

# Handbook of Research on Advanced ICT Integration for Governance and Policy Modeling

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# Chapter 15

## Zagreb Case: Improvement of Social Infrastructure

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### ABSTRACT

*This chapter explains the manner of implementing FUPOL policy model and FUPOL platform in the process of creating the actual policies in the City of Zagreb. For that purpose, two pilot initiatives have been chosen, and based on them, the whole policy lifecycle has been covered. The background of these pilots is explained, as well as the challenges that the City of Zagreb has faced. In addition, the results of concrete actions and possible solutions are presented. All of them use a new integrated approach to policy design and implementation that consists of an advanced policy lifecycle and an IT-solution (FUPOL) with features supporting all phases of the proposed lifecycle.*

### INTRODUCTION

The City of Zagreb is involved in the FUPOL project as a pilot city and the evaluator of FUPOL models. The reasons and motivation for the City of Zagreb participating in this project are to be involved in the development of new technologies enabling citizens to participate in the creation of urban politics, as well as providing better understanding of the citizens' needs by public authorities.

It was noted that the current methods of consultation with the citizens do not reduce the risk

of missing important details and the exclusion of certain groups of citizens, and ultimately it leads to the rejection of the political decisions and policies. For that reason the FUPOL consortium has elaborated a comprehensive approach to further advance the research and development in simulation, policy process modeling, semantic analysis and visualization (Sonntagbauer, 2013). The scientific approach is based on complexity science. It is aimed at reducing the complexity through a comprehensive policy spiral design lifecycle approach deemed appropriate for complex societal problems (Palmisano, 2012).

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Building on the current political environment and the public sector collective data FUPOL has enabled all stakeholders (interested citizens, companies, NGO etc.) to better forecast and understand future trends. While the approach and the technologies itself are generic and can be used in any policy domain, the projects focus is on urban policy challenges since the majority of the world's population is living in urban areas.

The City of Zagreb has tested the new FUPOL policy lifecycle and tool in the field of using the land for the purpose of social infrastructure improvement, applying them to different issues in this area.

The different social networks, such as Facebook and Twitter, as well as various electronic media, portals and blogs are channels that have been used in the new FUPOL tool for automatic collections and analysis. The City of Zagreb is able to interpret the results of the analysis and the opinions of the interested public. It provides a better understanding of the citizens' needs and more effective policy modeling.

## BACKGROUND

The City of Zagreb has implemented two pilots in the domain of Land Use & Improvement of Social Infrastructure (Jones, 2012), (Jones, 2013), (Topham, 2013). The first one consists of two tests, one regarding the policy setting in the field of social infrastructure, and the other one for gathering the opinions apropos the Centre for autism. The second pilot also consists of two tests, one for the policy setting in the field of social infrastructure as well, and the other one for gathering the opinions apropos the children's playground in Remete. This chapter presents only the first pilot that has already started and provided some initial results.

First pilot initiative was launched in May 2013. The aim of the pilot initiative was through FUPOL

approaches and platforms to include a greater number of citizens in the campaign aimed to define the city's policy on the issue of improving the social infrastructure in Zagreb, and the construction of the Centre for Autism and accompanying sensory park. In this way accomplished are also the preconditions for the evaluation of the new FUPOL solutions.

### Test 1: Social Infrastructure

The City of Zagreb ensures the necessary infrastructure for the education of preschool (kindergartens) and school children as well as for their everyday sports activities and access to the city's cultural facilities. Taking part in sports activities and access to cultural facilities should be enabled for all other Zagreb's citizens and visitors, too.

In the drafting of the City's Development Strategy (Gradski ured za strategijsko planiranje i razvoj Grada, Zagreba, 2013), the principal of the City Office for Strategic Planning and Development of the City *con* the principal of the City Office for Education, Culture and Sports. The principal of that Office made an analysis of the existing state and problems arising from it. Further given is an overview and analysis of the perceived problems in the area of preschool education, elementary and secondary education, university education, culture and sports.

Preschool education (*Službeni glasnik Grada Zagreba* 18/12, 16/13):

- The existing number of the city's preschool institutions does not meet the need, especially in the areas of the city districts of Sesvete, Stenjevec, Podsused - Vrapče, and in certain parts of Črnomerec, Dubrava - Gornja and Donja, Maksimir, Podsljeme, Trešnjevka - north and south, Novi Zagreb - east and west, and of Brezovica.
- Most cities' preschool institutions are more than 30 years old on the average and about

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25% of them are residential and business premises refitted for accommodation of children.

- Refitted facilities, in most cases, do not have adequate gym halls nor playgrounds or other areas for daily outdoor activities.
- Residential and business facilities refitted for accommodating children are not an adequate solution and may only be of temporary service (until facilities dedicated for the purpose are built)

Primary and secondary education (*Službeni glasnik Grada Zagreba*, 18/12, 16/13):

- Lack of school premises in the existing primary and secondary school facilities, due to which a large number of such schools operates in two shifts.
- Dilapidation of a part of the existing school facilities (most of them were built 30 years ago) in primary and secondary schools.
- Lack of gym halls and playgrounds in primary and secondary schools (50% of the schools do not have adequate gym halls).
- The number of primary and secondary schools with special education programs is significantly below the requirement.
- In some city districts there is an insufficient number of primary and secondary schools since the matter at hand are districts with prominent residential building construction and districts in which the internal city migration flow is directed toward the edges of the city.

University education (*Službeni glasnik Grada Zagreba*, Zagreb 18/12, 16/13):

- Lack of premises for holding classes, because of which some faculties hold classes in 5 to 10 different locations.

- Lack of accommodation facilities for an increasing number of students coming from other parts of Croatia and from abroad.

Culture (*Službeni glasnik Grada Zagreba*, 18/12, 16/13):

- Unequal distribution of cultural programs across city districts, especially in the newly constructed districts.
- Lack of premises and other conditions for satisfying and meeting the citizens' and visitors' cultural needs (lack of libraries and reading rooms, halls for exhibitions, dancing, art workshops and other cultural needs).

Sports (*Službeni glasnik Grada Zagreba*, 18/12, 16/13):

- The number of sports facilities is at 50% in view of the level of construction as regards European standards and citizens' actual needs for sports activities.
- Most sports recreation associations do not have their own sports facilities, and the existing facilities do not meet the need neither in respect of surface area nor quality.
- An unequal distribution of sports and recreation facilities across city districts, and an evidently increased need for sports facilities as regards their availability in the entire city's area.
- Insufficient number and inadequately equipped playgrounds.

The principal of the City Office for Education, Culture and Sports has informed the principal of the City Office for Strategic Planning and Development of the City of the above-mentioned issues. He stressed the need for using land for the purpose of building facilities for the needs of preschool

and school education, culture and sports. The principal of the City Office for Strategic Planning and Development of the City accepted the proposals of the principal of the City Office for Education, Culture and Sports and incorporated them into the Development Strategy of the City of Zagreb – ZagrebPlan.

## Test 2: Centre for Autism

The City office for Education, Culture and Sports and the City office for social protection and people with disabilities made a decision to build the Center for autism on the sight of the Oporovec area, with a total of 29801 m<sup>2</sup> planned for the construction of a new elementary school including all necessary utility infrastructures (Official Gazette of the City of Zagreb 16/07, 8/09, 7/13), (*Službeni glasnik Grada Zagreba*, 8/01, 16/02, 11/03, 2/06, 1/09, 8/09), (*Službeni glasnik Grada Zagreba*, 13/12).

The area included by the UPU Oporovec-south is located in the eastern part of the city, north of Dubrava and Klaka area. This is the part by the central zone of former Granešina area, located south of the Novoselečki put.

The existing land subdivision is historical, with incorrect shape and elongated in the north – south direction. In the zone towards the east there is an agricultural area today, which too UPU is turning into a theme park.

The plan foresees various uses for that area. It is expected, regarding the area position in the City's northern residential part, that most part of the zone is intended for mostly residential areas.

For this area the detailed plan elaboration is mandatory, by which all basic urban parameters for land use will be defined, as well as the way in which the area will be used and decorated, according to its planned purpose for public and social needs and respecting the values and specificities of the surrounding area.

The transformation of this area will include construction which will offer a high quality of

living to the future inhabitants with its spatial – functional determinations. Since the local population is very interested in using the surrounding land for their own needs, it is necessary to examine the possibility of the Centre for Autism's construction regarding its high significance. It is an institution that takes care of the children and adults with autism and mental illness. The Centre for the Autism organizes educational work for:

- 21 students from I.-VIII grade divided in 4 classes;
- 137 students from 7 to 21 years of age in 30,5 educational groups; and
- 108 adults participating in 14 educational groups.

Since the educational activities of the Centre for Autism are carried out in 7 different locations, it is estimated that a positive educational results will be accomplished by building a new facility.

Team work and respect for all professions and persons involved is necessary to accomplish excellence in the realization of this project.

## MAIN FOCUS OF THE CHAPTER

### Issues, Controversies, Problems

For the purpose of defining the new policy of improvement of the social infrastructure and building the Centre for Autism with the sensory park, a public dialogue should be held in accordance with the Croatian regulations. Public presentations, discussions and collection of written remarks and suggestions should be organized at city level and at the level of city districts. The principals of the said offices have agreed that, because of prior negative experiences, the public should need to be included more extensively.

It is a main issue that these offices and the City of Zagreb in general should cope with. How

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to enable involvement of citizens at a larger scale and how to provide mechanisms for collecting opinions from different groups of stakeholders are the questions that arose.

### Solutions and Recommendations

The FUPOL policy lifecycle and the FUPOL platform are recognized as possible solutions. The actual topics have been opened for discussion on the websites of the City of Zagreb, on the social network pages of the City of Zagreb and blog (<http://zagreb-fupol.blogspot.com/>). For this purpose the FUPOL platform has been used, which allows the actors involved search the most used social networks to collect people's opinions on this topic. Such opinions can also be geo-referenced through a specific opinion map (Sonntagbauer, 2013).

City of Zagreb via FUPOL platform launched a campaign to gather citizen input on social infrastructure in Zagreb, Figure 1.

For that purpose it created four opinion maps, for schools, kindergartens, sports facilities and the Centre for autism with sensory park. The media has

been informed about the new campaign through the Press Conference, the website of the City of Zagreb and Twitter and Facebook of the City of Zagreb. The FUPOL leaflet has been designed, printed and distributed to 32 locations in the City. The articles about the beginning of the campaign regarding social infrastructure and the Centre for autism have been published on the following portals, such as [www.dalje.com](http://www.dalje.com), [www.zagreb.hr](http://www.zagreb.hr), [www.zih.hr](http://www.zih.hr), [www.tjedno.hr](http://www.tjedno.hr), [www.cro.time.mk](http://www.cro.time.mk), [www.vecernji.hr](http://www.vecernji.hr), [www.nedstor.com](http://www.nedstor.com), [www.hina.hr](http://www.hina.hr), [www.trazi.hr](http://www.trazi.hr), [www.odisej.biz](http://www.odisej.biz), [www.soundset.hr](http://www.soundset.hr) and [www.predobro.com](http://www.predobro.com).

All employees of the city government involved in policy-making in the two aforementioned domains are educated, they are given access rights and they are provided with continuous support in using FUPOL platform. Facilitators continuously followed up changes in social media window, and citizens' opinions obtained through maps and questioners, available on the blog.

Through the blogs the facilitators lead a discussion on how to provide the most suitable ideas for the observed facilities, such as the Centre for Autism and the public park in the area "Oporovec-

Figure 1. Campaign "Social Infrastructure Improvement"

The screenshot displays the FUPOL platform interface. At the top, there is a navigation bar with links for HOME, CAMPAIGNS, SOCIAL MEDIA, and ADMINISTRATION. The user is logged in as Silvana Tomic Rotim. The main content area is titled "Show campaign list" and contains a table of campaigns. The table has columns for Status, Title, Start Date, End Date, Initiator, Facilitator, and Actions. There are five campaigns listed, including "Milan Bantic's hot topics", "Zagreb RSS Atom Feeds", "Improvement of the social infrastructure", "Autism Center Research", and "Buzz on local radio stations 2013".

Status	Title	Start Date	End Date	Initiator	Facilitator	Actions
🔒	Milan Bantic's hot topics	2013-04-12	2013-04-30	Silvana Tomic Rotim	Silvana Tomic Rotim	edit
🔒	Zagreb RSS Atom Feeds	2013-04-10		Silvana Tomic Rotim	Silvana Tomic Rotim	edit
🔒	Improvement of the social infrastructure	2013-04-02	2013-05-31	Elizabeta Khorr	Silvana Tomic Rotim	edit
🔒	Autism Center Research	2012-12-13	2012-12-31	Silvana Tomic Rotim	Silvana Tomic Rotim	edit
🔒	Buzz on local radio stations 2013	2012-12-12	2013-01-31	Silvana Tomic Rotim	Silvana Tomic Rotim	edit



south”. The plan is to construct a regular school and a school for children with autistic disorders. The public debate through the blog and social networks (Facebook and Twitter) is targeted to the green area very close of these schools. This green area is planned as a public park with a stream, which we would like to develop as a sensory park. During the previous considerations regarding the Oporovec project, we have emphasized the need for the sensory park for persons with autistic disorders. This park would be also used by children from the local community and from other parts of the city, regardless of whether they have difficulties or not. This type of the public park would help the integration of people with autistic disorders. For the purpose of defining the optimal content and equipment disposition in this park the FUPOL feature for simulation and impact visualization has been used. It enables the public administrators to make simulation regarding the best solution for the sensory park.

Figure 2 shows blog and opinion map to gather citizen input in the running of the campaign.

Also, using the FUPOL platform, its feature for social network aggregation and single window display, the City of Zagreb created social media windows for searching through the social media sources, Figure 3. Once such content is available, the facilitator can use the specific platform functionalities (hot topic sensing) to tropicalize it to extract the most debated issues; he can also provide certain graphs to present the results to decision makers in the City. It is a way to recognize the most interesting suggestions and include them in the agenda for the definition of new policy issues in the management of social infrastructure improvement.

In order to implement the policy of social infrastructure improvement, it is necessary to include various city offices and consider the possibility of implementing the policy from various aspects. Thereat, various data bases would be consulted (GIS, statistics, regulations, etc.) in order to identify areas suitable for building the social infrastructure facilities. Before the decision on the extension of the existing and the construction

Figure 2. Blog and opinion map





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Figure 3. Social media window



of new respective facilities on certain locations is made, the public should be informed and a dialogue initiated with all the stakeholders. The dialogue with the public would be of iterative character and it would follow the entire process: from agenda setting to policy formulation, policy implementation and monitoring.

By applying the FUPOL platform City of Zagreb ensured the involvement of citizens in all these phases. So far conducted phases are setting the agenda and creating the city's policies in the defined domains, and certainly plans to apply FUPOL approach in the phase of implementation and monitoring. FUPOL approach and platform proved to be a very good mechanism for the inclusion of a greater number of citizens in the campaign and simplify information sharing and gathering opinions in all phases of creating the city's policies.

## FUTURE RESEARCH DIRECTIONS

The key success factor for achieving the objectives in regards to project as such is the involvement of all important participants, especially citizens, therefore it is very important to start public campaigns in early stages of the project. Also, it is very important to involve the key public administrators and enable a good mechanism for evaluating the success of the project. There are various mechanisms on how to do that. It could be done through:

- FUPOL platform and a questionnaire which could be formed inside the platform.
- E-mail and the available blog.
- Organized forums and workshops in city districts.
- Selecting and involving trusted users .

- Announcements in different media, social networks etc.

Beside the above mentioned mechanisms, there are possibilities to recognize the ones that could result in larger response.

During the campaign for the two tests described in this article, held were two evaluation workshops with representatives of the city administration. One of them was related to the evaluation of simulation model and simulator, and other to evaluating other FUPOL features used in the campaign:

- Campaign.
- Opinion maps.

- Questionnaires.
- Social media aggregation.

Results of the evaluation of the simulation model are shown in Table 1, and the results of the evaluation of the simulator in Table 2.

Since the target value of the evaluation simulation model and simulator is set at score of 3.5 in the range of 1 to 5, the results of the evaluation indicate that it has not been achieved. Therefore a large number of improvements to the simulation model as well as to the simulator have been proposed. These improvements should be implemented in the continuation of the project.

*Table 1. The Simulation model evaluation*

No	Question	Average grade (1 – 5)
7.	All user requirements are fully incorporated in the model	3.8
8.	The model encompasses everything that is essential to simulate the construction of playgrounds	3.7
9.	The model is quite clear and understandable	3.5
10.	The model is easy to use	3.1
11.	The results of this simulation model are meaningful and acceptable	3.3
12.	Generally I'm satisfied with the simulation model and I would recommend it to other cities	3.3
<b>Average grade of Simulation model</b>		<b>3.45</b>

*Table 2. The Simulator evaluation*

No	Question	Average grade (1 – 5)
8.	The Simulator completely covers all functionalities defined by simulation model and user requirements	3.2
9.	The Simulator provides meaningful and useful results	3.2
10.	The Simulator has a good interface, easy to use by the user	3.1
11.	User by himself can set input parameters for the simulation and add new ones, depending on specific needs	3.5
12.	The simulations are performed quickly, in a short time	2.4
13.	The simulation results are extremely useful in planning the construction of playgrounds	3.5
14.	Generally I'm satisfied with the simulator and I would recommend it to other cities	3.5
<b>Average grade of Simulator</b>		<b>3.2</b>

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Results of the evaluation of other listed FUPOL features are shown in Table 3.

As for the evaluation of FUPOL platform and its four mentioned features as the evaluation target value is set at score of 3.5, the results indicate that it's realized. Nevertheless recognised are the possibilities of improving these features which will be analysed and applied in the following months working on the project.

Also, the area of hot topic sensing and visualization is open for further research and providing better and more useful data that could be used in the process of policy creation and implementation.

## CONCLUSION

A case of applying a new integrated approach to policy creation and implementation in the City of Zagreb has been outlined. The main issues and

challenges have been recognized, as well as the way of coping with them. The campaign started using FUPOL platform and its results have been presented, and as the main benefits following are recognized:

- Decision makers from the City can get a better understanding of the needs of citizen as well as businesses.
- Direct, better feedback from all political participants through multichannel social network based communication between politicians and citizens.
- Improved prediction of impacts of policy measures leading to more efficient implementation of government policies.
- Better decisions through forecasting of the potential impact of political decisions.
- Increased engagement of citizens and wider use of ICT tools resulting in higher

Table 3. Evaluation of the FUPOL platform

No	Question	Average grade (1 – 5)
11.	FUPOL platform entirely covers all the functionality arising from the needs of users while creating the city's policies	3.5
12.	FUPOL platform has a good interface, easy to use by users	3.7
13.	FUPOL feature "Campaign" provides an opportunity for input and monitor of all parameters essential in creating the city's policies	4
14.	FUPOL feature "Social media window / social media aggregation" provides an opportunity for the input of all relevant sources, easily search and meaningful results	3.1
15.	FUPOL feature "Opinion maps" provides the ability to create maps easily and monitoring the entered opinions	3.6
16.	FUPOL feature "Questionnaires" offers the possibility of creating a questionnaire easily, the analysis and different representations of the results	3.3
17.	FUPOL platform is efficient, provides a fast operation, without long waiting the response of the system	2.5
18.	The results obtained using FUPOL platform are extremely useful in the process of selecting areas for creating urban policies (agenda setting)	3.9
19.	The results obtained using FUPOL platform are extremely useful in the phases of analysis and creating the urban policies	3.8
20.	In general I am satisfied with FUPOL platform and I would recommend it to the other cities	4.1
<b>Average grade for whole FUPOL platform</b>		<b>3.55</b>

potential of innovation concerning interaction of citizens with the government.

- Simulations should assist the authorities in the process of policy development.

Also, based on current usage of FUPOL approach and platform, and their evaluation, identified are areas of improvement thereof and thereby provided feedback to partners who work on developing FUPOL features. This will ensure that in the next planning cycle in the City of Zagreb used is improved FUPOL platform.

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## KEY TERMS AND DEFINITIONS

**FUPOL (Future Policy Modeling):** A new approach and software for modeling and implementing policies.

**Hot Topic Sensing:** The HTS system is responsible for monitoring trends and detecting “hot issues” from the web.

**Opinion Map:** A graphical map that shows all citizens’ opinions collected in a specified area by social networks.

**Policy Lifecycle:** All phases in a public policy creating, implementing and monitoring – agenda setting, analysis, policy creation, decision making, policy implementation and policy monitoring.

**Public Policy:** Declared objectives that a city seeks to achieve and preserve in the interest of citizenry.

**Sensory Park:** A park created to be accessible and enjoyable to disabled and non-disabled visitors, with the purpose of providing individual and combined sensory opportunities for the user such that they may not normally experience.

**Social Infrastructure:** The facilities that accommodate social services, they include educational facilities, sports facilities, kindergartens and public amenities which are aspects that focus on the community.

**Social Networks:** Dedicated websites or other applications which enables users to communicate with each other by posting information, comments, messages, images, etc., such as Facebook and Twitter.