILLAN PRESS.

Landry, C. (2005). The Creative City: A Toolkit for Urban Innovators. London: Earthscan.

Journal article:

Bajec, N. L. (2009). Rational or collaborative model of urban planning in Serbia: Institutional limitations. Serbian Architectural Journal , 81-106.

Lindblom, C. (1959). The Science of Muddling Through. Public Administration Review, 19 , 79-88.

Mrđenović, T., (2013) Capacity issues in local communities for integral urban regeneration , 2013, iss. 38, pp. 9-16,

Архитектура урба

Internet source:

www.wikipedia.org

Additional note:

The research is a result of scientific project: Spatial, ecological, energy and social aspects of spatial development and climate change – mutual relations, funded by Ministry of education and science Republic of Serbia.