

Virtual Platform for SMART Decisions in Urban Planning

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ABSTRACT: *In this paper the web software for citizens' participation in urban planning is presented. The software is implemented in the pilot region of the city of Bitola in Republic of Macedonia. Also in the paper current legislation for urban planning in the Republic of Macedonia from the aspect of the citizens' participation in the urban planning is analyzed. Consequences from the current legislation and practices are analyzed too, through a survey among citizens. At the end some initial conclusions from the pilot operation of the software are drawn.*

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I. INTRODUCTION

When we talk about urban planning and urban art interventions in the public space, in the Republic of N. Macedonia they are usually realized by architects with the license for urban planner. Usually the planners what will intervene in selected area/ space are chosen by local authorities on public competition (open tenders). Very frequently the best tenderers (as a rule lowest price is key criteria) are companies/ experts with little or non-existing knowledge about area what should be reconstructed (its history, traditions, life style of inhabitants etc.). This causes situation in which the planners who propose reconstruction of some urban area to be guided only by professional norms and regulations (and unofficially political or business interests). They are unaware of the spirit of the urban area what they propose to be reconstructed. The spirit of some urban area are its inhabitants (citizens). The cities exist for the citizens and it is their right to participate in the processes which shape their community and environment. The spatial and urban development make up the spatial dimension of the overall societal development, which is why the discussion about spatial and urban development is in fact a discussion about the society we would like to live in.

Our experience and conducted researches (elaborated in the report: Analysis of the current situation with involvement of the citizens in the urban planning. GAUSS Institute – Bitola, December 2015) shows that in Republic of Macedonia, regarding urban planning

- Citizens are inadequately and untimely informed.
- Citizens are being consulted only pro forma and in the final phase of the preparation of urban planning documents.
- Citizens hardly understand the planned development and its' consequences.
- There are not user friendly IT tools for citizens' participation in urban planning.

Thus we developed a Virtual Platform which enables active participation of the citizens in the urban planning. Through this platform the citizens through internet can comment (give positive and negative comments) on current situation with their urban habitat as well as on the suggested changes with new or amendment urban plans. But not just that. They can suggest ideas and start initiatives what they want to see in their habitats. With this approach of giving voice to the citizens in the whole process of urban planning, the authorities can make SMART decisions and bring urban plans according the needs of local population (citizens)..

II. WHY CITIZENS' PARTICIPATION IN THE URBAN PLANNING

Elaboration of this question we will start with the elaboration of the knowledge transfer. Traditionally the processes of knowledge transfer are based on the principle of ONE (or few) to MANY (or all). For example, when someone (some) author(s) write a book or present a lecture, in that book or lecture he/she/they share(s) his/hers/their knowledge and ideas learned from LIMITED sources. Although this LIMITED may be a large number, it is still limited number: the books read, the lectures or events on which participated, experience gained during work on different projects etc. Even the high level experts have the knowledge acquired on the basis of a limited number of sources. For example, read 1,000 books, studied 10 years at 3-5 universities, attended 100 conferences etc.

Similar is situation in the area of urban planning and urban development. When developing an urban plan, a proposal to rebuild or beautify parts of the city is relying on the ideas and knowledge of a limited number of experts (urban planners). Regardless of the amount of knowledge and ideas what that they possess, still a limited number of input parameters affect the knowledge and creativity of the experts. As in the case with the writing of books, in this case too, the experts have acquired their creativity based on their talent and the (limited) number of sources (books, projects, lectures) that influenced their professional development.

Contrary to the processes in which we have limited number of sources is the Crowdsourcing. Crowdsourcing is the process of getting work, usually online, from a crowd of people. The word is a combination of the words 'crowd' and 'outsourcing'. The idea is to take work and outsource it to a crowd of workers. Famous example: Wikipedia.

In Wikipedia knowledge is shared from ALL to ALL. Anyone can share his/her knowledge (gained from the books and other verifiable sources) which can (if relevant) be available to all. The role of experts in Wikipedia is to refine knowledge. But the process of refining the knowledge is not controlled only by a few experts, but in the process of refining it is enabled participatory approach too. Those who are identified as experts can "discuss" whether knowledge shared by a user is adequate and relevant. On this way knowledge is shared (theoretically) from ALL to ALL.

In Wikipedia it is shared explicit knowledge. Explicit knowledge is what is documented or codifies and can be transferred easily to others. The processes, procedures, journals, manuals, drawings or any such artifacts come under Explicit knowledge.

But in urban development in order to capture the spirit of the specific area beside the explicit knowledge it is important to capture tacit knowledge of the citizens living in the area. This knowledge cannot be learned from the books; it is accumulated in the citizens living in the area on the basis of their everyday life experience. Tacit knowledge is what people carry in their minds and we find it difficult to access. There are times we are not ourselves aware of the knowledge we possess and also how valuable it can turn out to be if shared with others. The transfer of tacit knowledge mainly happens through personal contact and trust but this is considered to be very valuable. Many times, this is not shared, primarily because we are unable to communicate all we know.

We believe that the opportunity for everyone to be able to share your idea (obtained on the basis of learning from books, from experience or simply on intuition) is of great importance to the participatory approach to urban planning. Information technology enabled that in the field of urban planning sharing ideas from ALL to ALL can be achieved. Similarly to Wikipedia, the role of the experts – urban planners is to refine ideas from the citizens.

In addition, in the case of urban planning the word ALL means all residents (current and former) of a region, city or urban quarter. In the case of urban planning, the term ALL has not universal significance because it is hard to believe that a resident of Jakarta, Indonesia would be interested in the urban development of the city of Bitola in Macedonia. However, the sharing of ideas from everyone (from a particular area) to ALL (in that affected area) gives a new dimension of participatory urban planning.

III. VIRTUAL PLATFORM FOR CIVIL ACTIVISM IN URBAN PLANNING

On order to demonstrate good practice for citizen's involvement in urban planning we created web based software – fully operational and accessible through www and social media. It can be used by citizens to submit and share ideas for better urban living. They can criticize certain locations and projects. They may applaud good urban solutions and initiated projects. They may suggest solutions for improving their urban communities. Thus this tool will create environment for urban development crowdsourcing. It will be good example how should function existing governmental e-urbanizam.mk portal if we want real participatory urban planning.

The platform is accessible through web (www.urbandialog.net) and it integrated with Facebook <https://www.facebook.com/urbandialog.net/> (users can be registered, view proposals and comment through Facebook. It supports publishing: text, 2D images, videos and 3D models in .kml/.kmz format. The platform is organized in layers.

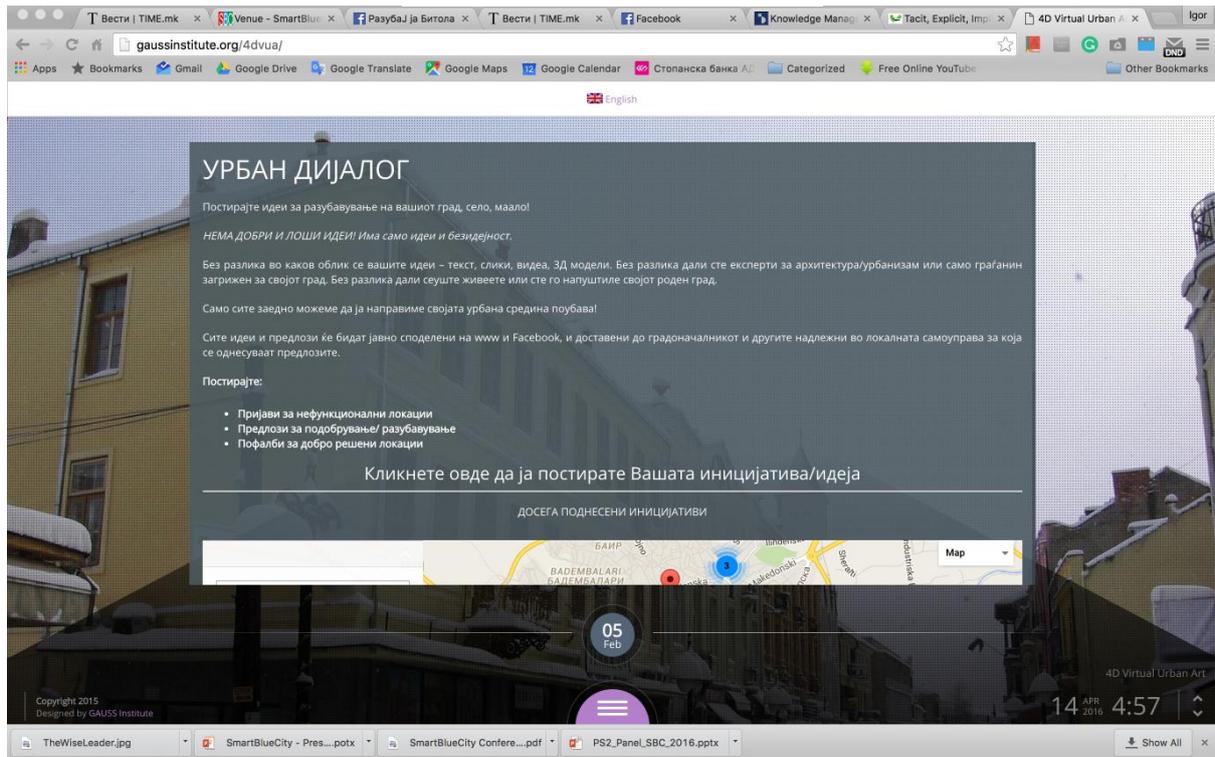


Figure 1. Screenshot of the platform for crowdsourcing in urban planning

The users of the platform can post their ideas in several layers based on their experience in the urban planning, experience from the living in the affected area etc.

When posting on the platform the users can declare themselves as:

- Expert for architecture/ urban planning.
- Citizen directly affected by location about which submits idea.
- Citizen who want to contribute to more beautiful city (not living in affected area).
- Visitor with positive attitude who wish to share his/hers ideas, experiences.

The users can post three types of posts

- Reports of non-functional locations, buildings, urban installations, objects etc.
- Suggestions for improvement / beautification.
- Praise for good practices: resolved locations, buildings, urban installations, objects etc.

Furthermore, the users can post their posts as

- 2D proposals: images and text, and video (optional)
- 3D proposals: kml/kmz format currently is supported

Every posts on the web platform is synchronized with the Facebook page and vice versa.

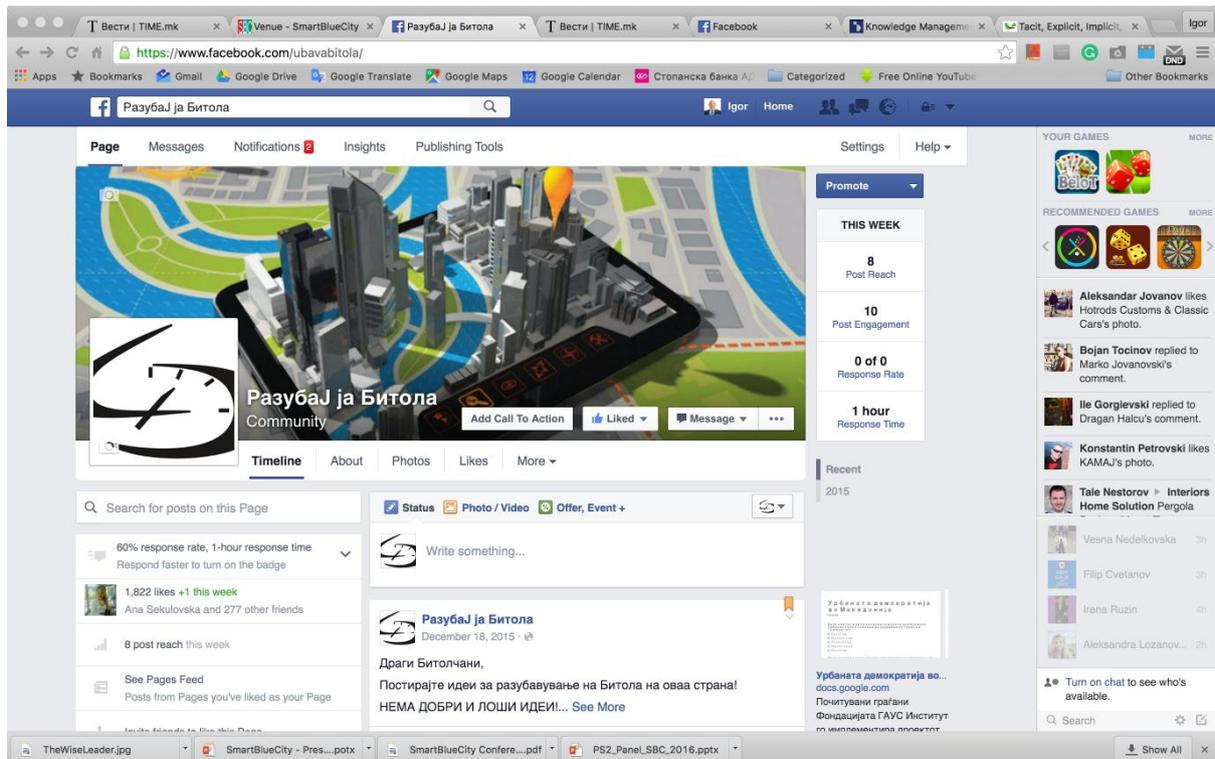


Figure 2. Screenshot from the Facebook page [ubavabitola.net](https://www.facebook.com/ubavabitola/)

Synchronization with the social media (Facebook) is very important for the success of the project, because our experience show that it is much easier to attract visitors to interfere through Facebook rather than to attract to visit specific web page.

The platform enables iterations in the process of urban art and planning.

Example 1:

1. Local Authorities have some idea(s) for reconstruction of the parts of the city – they publish the proposal(s) on the developed platform in the format easily understandable for the citizens.
2. Citizens and experts comment on the proposed solutions, but also modify them or even propose new ones.
3. IF (comments \geq positive) THEN GOTO 6
4. Authorities analyze responses from experts and citizens and propose improved solutions....
5. GOTO 2
6. END -> Implement proposal

Example 2:

1. Citizens start initiative for rehabilitation some dysfunctional area – they launch Facebook campaign and use web platform to share their ideas and make “pressure” on local authorities.
2. Local authorities analyze citizens initiative.
3. IF (initiative = feasible and legal) THEN CONTINUE
ELSE Explain why it is rejected.
4. Authorities create proposal about initiative.
5. Citizens and experts comment on the proposed expert solutions, but also modify them or even propose new ones.
6. IF (comments \geq positive) THEN GOTO 9
7. Authorities analyze responses from experts and citizens and propose improved solutions....
8. GOTO 4
9. END -> Implement

During this pilot operation the software (web platform) is implemented in the city of Bitola (~ 80.000 inhabitants) as a pilot region. Until now for period of 7 months in pilot operation we have 56 proposals (19 of experts) for reconstruction/ reshaping specific urban areas in Bitola. The proposals are simply as text/ images abut also in the form of 3D models. There are approximately 700 comments and discussions.

All received proposals and comments are shared with local authorities.



Figure 3. Proposal submitted for reshaping Bitola downtown by two recently graduated architects (Credits to Dejan Tomski and Mila Rorich)

IV. NEXT STEPS

Our intention is to extend virtual platform with an Augmented Reality app for smart devices. With the app the users can explore onsite their habitat and receive time related information on certain objects or areas. For example, the user can “travel in time”, and see historical data about the area of interest, which can be inspiration plus for the suggested future solution. Also users can explore future of area, what is permitted to be built in that area, or even how the area will look after implementing some urban art or construction project (by inserting virtual objects in video footage of the real space).

The AR app is developed on the basis of the following techniques:

- AR aligning and serving rich media content
- Data Filtering and Flow Optimization trough
- GPS Location Filtering
- User Orientation Filtering
- User Movement Prediction Filtering
- User Preference Filtering
- Non repetitive content optimization
- Content Storing
- Engagement trough interactive tools
- Active Viewer concept trough interactive Games and Quizzes



V. DISCUSSION AND CONCLUSION

We believe that through operation of this platform the authorities will recognize that their decisions for SMART urban development should be based on voices and ideas of the crowd (regardless how naïve or professional they can be). There are not bad and good ideas, only ideas and lack of ideas. We also believe that developed virtual platform enables hearing of the voices of the crowd. Success of this virtual platform accompanied with other measures could spark changes in legislation and practices toward participatory urban planning.

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