REAL CORP 2014

Manfred SCHRENK, Vasily V. POPOVICH, Peter ZEILE, Pietro ELISEI (Eds.)

PLAN IT SMART

CLEVER SOLUTIONS FOR SMART CITIES

PROCEEDINGS

of the 19th International Conference on Urban Planning, Regional Development and Information Society

TAGUNGSBAND

CD-ROM-Edition ISBN: 978-3-9503110-6-8
Print-Edition ISBN: 978-3-9503110-7-5

21-23 MAY 2014
VIENNA, AUSTRIA

www.corp.at

REAL CORP 2014. Plan it Smart.
Clever Solutions for Smart Cities

Proceedings of

19th International Conference on Urban Planning, Regional Development and Information Society

Beiträge zur

19. internationalen Konferenz zu Stadtplanung, Regionalentwicklung und Informationsgesellschaft

Edited by

Manfred SCHRENK, Vasily V. POPOVICH, Peter ZEILE, Pietro ELISEI

Schwechat, 2014

CD-ROM-Edition ISBN: 978-3-9503110-6-8

Print-Edition ISBN: 978-3-9503110-7-5

Im Selbstverlag des Vereins

CORP – Competence Center of Urban and Regional Planning

Kompetenzzentrum für Stadtplanung und Regionalentwicklung

Lechergasse 4, A-2320 Schwechat-Rannersdorf

office@corp.at, http://www.corp.at

REAL CORP 2014

TEAM

Manfred SCHRENK
Clemens BEYER
Christian EIZINGER
Linda DÖRRZAPF
Patrick KREJCI
Adela MARCOCI
Michael MÜLLNER
Julia NEUSCHMID
Flora STROHMEIER
Wolfgang W. WASSERBURGER

All rights reserved. – Alle Rechte vorbehalten.

Editors – Herausgeber:
DI Manfred SCHRENK, President CORP – Competence Center of Urban and Regional Planning, Schwechat, AT
Prof. Dr. Vasily V. POPOVICH, SPIIRAS, St. Petersburg, Russia
Dr.-Ing. Peter ZEILE, TU Kaiserslautern, Kaiserslautern, Germany
Dr.-Ing. Pietro ELISEI, URBASOFIA, Bucharest, Romania

Publisher – Medieninhaber und Verleger:
CORP – Competence Center of Urban and Regional Planning
Kompetenzzentrum für Stadtplanung und Regionalentwicklung
Lechergasse 4, A-2320 Schwechat-Rannersdorf
office@corp.at, http://www.corp.at

CD-ROM Edition: ISBN 978-3-9503110-6-8
Print Edition: ISBN 978-3-9503110-7-5

Contributions by the authors reflect their own findings, views and opinions
which may not necessarily be consistent with the views and opinions of the editors.

Die Arbeiten geben die Erkenntnisse und Ansichten des jeweiligen Autors wieder
und müssen nicht mit den Ansichten der Herausgeber übereinstimmen.

Table of contents – Inhaltsverzeichnis:

PREFACE **5**
Manfred SCHRENK, Conference Director 5

A Back Step before Proposing Smart Interventions. Fitting People Needs with Innovations **15**
Aniana Mereu 15

A Simulation of Land Use/Cover Change for Urbanization on Chennai Metropolitan Area, India **25**
Vijayalakshmi Rajendran, Toshiyuki Kaneda 25

A Smart Researching and Planning Tool for the Neuralgic Urban Zone: 3D-ZPA **35**
Angelika Psenner 35

A Visionary Study on Urban Neighbourhood Models in Kabul City Based on Actual Surveys **45**
Sofia Sahab, Rim Meziani, Toshiyuki Kaneda 45

An Urban Sensing System as Backbone of Smart Cities **55**
Benjamin Allbach, Sascha Henninger, Eugen Deitche 55

Ancient Smartness of Tomorrow **65**
Cecilia Scoppetta 65

ARchitecture – Augmented Reality Techniques and Use Cases in Architecture and Urban Planning **75**
Daniel Broschart, Peter Zeile 75

Assessing Smart Locations – the MORECO Project **83**
Susanne Franz, Ulrike Reutter, Eva Haslauer, Dagmar Schnürch, Thomas Prinz 83

Assessment of BIM Potentials in Interdisciplinary Planning through Student Experiment and Practical Case Study **91**
Iva Kovacic, Lars Oberwinter, Christoph Achammer, Michael Filzmoser 91

Automated Urban Management Processes: Integrating a Graphical Editor for Modular Domain-Specific Languages into a 3D GIS **99**
Michel Krämer, Andreas Stein 99

Building Smart Applications for Smart Cities – IGIS-based Architectural Framework **109**
Alexander Vodyaho, Nataly Zhukova 109

Challenges and Opportunities to Develop a Smart City: A Case Study of Gold Coast, Australia **119**
Bhishna Bajracharya, David Cattell, Isara Khanjanasthiti 119

Checking Smartness "On the Ground": Historically Rooted Dilemmas, Future Challenges and Visions for a Smarter Metropolitan Area of Rome **131**
Cecilia Scoppetta 131

CitInES Project – Tool for the Sustainable Energy Action Plan for Cities **141**
Nicolás Pardo García, Rébecca Aron, Clémence Bénévent, Sofia Burioli, Silvia Morigi 141

City in Transition: Urban Open Innovation Environments as a Radical Innovation **151**
Gert-Joost Peek, Peter Troxler 151

Competition between Cities and Regions in Europe – Can Smart Spatial Planning Interact with Gravitational Site Location Models for External Investment? **161**
Jan Zaman 161

Concept of "Smart City" and its Practice in Poland. Case Study of Łódź City **169**
Ewelina Szczech 169

Der Einsatz von Social Media im Stadtmarketing **181**
Alexander Masser, Hans-Jürgen Seimetz, Peter Zeile 181

Deteminants of the Value of Houses: a Case Study Concerning the City of Cagliari, Italy **191**
Michele Argiolas, Sabrina Lai, Corrado Zoppi 191

European Academic Smart Cities Network – Renewable Urban Energy Systems, Sustainable Mobility and ICT Technology Nexus for Smart Cities Studies **207**
Darya Bululukova, Harald Wahl, Mathias Ballner 207

Externalities and Local Government Policy as Braking Factors of the Development of Water Supply Systems in the Russian Towns **217**
Andrey D. Maksimov 217

Games in Urban Planning – a Comparative Study **239**
Bärbel Reinart, Alenka Poplin 239

Global Competition needs Smart Solutions, Urban Design Elements on City Branding **249**
Hossein Mohamad Hassani 249

Identifikation von Kriterien für den smarten Einsatz von Elektrobussen in den Netzen des ÖPNV **259**
Carina May, Conny Louen 259

ISBN: 978-3-9503110-6-8 (CD-ROM); ISBN: 978-3-9503110-7-5 (Print)
Editors: Manfred SCHRENK, Vasily V. POPOVICH, Peter ZEILE, Pietro ELISEI

Identifying Cultural Ecosystem Services of Urban Green Infrastructure – Report about a Pilot Project undertaken in Lower Austria 269
Christine Rottenbacher, Tim Cassidy 269

In the Public Eye: Toward the Electronic Transparency of Planning Process 279
Aleksandra Stupar, Aleksandra Djukic 279

Influence of Transport on Urban and Rural Development in Bosnia and Herzegovina 287
Nusret Drešković, Rahman Nurković 287

Information-Analytical System for Managing Cities of Perm Region Spatial Development 295
Didier Vancutsem, Svetlana V. Maksimova, Alexey Y. Zavialov, Kseniia O. Mezenina, Petr S. Mikushin 295

Institutional Framework of Brownfield Regeneration in Serbia 303
Ana Perić, Danilo Furundžić 303

Integration of Emotional Behavioural Layer "EmoBeL" in City Planning 309
Rania Raslan, Khaled Al-Hagla, Ali Bakr 309

It's Not Big, It's Large: Mapping and Characterizing Urban Landscapes of a Different Magnitude based on EO Data 319
Michael Wiesner, Hannes Taubenböck 319

Lampertheim effizient – Herausforderungen für Mittelstädte im Rahmen der Smart-City-Debatte 329
Carolin Dietrich, Anika Trum, Andreas Witte 329

Land Acquisition Policy in India: An effictive Inclusive Planning or Exclusive Planning Policy? 337
Bikram Kumar Dutta 337

Leben2050 – Bürgerbeteiligung in einer vorausschauenden Studie zu selbstbestimmtem Leben im Alter in Wien 349
Niklas Gudowsky, Mahshid Sotoudeh, Leo Capari 349

Leitprojekt ECR Energy City Graz-Reininghaus 357
Ernst Rainer, Kersten Hofbauer, Hans Schnitzer, Thomas Mach, Stephan Maier, Alexander Passer, Helmuth Kreiner, Thomas Wieland, Yvonne Bormes 357

Linked Open Data for Environmental Protection in Smart Regions – the New Challenge for the Use of Environmental Data and Information 367
Karel Charvat, Sarmite Barvika, Maris Alberts 367

Metrical Analyses on Population and Economic Growth and Urban "Quality Of Life" of Metropolitan Cities in China during the 00s 377
Toshiyuki Kaneda, Meiying Tian, Yang Wang, Mingji Cui, Renbao Jin 377

Urban Sensing App – A Mobile Tool for Urban Sensing and Climate Monitoring in Smart Cities 387
Benjamin Allbach, Sascha Henninger, Oliver Griebel 387

Modelling Day and Night Time Population using a 3D Urban Model 397
Monika Kuffer, Richard Sliuzas 397

More Green Open Space in a Densified City 407
Silja Tillner 407

Moving Objects Tracking in Distributed Maritime Observation Systems 417
Vasily V. Popovich, Victor I. Ermolaev, Andrei V. Makshanov, Stanislav A. Vlasov 417

New Concepts for Urban Highways Control 423
Martin Gregurić, Edouard Ivanjko, Sadko Mandžuka 423

Open Street Map for Multi-Modal Freight Transport Planning 433
Markus Mayr, Gerhard Navratil 433

Ökotopia – Multidimensional Cities need Multidimensional Data 443
Hans-Georg Frantz 443

Planning Smart Cities ... Sustainable, Healthy, Liveable, Creative Cities ... Or Just Planning Cities? 447
Judith Ryser 447

Quality of Time Spent Matters! 457
Barbara Goličnik Marušić,Damjan Marušić 457

Recycling Architecture: the Redefinition of Recycling Principles in the Context of Sustainable Architectural Design 467
Milan Šijaković, Ana Perić 467

Resilient and Smart Public Spaces: the Div@ter Digital Platform 477
Marichela Sepe 477

Rethinking the Strategic Dimensions of Smart Cities in China's Industrial Park Developments: the Experience of Suzhou Industrial Park, Suzhou, China 487
Joon Sik Kim, Xiangyi Wang 487

Scenario Approach for Image Processing in Smart City 497
Filipp Galiano, Nataly Zhukova, Maksim Pelevin 497

Scientific and Practical Understandings of Smart Cities **507**
Corinne Moser, Thomas Wendel, Vicente Carabias-Hütter 507

Share it – Don't Own it: Space Sharing as a Smart Solution for Cities and Regions? **515**
Petra Hirschler, Sibylla Zech 515

Simulation Game for Future Mobility – Support Tool for the Discussion Process about Scenarios of Future Mobility in SUMP Processes **525**
Conny Louen, Daniel Horn 525

Smart Cities and ICT – Insights from the Morgenstadt project **533**
Willi Wendt, Dominik Kalisch, Thomas Vandieken, Wolf Engelbach 533

Smart Cities between Ethics and Aesthetics **543**
Chiara Garau, Luigi Mundula, Andrea Salustri 543

Smart Cities Need Smart Citizens, but What About Smart Children? **553**
Sabine Hennig 553

Smart City – a Quest for Innovation within the EPS Framework **563**
Małgorzata Hanzl, Antonina Młynarczyk, Alizee Tessier, Marcos Meiriño Munoz, Iban Micieces, Fanny Noirot 563

Smart Environment for Smart Cities: Assessing Urban Fabric Types and Microclimate Responses for Improved Urban Living Conditions **573**
Katrin Hagen, Beatrix Gasienica-Wawrytko, Wolfgang Loibl, Stephan Pauleit, Richard Stiles, Tanja Tötzer, Heidelinde Trimmel, Mario Köstl, Wolfgang Feilmayr 573

Smart Kids Make Cities Smarter **583**
Cecilia Scoppetta 583

Smart Navigation for Modern Cities **593**
Nataly Zhukova, Oksana Smirnova 593

Smart Planning & Smart Cities **603**
Jan-Philipp Exner 603

Smarter Cities – ein Modell lebenswerter Städte **611**
Bettina Mandl, Susanne Zimmermann-Janschitz 611

Smarting the City or Development: The Dilemma of the Post-Oil Countries in sub-Saharan Africa **621**
Alexander Boakye Marful 621

Social Media Geographic Information: Current Developments and Opportunities in Urban and Regional Planning **631**
Pierangelo Massa, Michele Campagna 631

State Space Model for Accounting Smart City Heating by Municipal Solid Waste Management **641**
Sanhita Bandyopadhyay 641

Technological Solutions for Knowledge Management in Smart Cities **653**
Nataly Zhukova 653

The City of Matera and the Sassi: Smart Places with a Dantean Attraction **665**
Tiziana Cardinale, Laura Pavia,Giovanni Zucchi 665

The E-City or the City on the Cloud **675**
Josep Lluís Miralles i Garcia 675

The Effect of Potential-based Land Tax on Land Utilization **685**
Gerhard Navratil, Reinfried Mansberger, Christoph Twaroch, Gerhard Muggenhuber, Reinhold Wessely 685

The Reification of Resilience and the Implications for Theory and Practice **693**
Ksenia Chmutina, Gonzalo Lizarralde, Lee Bosher, Andrew Dainty 693

The Research on New Town Development Strategy in Metropolitan Outskirts: A Case Study of Liangzhu New Town **701**
Qi Fan, XM. Hu, Y. Zhao 701

The TRANSFORM DSE – an Interactive Decision Support Environment for Serving Smart City Strategy Development and Local Measure Implementation **711**
Wolfgang Loibl, Stefan Vielguth, Jan Peters-Anders, Sebastian Möller, Daiva Jakutyte-Walangitang, Joost Brinkman, Ivo Wenzler, Alex Cramwinckel, Michele Fumarola 711

The Use of Social Media in Public Transit Systems: The Case of the Gautrain, Gauteng Province, South Africa: Analysis and Lessons Learnt **721**
Walter Musakwa 721

TRANSFORM – Governing the Smart City by Projects **729**
Christof Schremmer, Heidi Collon, Max Kintisch, Stephanie Kirchmayr-Novak, Ursula Mollay, Barbara Saringer-Bory 729

Unort Gewerbegebiet? Qualitätsvolle Freiräume als Grundlage für Arbeitsorte **739**
Martina Jauschneg, Myriam Maier, Peter Höger, Volkmar Pamer, Rainer Holzer 739

ISBN: 978-3-9503110-6-8 (CD-ROM); ISBN: 978-3-9503110-7-5 (Print)
Editors: Manfred SCHRENK, Vasily V. POPOVICH, Peter ZEILE, Pietro ELISEI

Urban Development Simulator: An Interactive Decision Support Tool for Urban Planners Enabling Citizen's Participation **749**
Ernst Gebetsroither-Geringer, Wolfgang Loibl 749

Urban Green Infrastructure Planning as a Contribution to the Smart "Green" City **757**
Florian Reinwald, Doris Damyanovic, Christiane Brandenburg, Brigitte Allex, Birgit Gantner, Christina Czachs, Jürgen Preiss 757

Use of ICTs and Mass Media in the Planning Processes: the Two Sides of the Same Coin **763**
Federica Leone 763

Virtuelle Leerstandsbespielung – „Pop-Up-Zwischennutzung" mittels Augmented Reality **773**
Christoph Holderle, Stefan Höffken, Martin Memmel, Peter Zeile 773

Wer plant die Planung? – Widersprüche in Theorie und Praxis **783**
Harald Frey 783

„What is planning for?" Die Evaluation von strategischer Stadtentwicklungsplanung am Beispiel Wohnen **793**
Judith Bornhorst 793

Application of Aggregated Indices Randomization Method for Prognosing the Consumer Demand on Features of Mobile Navigation Applications **803**
Sergey Dotsenko, Andrey Makshanov, Tatiana Popovich 803

Beiträge innovationsorientierter Unternehmensförderung zur Umsetzung des Smart-City-Konzepts am Beispiel Wien **807**
Alfried Braumann, Dominic Weiss 807

Blue City Mannheim – innovative Konzepte für Konversionsflächen in Mannheim **817**
Alexander Kuhn, Dorothea Bartnik, Walter Rhiem 817

CentropeSTATISTICS – a Tool for Cross-Border Data Presentation **823**
Manfred Schrenk, Clemens Beyer, Norbert Ströbinger 823

Climate Neutral City Districts – the Smartest Form of a City's Districts? **831**
Michael Erman 831

Daten, Informationen und Wissen zu Alltagswegen – eine Voraussetzung für Smart Cities?! **839**
Bente Knoll 839

Digging into the Smartness: A Short Technopolitical (Pre)History of Vienna's Urban Lakeside **845**
Aníbal García Arregui 845

EmoCycling – Analysen von Radwegen mittels Humansensorik und Wearable Computing **851**
Stefan Höffken, Johann Wilhelm, Dennis Groß, Benjamin S. Bergner, Peter Zeile 851

European Standards for Vocational Training in Urban Regeneration **861**
Krzysztof Jan Chuchra, Marek Bryx, Julia Neuschmid 861

Exploring Population Distribution and Motion Dynamics through Mobile Phone Device Data in Selected Cities – Lessons Learned from the UrbanAPI Project **871**
Jan Peters-Anders, Wolfgang Loibl, Johann Züger, Zaheer Khan, David Ludlow 871

Garden in Motion – an Experience of Citizens Involvement in Public Space Regeneration **877**
Sara Lorusso, Gerardo Sassano, Michele Scioscia, Antonio Graziadei, Pasquale Passannante, Sara Bellarosa, Francesco Scaringi, Beniamino Murgante 877

Infographics for Smart People in Smart Cities **887**
Kersten Nabielek 887

L(i)ebenswerte Quartiere – Wohnportraits als Beitrag zur smarten Planung?! **897**
Mechtild Stiewe, Regina Sidel 897

Mobilstationen – Bausteine für eine zukunftsfähige Mobilität in der Stadt **903**
Jan Garde, Hendrik Jansen, Daniel Bläser 903

Modellierung raum-zeitlicher Bevölkerungsverteilungsmuster im Katastrophenmanagementkontext **909**
Klaus Steinnocher, Christoph Aubrecht, Heinrich Humer, Hermann Huber 909

Multilayer Information Management System for Personalized Urban Pedestrian Routing **915**
Harbil Arregui, Patrick Krejci, Estibaliz Loyo, Oihana Otaegui 915

Narrative Urban Mapping **921**
Renate Krause, Stefan Höffken, Bernd Streich 921

Neue Einblicke – Social Media Monitoring in der Stadtplanung **931**
Lucas Joa, Stefan Höffken 931

Regional Identity and Culture in Intercompany Networks – a Case of Transdanubian Winery Networks **941**
Árpád Bányi, László Tamándl 941

RegioProjektCheck – New Instruments to Evaluate the Impacts of Housing, Industry and Retail Projects. Case Study: New Supermarkets and their Effects on Existing City Centres **947**
Sascha Anders 947

Sharing Geographic Data: How to Update Distributed or Replicated Data 959
Andrew U. Frank 959

Smart Cities as a Tool to Tackle Global Challenges 967
Marc Montlleó, Gustavo Rodríguez, Itzel Sanromà 967

Smart City Labs als Möglichkeitsraum für technologische und soziale Innovationen zur Steigerung der Lebensqualität in Städten 975
Barbara Hammerl 975

Smart Governance for Smart Region: The Yaroslavl Region Case 983
Anastasia Dubova, Dmitriy Razumov 983

Smarte Städte brauchen smarte Unternehmungen 985
Hans Schnitzer 985

Smartes Straßendesign für Smart Cities 991
Dieter Schwab, Stefan Müllehner 991

Social Media Data in Tourism Planning: Analysing Tourists' Satisfaction in Space and Time 997
Roberta Floris, Michele Campagna 997

Spatial Plan of the Republic of Serbia in the light of Digital Agenda for Europe 2020 1005
Ljiljana Živković 1005

Städtebauliche Kalkulation mit Decision Support Infrastructure – das Beispiel der Analyse ökonomischer Wirkungen eines kommunalen Baulandmodells 1015
Dominik Weiß, Theo Kötter 1015

The Path Towards Smart Cities in China: From the Case of Shanghai Expo 2010 1023
Yanlin Zhou 1023

The Role of Logistics Services in Smart Cities: the Experience of ENCLOSE Project 1029
Giorgio Ambrosino, Stefan Guerra, Irene Pettinelli, Carlos Sousa 1029

Urban Living – Smart & Sustainable!? – Tool für den Wohnungsvergleich 1035
Susanne Supper 1035

What could be the "Imaginary Institution" of the City? 1041
Olivier Lefebvre 1041

Will the Guidebook "Green and Blue Spatial Planning" be a Value Help for Styrian Cities to Become a "Smart City" 1047
Christine Schwaberger 1047

Smart Governance Answers to Metropolitan Peripheries: Regenerating the Deprived Area of the Morandi Block in the Tor Sapienza Neighbourhood (Rome) 1051
Pietro Elisei, Angela D'Orazio, Maria Prezioso 1051

A Smart "Cairo" in the Making: A Strategic Approach towards a Better Quality of Life 1063
Heba Safey Eldeen 1063

ISBN: 978-3-9503110-6-8 (CD-ROM); ISBN: 978-3-9503110-7-5 (Print)
Editors: Manfred SCHRENK, Vasily V. POPOVICH, Peter ZEILE, Pietro ELISEI

reviewed paper

In the Public Eye: Toward the Electronic Transparency of Planning Process

Aleksandra Stupar, Aleksandra Djukic

(Associate Professor Dr Aleksandra Stupar, University of Belgrade, Faculty of Architecture, Bulevar kralja Aleksandra 73/2, Belgrade, Serbia, stupar@afrodita.rcub.bg.ac.rs)
(Associate Professor Dr Aleksandra Djukic, University of Belgrade, Faculty of Architecture, Bulevar kralja Aleksandra 73/2, Belgrade, Serbia, adjukic@afrodita.rcub.bg.ac.rs)

1 ABSTRACT

The numerous technological possibilities have significantly improved the performances of contemporary planning. The open access to information and continuous upgrading of data bases have certainly raised the level of interaction between planners/professionals and public audience/users, leading to a better understanding of sensitive urban mechanisms, anticipated development options and available spatial resources. The digitization of planning process has also become an important issue in developing countries, especially related to problems of public participation and visibility of information.

Similar problems were detected in Serbia, causing delayed implementation of plans, but also blurring investment possibilities. However, during the last decade a number of planning institutions have been using web platforms to present different planning documents to the public, facilitating communication with different groups of users and providing valuable information about planned transformations.

The paper discusses a relationship between contemporary cities, their digital skeleton and planning trends, focusing on the expected and achieved transparency of planning process. The case of Serbia is emphasized, considering the possibilities of digitization in the field of planning/urban development. The selected examples (Pozarevac, Belgrade and Zrenjanin) will be presented, the main elements of the applied e-networking will be analyzed and the possible obstacles in a process of upgrading will be identified.

2 INTRODUCTION

The city of the 21st century has gradually become an open system shaped by the increasing significance of technology and information. The role of planners is changing and adjusting to new trends, shifting the focus to innovative methods, techniques, strategies and procedures. The upgraded complexity of planning has become a necessity of/for further urban development which should provide better understanding of fast-changing urban processes, efficiently tackle the problems of multiplying urban realities and facilitate preferred inter- and multi-modal nature of urban spaces.

The existing technology, with its various applications and implications, is frequently labeled as an important element of urban culture. Reflecting its power on all levels and scales, technology pervades cities, stimulates interaction between urban space, urban society and innovations, and opens numerous perspectives and possibilities. However, urban socio-technical change could face problems of obduracy/inflexibility, which might reflect in urban development. Hommels (2005) identifies three different conceptions dealing with this problem - concept of frames, embeddedness and persistent traditions.

The concept of frames could be found in urban planning and design and applied to situations in which both users and planning/technology experts are restricted by the rigid ways of thinking and interacting. The concept of embeddedness emphasizes the importance of interlinked social and technical elements, clarifies heterogeneous nature of a city and its networks and considers technological inflexibility of urban systems or their elements. The concept of persistent traditions is focused on structural, cultural and symbolic factors influencing the inflexibility of urban structure and its technological background.

Technology also provdes new tools which might help citizens to find information, connect with others (groups, communities, experts, administrative bodies etc.) and to participate in planning process transcending traditional spatial, social or economic boundaries. Simultaneously, technology increases efficiency but often decreases opportunities for socializing and making contacts. Changing the traditional dynamic and the rhythm of everyday life it also affects space organization and emerging typologies in many ways.

3 CONNECTING THE PLANNING REALMS

The link between cities and advanced technology has generated numerous alterations in our perception of urban surrounding, processes, groups and individuals. Digital and physical worlds have become intertwined, allowing mutual recognition and more-less synchronized functioning of both multiplying communities and challenging identities. The way we communicate also defines urban planning and design. Consequently, the performances of the current technological realm guide our actions in physical space, as well as within numerous analogue and digital networks.

3.1 Public participation

The real effects of public participation in the process of urban planning have often been questioned both by numerous authors and the public. According to Fung (2006), by applying a synchronized participation of citizens and government in the planning process it could be possible to achieve three democratic values - legitimacy, effectiveness, and justice. However, the problems related to the involvement of representatives of all citizens, relevant inputs and ability of citizens to join the process are still present and mostly unsolved. Still, the active public participation, which includes more responsibilities for the planning outcome and implementation, has also been recognized as a precondition of sustainable urban development.

It is important to notice that we can identify several groups of participants in the process of decision making, but they rarely represent all interested parties. In general, these groups are determined by their role in planning process, as well as by their potentials, resources, knowledge and level of influence. Therefore, we can distinguish three main categories - the professionals (in charge for the proposal of the plan), the decision makers (local government and city authorities) and the public (which has to be well informed, highly motivated and trained to act and contribute to the process).

The theory and practice of participation has evolved since 1969 and the famous Arnstein's essay "A Ladder of Citizen Participation". In general, a contemporary political theory has distinguished two modes of decision making - aggregative and deliberative (Cohen, 1989; Gutmann and Thompson, 1996). Simultaneously, the practitioners have developed many methods and techniques in order to recruit participants (e.g. random selection - Fishkin, 1995), to facilitate meetings and to design entire participation processes adjusted to possible (and inevitable) civil disputes, regulatory challenges and law making (Connor, 1988; Creighton, 2005).

The trend of public participation also affected the methodology of planning process. Instead of experts and urban administrators who were traditionally in charge of creating urban plans, the contemporary comprehensive planning includes and supports an extensive involvement of citizens and nongovernmental stakeholders (Brody et al., 2003). Consequently, a number of participatory techniques has been created and used, ranging from interactive workshops and meetings to Internet websites (Creighton, 2005).

In general, there are five basic types of engagement which aim to inform, consult, involve, collaborate and empower participants.

The main objectives of these engagements are:

- providing objective information to stakeholders which could be used for building skills and knowledge of the community;
- obtaining feedback from the community on various analysis, options and decisions which can be used for future policies and plans;
- ensuring understanding and consideration of public concerns and aspirations;
- working with a community in order to cover every aspect of the decision, develop alternatives and identify preferred positions;
- ensuring power (and shared responsibility) of the public in the final decision-making.

Although the direct public participation could be manifested on all levels of governing, it is evident that the highest efficiency could be achieved on local and regional level. The citizens could be involved in the process of various analysis, stimulation, conceptualization, implementation and evaluation of decisions, especially those related to environmental issues, public services (education, public health etc.), economic and social development. However, there is always a noticeable tension between citizens and experts, which is the

result of an imbalance of resources and knowledge of these two groups. Therefore, it is necessary to provide a high level of decentralization, local control and direct participation, maintaining the fragile equilibrium.

3.2 Wired, viral or virtual?

Beside traditional modes of participation, the advanced technology has introduced benefits of e-participation which is supposed to provide cyber-democracy and enable creation and functioning of virtual democratic communities. The created inter and intra urban e-networks have also influenced a new perception of public spaces, which provide and support interaction within and across urban communities, but via digital interfaces and tools. These on-line meeting places could be seen as an improvement of the level of democratic participation, but frequently they could be used as another tool of political manipulation or a testing ground for anticipated changes. Although declaratively open and transparent, the digital realm of contemporary cyberspace has its own system(s) of control and boundaries, which often has a boomerang effect both on users and the system's security.

In order to follow recent patterns of 24/7 accessibility we have to be continuously linked and interactive. Consequently, e-networking represents a new supporting system and social glue that saturates all areas of our lives. Producing new and redefining existing urban processes and relationships, electronic web has upgraded urban tissue with superimposed digital realm. Introducing a completely different set of values, opportunities and social constructions, digital infrastructure has directly or indirectly guided latest urban transformations in order to create a perfect (efficient) setting for further increase of electronic interconnections.

Mitchell (2000) described cities of the 21st century as systems of interlinked, interacting, silicon- and software-saturated smart, attentive, and responsive places. And indeed they have become complex interfaces affecting a new logic behind urban restructuring - on spatial, functional and social level. However, it is evident that digital nodes of gathering, interaction and intellectual exchange cannot completely replace physical ones, although they certainly provide easier flow of information and ideas, representing an additional connector between public and professionals (planners, architects, urban designers) and an efficient tool for social and economic integration. However, in order to work properly, all these access points should provide 'both freedom of access and freedom of expression' (Mitchell, 2000). Sometimes, the availability of different options could direct users towards like-minded participants in the process, which might cause creation of homogenized groups and disable favorable discussions and debates originating from different perspectives.

The relationship between technology and community, although frequently emphasized as a necessity which leads to a better accessibility, transparency and democratization, actually represents an insufficiently defined and simplified field of interaction, in which participants usually act as passive consumers of information, instead of being their active producers (Schon et al., 1999). However, in order to reach a higher level of participation, especially in the planning process, it is essential to extend the role of technology, activating its communicative potential, instead of using it as an advanced data base.

4 PRACTICE AND LEARN

Although Serbia ratified the Aarhus convention (1998), which is supposed to grant the public rights regarding access to information, public participation and access to justice concerning environmental issues, some of the most important principles of this convention are not included into the latest Law of building and construction. This law, as well as its predecessors, only guarantees the planning procedure which requires the public presentation of spatial/urban plans, but not the actual participation in the conceptual phase of the plan. After the public display, all comments, questions and remarks are sent to the team in charge of the proposal, which is obliged to react and respond to them. However, even in this limited participation, a number of problems have been detected:

- the structure of public meetings is too rigid and controlled by the authorities which moderate them;
- the presentation of the plan (its language and elements) are not adjusted to non-expert participants;
- meetings are usually organized during working hours, which excludes some of possible participants from the process;
- meetings/public presentations are usually organized in the municipal building, which might not be accessible to all interested parties (due to financial limitations or available time);

- some meetings could be obstructed by small, but aggressive groups of citizens;
- majority of citizens is not aware of the fact that they could participate in the planning process, or they do not know how to obtain that right.

Evidently, the Serbian model of public participation does not provide training for active participation in the conceptual phase of the plan or decision-making. Instead, the public is only informed about the proposal, allowing the possibility for reaction and comments.

According to Serbian practice and laws, cities and municipalities are obliged to create spatial and master plans for their territories, which are re-evaluated every five years. Master plan of a city, representing a strategic document, should provide guidelines for anticipated land use and public investments. Since the document does not include actions which tackle the level of individual property, citizens are usually not motivated to participate in the planning process which does not maximize their personal benefit (Djukic, Milovanovic, 2003). However, there are some examples which represent a certain improvement, especially in the field of public participation based on electronic accessibility.

4.1 Working together: the city of Pozarevac

During the last decade, Pozarevac adopted several urban plans and the new Master plan 2025, was created by the team of the Faculty of Architecture, University of Belgrade. Methodological framework was based on a planning paradigm which used variables generated by the prevailing condition of general social and economic uncertainty. During the conceptual phase a data base was established, a catalog of existing sites/locations was created, as well as an atlas of their potentials. The structure of the catalog could be directly used for an interactive map, enabling faster access to information related to current and planned land use, identified condition of urban infrastructure and possibilities for further implementation of the plan. This kind of application would certainly facilitate general e-accessibility providing a higher transparency of anticipated transformations.

The concept of the Master plan was supported by an extensive participation of citizens and the outcome of this phase was included in a program for the Master plan (Ralevic, 2006). It is interesting to notice that the Serbian legislative does not formally recognize the importance of public participation in this phase. Instead, it is considered to be an important element of the next phase, suggesting a necessity of public meeting(s) before its official confirmation by the City Assembly.

During the planning process related to the Master plan of Pozarevac, citizens were asked to express their views and ideas related to the identity and value of urban spaces and ambiances. The survey with closed-ended questions was conducted, along with a series of systematically reviewed meeting minutes ('meeting-in-a box'), thematic panels with local experts and brainstorming, which included relevant maps and photos. This methodology engaged lay stakeholders i.e. the unpaid citizens with a deep interest in some public concern, willing to be involved and to represent those with similar interests. Simultaneously, many associations, NGOs, professional associations, but also public officials and representatives, took part in these meetings and discussions. The conclusions resulted from three separate rounds and were structured around three complex topics - (1) land use, urban land rent, heritage and value; (2) green, tourist and sport activities and facilities; (3) traffic and land equipment. The result of this process also emphasized some special concerns about a typology of housing and density, public services in local communities, new parks and green areas, lack of parking lots, connections with antique Roman city Viminacium, as well as a problem of neighboring rural areas.

Since February 2012, the city of Pozarevac is using a specific e-service, as a possible channel of communication between city government and citizens. During the last two years the service detected 56 questions addressing the city authorities. About one third of them is related to communal issues, but some of the questions might be solved by revising the existing documents and implementing new measures. It is also interesting to notice that some questions overlap with conclusions generated from meetings which followed the process of master planning - from those underlining the traffic problems (available parking space, quality of street pavement, signalization), inadequate infrastructure, street furniture, accessibility for all groups of users, to legal issues and environmental conditions.

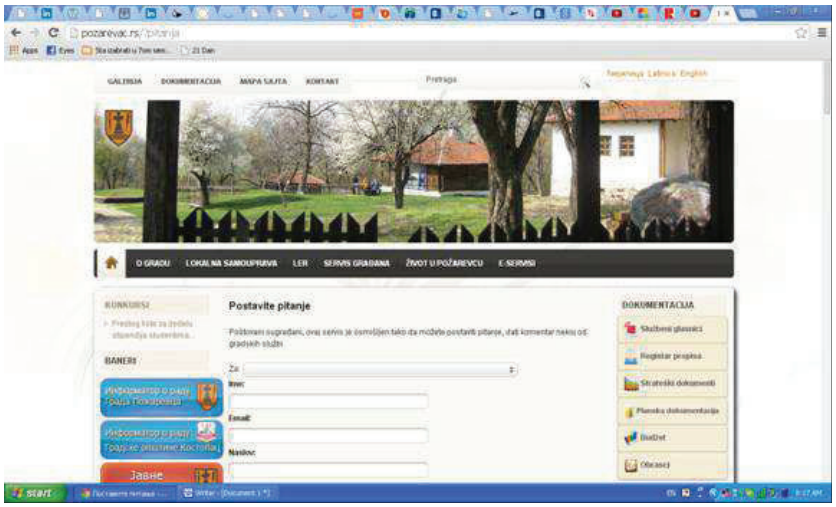

Fig.1: City of Pozarevac - official web-presentation: section for questions, as a channel for communication between local government and citizens.

4.2 Improving accessibility: the city of Belgrade

During the preparation of the Master plan of Belgrade in 2003, public participation was also included into the first phase of the process. The conceptual phase used the method of 'random participation', targeting all interested parties. Several hundreds of Belgrade citizens communicated with a special team in charge for the preparation of Master plan, using various media - from phone calls, to emails. After the completion of the second phase (and before the official approval of the plan), citizens also participated in the public meeting which gave them a detail insight into the document. Although majority of citizens were mostly interested in small-scale interventions i.e. a level of their own lot or building, approximately one-fifth of the present citizens was interested in the problems of public good, giving a number of useful ideas and suggestions related to crucial urban issues - green network, urban infrastructure, main bridges, articulation of river banks, protection of certain areas and buildings, quality of the environment.

Fig. 2: Town Planning Institute of Belgrade, web-site: frequently asked questions related to different aspects/problems of urban development (e.g. planned activities and capacities, procedures, public presentations of plans etc.)

Following this practice, the Town Planning Institute, as the leading planning institution of Belgrade, has posted all planning document related to the development of Belgrade and enabled an interactive approach to the documents produced during the last six years. The Institute has also opened a special e-service oriented towards citizens, intensifying the communication between the users of urban space and experts of the Institute. The majority of questions has been related to the process of implementation of approved plans, as well as to other areas of spatial development and transformation, on all levels and scales.

ISBN: 978-3-9503110-6-8 (CD-ROM); ISBN: 978-3-9503110-7-5 (Print)
Editors: Manfred SCHRENK, Vasily V. POPOVICH, Peter ZEILE, Pietro ELISEI

4.3 Increasing efficiency: the city of Zrenjanin

The city of Zrenjanin has also established a mode of e-government. The web-site of the city administration includes a section related to planning documents containing all levels if plans - from the Regional and Master plan, to the plans of general and detail regulation of urban zones. The documents (textual files and drawings) could be downloaded from the site by all interested parties. The site also incorporates two interesting services - 'The office of quick responses' and 'System 48'. The first one provides information about urban sites/locations, including the data about potentials and limitations of a particular building lot, defined by the planning documents. The 'System 48' is used for communal problems, which could be reported by phone, text messages or Internet. It interlinks services of all public institutions founded by the city of Zrenjanin, enabling efficient response to identified urban problems and demands of citizens, as well as facilitating their solution. The system is active non-stop and within 48 hours all users receive a status report about the activities related to the problem.

Fig. 3: City of Zrenjanin, web-presentation: 'System 48' - a user-friendly service of e-government, which enables interaction between citizens and all institution founded by the city.

The web-site of the city administration has another user-friendly option, which enables citizens to check the status of their documents (to be issued or applied for). However, this e-platform does not provide information about the content of user's requirements, remarks and comments (in contrast to the platform in Pozarevac), or the insight into frequently asked questions (which is possible in the case of Belgrade).

5 CONCLUSION

The contemporary technology enables improvement of traditional methods of public participation during the planning process. However, its success still depends on numerous elements which should increase the motivation of citizens to participate in planning activities, provide necessary information about detected problems and actions which might have spatial consequences and train citizens to formulate and express their opinions and suggestions in all phases of the process.

The best results could be achieved when participation represents an inseparable part of all phases of the process - from conceptualization, decision-making to implementation. The electronic transparency of planning is preferred because it increases the accessibility of information, provides different possibilities for training and education of the public, and ensures continuous and interactive participation. However, in spite of numerous advantages, it cannot be used as a substitute for other, more traditional techniques, but just as a complementary tool which might increase efficiency of interaction.

Although Serbia still has to increase the significance and influence of public participating, as well as its electronic support, it is noticeable that some positive changes have occurred since 2000. However, they are mostly related to the final part of the planning process or post-planning activities, when electronic transparency represents an option for gathering information and communicating with urban services and institutions. Therefore, it is necessary to further develop integrative potential of e-platforms for participation, provide a stronger political support, increase scope and intensity of use, as well as a level of inclusion. The

organization and structure of services also influence the overall results and efficiency, but they mostly depend on implemented tools, financial support and continuity of application.

6 ACKNOWLEDGEMENT

The paper is realized as part of the project "Studying climate change and its influence on the environment: impacts, adaptation and mitigation" (43007), within the framework of integrated and interdisciplinary research, and the project "Spatial, Environmental, Energy and Social Aspects of Developing Settlements and Climate Change – Mutual Impacts" (TR36035), within the program Technological Development, both financed by the Ministry of Education and Science of the Republic of Serbia (2011-2014).

7 REFERENCES

BEDFORD, T., CLARK, J., HARRISON, C.: Limits to new public participation practices in local land use planning. In: Town Planning Review, Volume 73, Issue 3, pp. 311-333. Liverpool, 2002.

BRODY, S.D., GODSCHALK, D. R., BURBY, R. J.: Mandating citizen participation in plan making: Six strategic planning choices. In: Journal of the American Planning Association, Vol. 69, Issue 3, pp. 245 - 264. 2003.

COHEN, Joshua: Deliberation and Democratic Legitimacy. In: HAMLIN, Alan, PETTIT, Philip (eds.), The Good Polity: Normative Analysis of the State, pp. 17-34. New York, 1989.

CONNOR, D. M.: A New Ladder of Citizen Participation. In: National Civic Review, Vol. 77, Issue 3, pp. 249-57. 1988.

CREIGHTON, James L.: The Public Participation Handbook: Making Better Decisions through Citizen Involvement. San Francisco, 2005.

DJUKIĆ, Aleksandra, ČOLIĆ, Ratka: Gradjanin - od pasivnog korisnika ka aktivnom ucesniku u procesu planiranja/Citizen - from passive user to active participant in a planning process. In: BOGDANOVIĆ, Ruzica, STOJKOV, B. (eds.), Principi i praksa odrzivosti u razvoju naselja u Srbiji, pp.376-389. Belgrade, 2000.

DJUKIĆ, Aleksandra, MILOVANOVIĆ, Danijela: Participacija gradjana u kreiranju i ocuvanju identiteta gradova. In: International scientific conference INDIS 2003 - proceedings, pp. 95-104. Novi Sad, 2003.

DREWE, Paul: ICT and urban form. Urban planning and design – Off the beaten track. Delft, 2000.

FISHKIN, James, S.: The Voice of the People: Public Opinion and Democracy. New Haven, CT, 1995.

FUNG, Archon : Varieties of participation in complex governance. In: Public Administration Review, Vol. 66, Issue Suplement 1, pp. 66-75, 2006.

GUTMANN, Amy, THOMPSON, Dennis: Democracy and Disagreement. Cambridge, MA, 1996.

HOMMELS, Anique: Studying Obduracy in the City: Toward a Productive Fusion between Technology Studies and Urban Studies. In: Science, Technology and Human Values, Vol. 30, Issue 3, pp. 323 -351, 2005.

MITCHEL, William John: E-topia: “Urban life, Jim - but not as we know it”. Cambridge, MA, London, England, 2000.

PUŠIĆ, Ljubinko: Odrzivi grad: ka jednoj sociologiji okruzenja/Sustainable city: towards sociological environment. Belgrade, 2001.

RALEVIC, Miodrag: Modelovanje urbanog procesa/Modeling of Urban Process. Belgrade, 2006.

SCHON, Donald A., BISH, Sanyal, MITCHELL, William J. (eds.): High technology and low-income communities. Cambridge, MA, 1999.

STUPAR, Aleksandra: Shaping the image of globalization: The role of technology in urban regeneration. In: GETZINGER, Guenter, WIESER, Bernhard, BAMME, Arno (eds): Yearbook 2008 of the Institute for Advanced Studies on Science, Technik und Wissenschaftsforschung 57, pp. 297-317. Graz, 2009.

TODIĆ, Dragoljub, VUKASOVIĆ, Vid: Pravo na adekvatnu zivotnu sredinu/Right for sustainable environment. Belgrade, 2001.

VUKELIĆ, Jelisaveta: Neposredno učešće građana u donošenju odluka na lokalnom nivou vlasti u Srbiji. In: Sociologija, Vol. LI, Issue 3, pp. 291 -312. Belgrade, 2009.