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Improving public participation in spatial planning with Web 2.0 tools

Public participation is a form of public cooperation or participation in the spatial-planning process that enables subjects or groups to express views, give initiatives, and actively take part in such proceedings. Because public participation is often limited to giving remarks on finished spatial plans, it is assumed that public participation could be improved with the help of information technology: namely, new web tools. One innovation is Web 2.0, a concept introduced in 2004. This introduced many tools into the world wide web that are useful in social networks and various web services as participatory services with a huge number of users. This article analyses opportunities for interaction between public participation and Web 2.0. It presents the demands of public participation and Web 2.0 and their opportunities for enabling participation in spatial planning. The article ascertains that Web 2.0 tools are very useful in including the public in spatial-planning processes but that much preparatory work and a good technical platform are necessary.

Key words: participation, public participation, e-participation, spatial planning, Web 2.0, social networks, web tools

1 Introduction

"We are trying to include the public in the spatial-planning process as much as possible. The public is the 'consumer' of our work because people will live in the cities we plan" (Pogačnik, 1999: 113). Andrej Pogačnik has ascertained that public participation is necessary for successful spatial planning. He also adds that public inclusion is often limited to commenting on spatial plans that are already finished, which often causes resentment against spatial solutions presented, uncritical rejection of new things and overall public disapproval. Spatial planning can also be understood as an expert technical process but should also be inevitably understood as a political activity. Spatial planning is about the interests of politics, capital and various stakeholders that are directing themselves towards enforcing their interests and the interests of local communities (Ploštajner, 2003). If spatial planning is viewed as political decision-making about the future of any community, then public participation must be treated as part of a democratic process. This creates differences among citizens, spatial planners and investors, and then local and state government as contracting authorities. Discrepancies mostly arise from public and government resentment of solutions presented by planners. Participation is not possible if either planners or those that commission the plans are unwilling to listen or accept opinions that are not necessarily made by experts. At the same time, the public is more likely to collaborate if participation is more focused on essential elements of planning that ensure better living quality and citizen satisfaction. A political connotation can be a factor that turns the general public away from participating in spatial planning. Citizens can group and organise themselves, but that is difficult in current practice. Spatial planners must clarify the problems that arise in the spatial-planning process, and they have to reconcile the different standpoints, thereby enabling the efficient preparation or execution of plans. Interaction between planners and the public is essential.

The first legally binding document of the European Union that manages public participation in environmental matters is the Aarhus Convention. It was signed in 1998 at the fourth secretarial conference by the regional convention of European Union members, their chambers of commerce and nations with consulting status in the United Nations Economic Commission for Europe. The Arhus Convention is the basis of the directive on public access to environmental information and the directive on providing public participation for drawing up certain plans and programmes relating to the environment (see European Commission, 2003a, 2003b).

Based on the convention and both directives, Slovenia passed acts that are in accordance with them. The most recent ones are the Spatial Planning Act (Sln. *Zakon o prostorskem načrtovanju,* Ur. l. RS, no. 33/2007 and amendments) and the Spatial Planning of Arrangements of National Significance Act (Sln. *Zakon o umeščanju prostorskih ureditev državnega pomena v prostor,* Ur. l. RS, no. 80/2010). Both acts define public participation in the spatial-planning process. They stipulate that the public must be informed about the proceedings and adoption of spatial plans, and that the public has the right to participate with comments, opinions or otherwise in accordance with the act. In the Spatial Planning Act (Ur. l. RS, no. 33/2007 and amendments) no role of the Ministry of the Environment and Spatial Planning is provided. It is an organ of sanctions and controls, and there is also no sign of its interest in the active cooperation of the general public. Planners inform the public about proceedings and phases of work, and allow citizens to participate, but only during public hearings and discussions, when plans have already been prepared. Various public groups are increasingly demanding to become part of the entire planning process and to have a say at the beginning, during the planning process and at the end, when choosing final solutions (Ogorelec, 1995).

It is assumed that more creative public participation could be ensured through the new tools created and emerging (daily) on the internet. If the public were informed about spatial-planning procedures, citizens could offer suggestions, ideas and knowledge about the community they live and work in via the internet in the early stages of planning. In many cases, this could facilitate work for planners and result in fewer negative responses from the public. The purpose of this article is to:

- Present public participation in general and public participation in spatial planning, and to determine what types of public-relations communication (sociologically) could be implemented;
- Define the opportunities for public participation using web tools and critically analyse their meaning and role in the active participation of the general public in the spatial-planning process.

In a methodological sense, this article is based on an analysis of notable research and discussion articles on the subject. Most literature on public participation is about participation in spatial planning, but very few discuss public participation through web tools and new web services. This article offers new insights to Slovenian society, supplemented with a SWOT analysis, suggestions and critical standpoints by the author. At the same time, it presents questions for further reflection and starting points for future research and applied work in this area.

2. Public participation

2.1 Definition

Participation, especially participation in spatial development, is a topic that has been professionally discussed for almost four decades. A pioneer in this field is Sherry Arnstein (1969: 216), who said that "[t]he idea of citizen participation is like eating spinach: no one is against it in principle because it is good for you". Understanding people and their understanding of the environment is picturesquely described by Nicholas Moore and Dave Davis (1997: 5) with an old Chinese saying: "Tell me, I forget. Show me, I remember. Involve me, I understand." By participating, people are those that can affect the outcome of the process. Participation augments the power of citizens and people in general by involving them in deliberation processes and it enables them to take an active role (Arnstein, 1969).

There can be many types of participation. Sherry Arnstein (1969) divided types into eight different models and those into sublevels, which are arranged in a ladder metaphor of citizen participation (Figure 1). As Figure 1 shows, the bottom rungs of the ladder are "manipulation" and "therapy", describing non-participation of the public, but enabling education and public therapy. In the middle are "degrees of tokenism", shown in "informing", "consultation" and "placation".

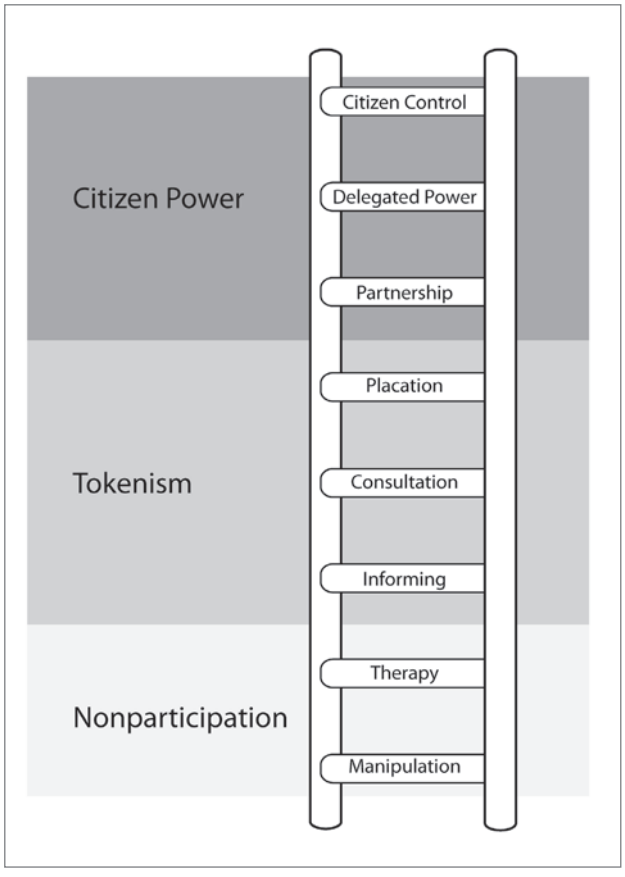

Figure 1: A ladder of participation by Sherry Arnstein (1969).

Seeming participation is expressed in accepting public voices but at the same time retaining power-holders' right not to take the public into account. The top rungs are "degrees of citizen partnership" (i.e., "partnership", "delegated power" and "citizen control"). Partnership enables opinion tradeoffs between the public and power-holders, but power delegation and public control enable full participation by influencing power-holders' decisions. Analyses of public participation according to this model have shown that power-holders often do not support full participation. Instead they provide more opportunities for active participation to specific population groups (the wealthy, the young, etc.; Carver et al., 2001). By doing so, the power of individual citizens is taken away, and the public, initiative groups and local associations are averted from the desired goal (Sieber, 2006). As Peter A. Kwaku Kyem (1998) ascertained, the public does not trust participatory systems with that level of participation (seeming participation). Because of this, eventually part of the public no longer wants to participate.

A somewhat different participatory scale was designed by Peter

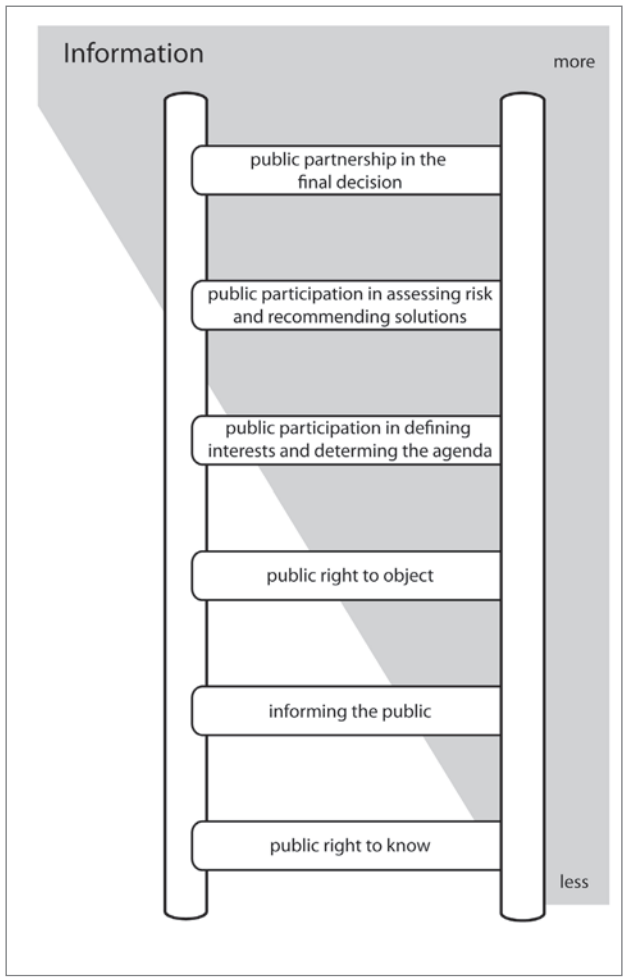

Figure 2: A ladder of participation by Peter Waidemann and Susanne Femers (1993).

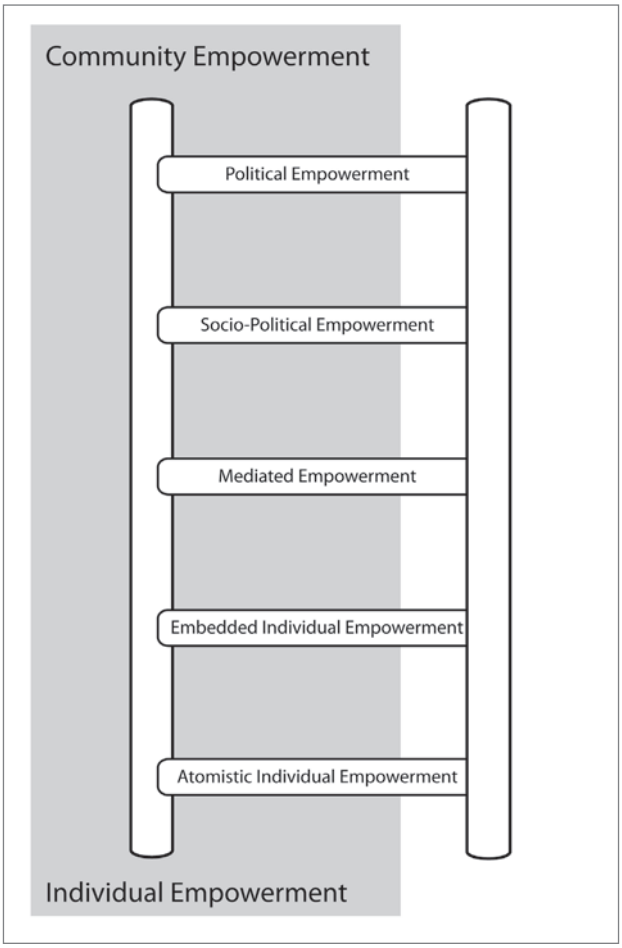

Figure 3: A ladder of participation by Elisabeth Roche (1997).

M. Waidemann and Susanne Femers (1993). Their ladder has six levels (Figure 2). The lowest level is the "public right to know", followed by "informing the public" and the "public right to object". Levels closer to participation are "public participation in defining interests and determining the agenda" and "public participation in assessing risk and recommending solutions". The final level and also the level that gives the public the greatest power is "public partnership in the final decision". Characteristic of this ladder is that levels of participation grow with growing levels of public access to information. The more information the public has, the greater is its role in participation and the power of decision-making gained.

The ladder of participation by Elisabeth Roche (1997) illustrates the power of an individual to affect the behaviour of another individual, to do something they would not otherwise do. The ladder has five levels and it grows from the power of individual to the power of the community. With each step, the power of the individual becomes greater and approaches the power of the community. This is in contrast with other ladders, which all take place in a community. At the bottom of the ladder, this disables an individual from achieving something as part of the community, and at the top it enables him.

All participatory models presented seek to enhance the power of individuals so that they can have influence on decisions regarding their life. From the spatial-planning point of view, the scale by Peter Waidemann and Susanne Femers is the most appropriate of the three (the other two are more appropriate for political participation; e.g., elections). In this scale, information and accessibility of information stand out, and in case of spatial planning the information about spatial development. Based on this, the public is able to make decisions for or against spatial proposals. If the public is acquainted with all information during the entire spatial-planning process, some ambiguities can be eliminated during the process itself that otherwise mostly arise at the final public hearing of plans. On the timetable of making plans in Slovenia (municipal master plans, municipal detailed spatial plans and national importance infrastructure master plans) public hearings and discussions on amended first drafts are one of the final stages of making plans. This is too late in the process because in this case the public can only make comments about the plan. The planner adopts or rejects these comments.

2.2 Forms of public participation

Public participation is divided into:

- Formal, declared by an act and binding for the authorities. Types of formal public participation are referendums, public initiatives, public assemblies and elections.
- Informal, not declared by an act and left to the public to decide how to implement it. Forms of informal public participation are consultations, vote raising, protests, signing petitions and making demands. Nongovernmental organisation initiatives, initiatives for meetings with representatives of local authorities and so on are also types of informal public participation.

Contributing to participation is the principle of openness, which means defining the transparency of public services, the ability to provide information about their work and also the right to access public documents. This principle also demands various forms of active cooperation and communication between administration and citizens. The principle of openness was declared by the European Commission in 2001 in its White Paper on European Governance (European Commission, 2001). In Slovenian legislation, this is enabled by the Access to Information of Public Character Act (Sln. *Zakon o dostopu do informacij javnega značaja,* Ur. l. RS, no. 24/2003). The public services are obliged to organise their web portals according to this act. According to the act, along with other media (newspapers, radio, television, etc.) web portals are one of the most important media for accessing information of a public character. By enabling access to information of a pub-

lic character, the demands of the principle of transparency of public services are met.

To carry out public participation in spatial planning, deliberation and consultation are useful, being informal participation partly defined by the Spatial Planning Act (Ur. l. RS, no. 33/2007 and amendments) in basic stipulations. There is a principle stating that citizens have a right to be asked for an opinion or to express an opinion about a certain project or act proposed by a local community or ministry. Spatial planners must also take a stand on public comments and initiatives given during public hearings of plans. Types of consultation are questionnaires, workshops, seminars, conferences, public presentations of opinions, open-house events and so on. Another form of informal public participation is taking part in decision-making and enabling citizens to take an active part in preparing spatial documents. In consultations, citizens give their opinions and initiatives and the local community must respond. It is not obliged to take them into consideration, but citizens are decision-makers from the beginning by helping to define a problem and find a solution to it (Lavtar, 2007). The public has its greatest opportunity to participate in the spatial-planning process in an informal type of participation because it is not binding. It is also not necessarily political and, because it is not accurately defined, the public is able to adjust it to its needs. However, it has to have support among spatial planners and those that commission the plans.

Public participation in a spatial-planning process and other spatial development processes is part of the democratic process. However, it depends on planners how much of this participation there will be (Carver et al., 2001). Drago Kos (2005) states that having participation in a process of city renovation means that the renovation will be legitimate if it allows the participation of all involved in the renovation process; that is, those planning the renovation and the public that the renovation is intended for. Exchanging views between planners, authorities and the public is not possible without the active role of the public. However, to achieve this different types of communication must be implemented (Zhong-Ren Peng, 2001). Communication can be one-way or two-way. Initiators of one-way communication are spatial planners; the public is an object to study and a source of information. In two-way communication, the public can collaborate and be part of decision-making. Types of two-way communication are: public opinion surveys, workshops organised by spatial planners, suggestions given by the public and so on (Ogorelec, 1995; Wates, 1996). Because public participation in Slovenia is currently limited to public hearings and discussions announced in the official gazette, on the community bulletin board and on web pages, this means that not all stakeholders are aware of the event. Public participation with web tools would give the public the power to intervene more creatively in spatial-planning processes and influence them because spatial planning is also about mutually shaping a quality living and working environment.

3 Public participation with the help of web tools

Development of information technology with new web tools offers the public the opportunity to participate more easily in the planning processes. At the same time, planners have easier access to information about citizens' living and working environment. Franc Trček and Blaž Lenarčič (2003) have established that using the internet contributes to better spatial planning and better communication between all parties involved in the spatial-planning process: planners, representatives of local authorities, specialised public services and stakeholders. By involving the public, spatial planning would achieve greater social incorporation because the public can already be involved in early stages of preparing spatial acts in a community.

By combining public participation and web tools, it is possible to speak of electronic participation (or e-participation), which has many definitions. According to Ann Macintosh and Angus Whyte (2006), e-participation is a connection between elected representatives of authority and various public groups through information-technology tools. It is more about giving initiatives and suggestions "bottom-up"; that is, from the public toward elected representatives of authority, and not vice-versa. Simon Delakorda (2003: 92) explains e-public participation as "a computer application (websites and web portals) for methodically standardised, public, expert and political participation of citizens in policy making, adopting programmes and plans about matters of public interest". Lasse Berntzen et al. (2005) believe that e-participation is a group of tools for easier communication between the public and representatives of authority. They consider geographic information systems to be such tools as well. To sum up, e-participation is a commonly accepted term that incorporates participation in various phases of the democratic political process, supported by information technology tools.

Andrej A. Lukšič (2003) cites instruments that can be used in e-participation (according to information flow):

- *Allocution*
  Instruments of allocution may be: an election campaign through the computer, an information campaign through the computer, information centres and public services.
- *Consultation*
  Consultation uses widely accessible public and more developed informational systems (such as the internet).
- *Registration*

Registration is supported by the registry system of government services and public services, computer-aided citizen polls, e-referendums, e-elections and e-selections.

- *Conversation*
  Conversation has a supporting system for group decision-making, a list of bulletin boards, e-mail, videoconferences and e-municipal portals (discussion forums).

As previously mentioned, these instruments are limited to usage in a political system and cannot be directly applied to spatial-planning participation. Instruments of e-participation have yet to be determined, but Ian Turton and James Macgill (2005) offer some help. They identified two types of participation in spatial planning: synchronous and asynchronous. In synchronous participation, all participants simultaneously interactively cooperate via electronic media and use the same plans available on a given server. In asynchronous participation, participants are not simultaneously present online and their responses are saved for later reviewing or evaluation and responding.

The two main problems of e-participation are the public's poor technical equipment and lack of advanced technology tools. The public is mostly not organised well enough and has no human or material resources to develop an elaborate technical platform (web pages containing web services). The public is therefore put in a subordinate position because easier e-participation is enabled only in collaboration with non-governmental organisations. These can be better organised and generally have the people and means needed to establish technical platforms needed for participation. The lack of efficient and advanced technical tools to analyse and present data accumulated by e-participation is a challenge to current e-participation research. In most cases, the data provided by e-participation are unstructured, there is too much information, much of it is useless and a lot of time and means are lost arranging it. There is an increasing need for research on intelligent tools for e-participation and the application of these tools in other communication devices such as smart mobile appliances. With new social networks, a new dimension of e-participation emerged: e-participation of various interest groups and the public on the one hand and the authorities that had used e-participation before on the other (Macintosh et al., 2009).

4 Public participation in Web 2.0

4.1 Concept of Web 2.0

Internet users and providers of information each have their roles. Providers publish information on the world wide web, and users use this information. This is one-way communication, going from the provider to the user. In past years, this communication has changed. With opportunities such as forums, newsgroups and chat rooms, providers have empowered web users and communication has started to go both ways (Best, 2006). There is much information on various websites and portals now. It is impossible to determine exactly how much and the status is changing daily. The number of web pages and, with them, information has more than doubled in the past five years.[1] The reason is Web 2.0.

Web 2.0 was first introduced in 2004 by Tim O'Reilly and Dale Dougherty, representatives of O'Reilly Media Publishing, as a concept capturing the emergence of new web pages after the "dot-com" collapse at the end of the 1990s. This ruined many companies dealing in web services. Companies that enabled users to create their web own pages and use them survived (Maness, 2006; Anderson, 2007). However, according to Tim Berners-Lee, Web 2.0 is no different than Web 1.0, which in principle put forward the connection between users (see Internet 2). Web 2.0 was a logical continuation of web development with new capabilities enabled by advanced software and hardware equipment. In addition to reading, Web 2.0 also enables writing, which is basic for user participation and the development of social networks. Amy Shuen (2008) is of the same opinion, saying that Web 2.0 is not about technology, but about web tools that enable people to work together and to build and share their information, experiences, photos and so on. In addition, according to Alexandru Bryanu (2006), Web 2.0 is not a new discovery, but is labelled as a mixture of similar technologies that are useful on the internet. Among them, the "social" software application stands out as one of the main components. The term "social" refers to software that enables users and web developers or providers to make web pages more accessible to a wider range of users. Paul Anderson (2007) has a similar opinion; he states that concepts such as "cooperation", "contribution" and "community" are present on the internet daily and are part of the social network that is emerging "before the very eyes" of web users. This kind of network needs technologies that transform these concepts into web services and applications used on the web.

The use of these specific technologies has helped users exchange and share information not only from personal computers, but through mobile appliances such as smart phones and pads. By doing so, a user is collaborating with other web users and thus participating (Blankenbach and Schaffert, 2010). Social network pages are web pages that make it possible to create a public or semi-public profile with web services. This profile allows users to put photos, videos, text and other data on their site. Users can make a list of other users they share these data with (Boyd and Ellison, 2008). Web 2.0 is therefore a concept with no precise boundaries, more of a gravitational area that combines websites that use a similar group of principles and practices (O'Reily, 2005). According to David Best (2006), principles and practices of user participation are affluent user

experience, dynamic web page contents, metadata and scalability. Scalability is shown in the adaptability of the computer system and network to user demands. The users of Web 2.0 are all the people using the internet. However, within Web 2.0 they have the opportunity for active collaboration in creating content and not only accessing it. Thus Web 2.0 services allow a user to achieve a sense of belonging and recognition (Högg et al., 2006).

4.2 Technologies, tools and Web 2.0 services

As ascertained, one of most important innovations deriving from the concept of Web 2.0 is that users are adding data to the web and thus helping design web pages. In this process, the owners of pages retrieve information about users, their knowledge and expertise that could be used in various purposes. Users can therefore participate. Participation is enabled by web services and web applications. The basis for creating services and applications is a group of technologies named AJAX (from *asynchronous javascript* and XML; Anderson, 2007). Software written in this computer language enables creators of web pages to create pages faster. Web pages that do not use this technology are reloaded entirely on a computer each time the page is changed. On the other hand, web pages that are created with AJAX technology allow only changed information to be transferred between the server and host, which substantially speeds up page refreshing and eliminates host time-out (Högg et al., 2006). Software made with AJAX technology has enabled applications to be more user friendly and simple. Thus a wider range of users can use them and, with no additional computer knowledge, can add or change the contents of web pages (Kolbitsch and Maurer, 2006). Web pages can be improved by using such services and applications. An example is the BitTorrent service, which is even more useful if more people use it (O'Reilly, 2005).

New technology has allowed the development of new tools and services that are now widely used on web pages. Among basic services that have emerged with Web 2.0 are blogs or weblogs, wiki pages, podcasts and videoblogs, RSS protocol (Really Simple Syndication), the beginning of tagging (tags), social bookmarks, social networks and the web library (Alexsander, 2006; Kolbitsch and Maurer, 2006; Anderson, 2007).

- A blog or weblog is a diary on the internet. Compared to a personal diary, a blog is visible to any user of the web page the blog is on. It is based on a subjective presentation of contents and expresses the personal opinion of an author. It allows reader comments that the author responds to. Thus publishing blogs and commenting enables communication or expression of opinions between the author and writers of comments, and immediate commenting in a newspaper timeframe that can be hourly, daily or weekly (Benkler, 2006). An author of a blog can label published material with one tag or more. This enables a faster search through similar tags, and the blog address is copied into an application that collects such addresses and allows searching (Anderson, 2007). A blog could be used to present an official stance; for example, if an author presents a planned spatial development and tests the public response to it.
- Wiki is a web page that allows users to add content prepared by another user. The American programmer Ward Cunningham invented the wikiconcept. The word *wiki* comes from Hawaiian *wikiwiki*, meaning 'very fast', which expresses the concept of wiki pages; that is, fast and simple editing of web content through collaboration of users. Wikipages are best represented by Wikipedia (Ebersbach and Glaser, 2004), based on collaboration, which means that a user inserts a text, another one edits it, yet another one makes additions to it and so on. For the first user to see the changes, wikipages offer a history review and a function to reset to a previous state. With this numerous questions emerge: the author of the original text may not agree with further corrections and what happens to intellectual property (Lamb, 2004), and, not least of all, there is the question of the openness of wikipages. Wikipages could be useful for clarifying certain terminology in urban planning and for explaining processes.
- Podcasting is a form of audio diary, usually for recording lectures, interviews, radio shows, and so on. The file format is MP3 and can be played on all players supporting this format. Videoblogs are recordings of a similar kind only for videos. Sound podcasts and videopodcasts are very appropriate for presenting educational themes (Rogers, 2005; Anderson, 2007).
- RSS protocol is intended to disseminate data from web pages to users. This means that a user of RSS protocol does not have to search over and over again through web pages, and an RSS reader is installed on the computer. The user is then subscribed to the web page he wishes to receive information from (Anderson, 2007). The advantages of RSS protocol are that it automatically expands content and thus allows users to concentrate on reading and not waste their time visiting other web pages and searching for new content. It is also useful for reporting on events and procedures.
- Tags are keywords attached to a piece of information; for instance, to a photo, video, file or so on. They contribute to a better description of information and an easier search through the web. Any user can pin tags to information and create his own list of tags or share them with other users (Högg et al., 2006; Maness, 2006; Anderson, 2007). Tags are also useful for checking on public opinion. For

example, a solution to a spatial development problem could be published on the web and so users are able to express their opinion by pinning tags (such as "like", "don't like" and so on).

- Bookmarks allow users to save a link to a certain web page in a web browser. Social bookmarks are similar, but are saved on web pages that allow saving bookmarks (Högg et al., 2006; Maness, 2006). Users can pin tags to bookmarks and share them with other users.
- An online geographic information system (GIS) is a group of tools that enable presentation of spatial plans together with various specific maps (satellite images, three-dimensional objects, etc.). With Web 2.0 tools, GISs have made it possible for users to collaborate by drawing and adding spatial data to maps prepared in advance.

4.3 Analysis of public participation in spatial planning in Web 2.0

So far, e-participation has mostly been dedicated to solving political questions or has mostly enabled public participation

Table 1: Analysis of potential public participation in spatial planning with Web 2.0 tools, according to the SWOT method.

Advantages
• The main advantage of e-participation with Web 2.0 services and tools is that it enables users to collaborate in changing web page content and thus participate;
• By collaborating, users augment the quantity of useful information that could be used for further analyses and suggestions;
• In their participation users can be anonymous and operate from a distance (from home, work, etc.);
• Web 2.0 tools make it possible to collect various types of data; from sound tracks, video tracks, and three-dimensional objects to graphic and textual cartographic material;
• By using tools, users can express their personal views and collaborate in live-stream discussions with multiple users;
• To see information about certain currently discussed plans or other spatial projects, assessment is enabled through one entry point that is permanently accessible (e.g., from one web portal);
• Web 2.0 tools make it possible for a web page to inform users about changes (if new initiatives are added in various phases of preparation, etc.);
• With web tools, civil initiatives can organise social networks intended for spatial problem-solving and more easily pass on their suggestions and comments.
Weaknesses
• Users need certain knowledge about web tools and services in order to use Web 2.0 tools;
• Not all tools are suitable for all users due to their complexity;
• Wide accessibility to users and anonymity can lead to tool abuse;
• To set up a web portal based on Web 2.0 tools, a specific technical infrastructure is needed that users do not always have;
• Because tools make it possible to keep track of expert solutions through the planning process, these are more in the open (which could be an advantage).
Opportunities
• The usefulness of e-participation and Web 2.0 tools is increasing by augmenting access to the internet;
• Opportunities for software developers to make new Web 2.0 tools to support e-participation;
• The more users, the better e-participation because users are the ones to offer suggestions and form additional opinions, and planners can acquire additional information;
• The usefulness of e-participation is increasing with better technical expertise of users;
• Easier and less costly passing of materials among users (public, spatial planners, investors, municipalities, the state);
• Positive experience with well-performed e-participation (considering ideas and suggestions from the public) leads to greater public response and trust in the system of e-participation and its future realisation;
• Possible investments in additional information infrastructure (e.g., a fibre-optic network reaching every home) that enables e-participation for a larger number of people.
Threats
• Obstruction of e-participatory processes by decision-makers and investors, and also by the public;
• Possible abuses of personal data protection acts (violation of anonymity);
• Public distrust in a positive effect of e-participation due to ignorance, fear and social status;
• The possibility of unsuccessful e-participation due to an unrepresentative sample of users;
• Web pages are often targeted by online criminals. This can affect e-participation;
• Possible presentation of incomplete information from earlier stages of the planning process, which can be misleading for the public.

in the political decision-making process. Regarding the previously presented characteristics of Web 2.0, it can be assumed that these services could be useful for participation in spatial planning by carefully choosing them. This was confirmed with the analysis of public participation in Web 2.0 according to the SWOT method (Table 1).

4.4 Analysis findings

To summarise the public participation advantages in Web 2.0 and apply them in spatial planning, e-participation would allow the public to more actively collaborate in spatial document formation and thus in jointly creating the environment in which citizens live, work and spend their free time. With the help of Web 2.0 tools, planners and those that commission plans (communities, municipalities and the state) could facilitate public access to information in earlier stages of spatial planning. The preparation of spatial documents has its established rules, and by making the process transparent it would be possible to determine ways of monitoring the course of work. For this purpose, a range of web tools to show sound and video contents and cartography, to pass along knowledge and educational content, to facilitate discussions about the content of spatial documents (blogs, forums) and so on would have to be prepared. Through the sensible launch of information during project preparation, the public could follow the work and respond early enough and properly. Unnecessary delays due to a large number of public remarks could therefore be avoided. Spatial planners could follow the needs and requests of people and their reasoning. The tools of Web 2.0 are therefore making it possible for the final result of spatial planning to be a compromise, a solution to benefit all.

It has been ascertained that Web 2.0 tools allow efficient e-participation. This can be shown as a contribution of ideas and initiatives about spatial interventions. However, it can also be shown as a weakness, as a critical evaluation of a solution by the professional community that is invited to e-participate and has no official role. The public can also take part with its knowledge about the environment it lives in because it can offer local knowledge about flooding, special geological features and so on. The internet as a basis for e-participation allows participation from home or work computers or anywhere else; for instance, from a retirement home. The accessibility of an e-participatory web page from any computer or other mobile appliance (smart phone, pad computer, notebook) is also an advantage because the page is accessible 24 hours a day during the process of preparing the spatial plan and not only on days of formal public hearings of plans. Users can be anonymous or give their real names. Anonymity is an advantage to a certain point because it allows users that do not want to be exposed to participate all the same, and in this way helps them find a way to a better solution. However, Macintosh et al. (2009) warn about the small number of participants in discussion groups (forums) and the low level of discussion that take place there.

Use of Web 2.0 could work out to be more user friendly in the spatial-planning process than traditional public participation is during public hearings. More people would participate through the web, and the group of the active population would be larger so that spatial planners could obtain a better perspective on citizens' views or wishes. Comments could be more grounded, better considered and not as impulsive as they can be during public discussions and hearings. By receiving more public opinions and more constructive comments, the authorities commissioning a plan would obtain more information and comments could be expanded in time because participation would not be limited to the time of the public hearing, but perhaps to the entire timeframe of the plan's preparation. Communities as investors could demonstrate their share by modernising telecommunication infrastructure or by establishing an optical network where this has not yet been done. Through this, e-participation would be enabled for the public that has not had this opportunity before. Jennifer Evans-Cowley and Justin Hollander (2010) have established that certain tools cannot be used if the infrastructure is not fast enough. Upgrading to high-speed internet would enable the use of advanced Web 2.0 tools such as GIS. Web tools offer the opportunity to educate the public about web services and technical terminology used in the spatial-planning process. The more users know about spatial issues and about web services and technical terms, the more easily they participate. However, Koekoek Arjen et al. (2009) warn that systems of e-participation that are too complex and demand too much personal information from users do not stimulate participation, but deter users from it. This can be an opportunity for web pages and tool developers to create new tools and prepare new web pages that are user-friendlier and adapted to e-participation in spatial planning. Thus there are many opportunities – but more or less they all depend on the positive experience that planners, investors, communities, the state and the public receive after finishing e-participation. This could be a master plan that is adopted and along with it opportunities for community development. For planners, this could be a well-executed spatial plan and opportunities for new projects, for investors a possibility to invest and enrich capital, and for the public the recognition that the ideas suggested and proposals have had some effect and have contributed to a better environment to live in.

As is evident from the SWOT analysis, spatial planners and those commissioning plans (local communities, communities and municipalities, and the state) are under a certain amount of pressure because of "public insight" into their work. The

spatial planning process without e-participation takes place far from the eyes of the public in planning offices. Planning work bears in mind guidelines from various environmental expertise holders, citizen initiatives and wishes from contracting authorities and investors. Usually it is possible to harmonize the interests of contracting authorities, spatial planners and experts. The consumers of the plan (i.e., the public) mostly do not see these complicated routes and often do not know or understand why certain solutions are not accepted. This is because they are only acquainted with the plan seen at public hearings. In e-participation the entire preparatory process for the plan must take place on web pages equipped with Web 2.0 tools. In this case, these tools take the role of the project reporter (e.g., RSS publishers) and the collector of certain information (web surveys) that planners can use in their work. The public is able to obtain insight into the work at all times and is able to comment. Comments can help spatial planners and contracting authorities in the spatial-planning process.

A danger of public participation in Web 2.0 tools is that a certain part of the public becomes involved only to draw attention to themselves, which foils the normal working process. Among these are citizens that oppose planners' ideas because of the NIMBY (Not In My Back Yard) syndrome, who are ready to do anything so that certain spatial developments are not carried out on their land or on neighbouring land. It is also true that such citizens also come to public hearings and discussions, but the proportion of them could be greater in e-participation. First of all, this is because e-participation is accessible to a larger number of people that can remain anonymous and, second, the structure of the participants is very different from the structure of the public present at public hearings of plans. In public hearings, negative responses mainly come from landowners directly or indirectly affected by the plan that could be faced with losses, but in e-participation negative responses also come from the younger population that are not landowners yet, and opposition represents a "sport" of some kind to them and not a constructive contribution to a common cause.

Spatial planning often handles information that is confidential according to the Personal Data Protection Act of the Republic of Slovenia (Sln. *Zakon o varovanju osebnih podatkov,* Ur. l. RS, no. 86/2004); landownership data and building ownership are such examples. It is therefore one of the dangers of e-participation to publish such data on the web. Therefore both the contracting authority and the planner have to be very careful about this because they can encounter trouble because of it, as numerous authors have warned (e.g. Hoffman, 2003; Sieber, 2006). Among the dangers of public participation in Web 2.0 are also problems of maintaining technical and hardware platforms for e-participation. This can be fairly complicated and needs a constant systems operator to verify its functionality and fix problems that arise. In an analysis of 590 American towns with more than 50,000 inhabitants it was established that this can present an obstacle in establishing e-participation (Conroy and Evans-Cowley, 2006). According to the Spatial Planning Act (Ur. l. RS, no. 33/2007 and amendments), a technical platform has to be provided by the one commissioning the plan, which raises the question of impartiality if the platform is to enable all aspects of public participation or just those closer to the contracting authorities.

A certain proportion of the public will never use e-participation. There are several reasons: not all people have computers or know how to use them, or have access to the internet. Even if access to the internet were provided in community centres, not all people would take advantage of it. Moreover, some citizens, particularly the elderly, have never used a computer or the internet and probably never will. Other authors have similar thoughts; for example, Jo Saglie and Signy Irene Vabo (2009) for Norway. Rebecca Moody (2007) has established that if users do not have and do not know how to use computers, or the authorities cannot use e-participation for solving problems, then e-participation does not achieve its goal. Society is growing increasingly informational and the proportion of citizens with no access to the internet is becoming smaller each year. These people therefore represent a minority of the public that is willing to participate. Public trust in changes that can be achieved through e-participation is very important for the further success of e-participation. By all means, the public must be allowed to track how the initiative is implemented in the spatial-planning process. Otherwise the public can feel cheated, as Koekoek Arjen et al. (2009) call attention to. This means that the success of e-participation is mainly in hands of authorities, spatial planners and investors. This is also the main problem because they prefer to see matters solved without public interference. The opinion of Lee Komito (2007) is similar when speaking about systems that can make local e-participation better, but only if contracting authorities support it.

4.5 Proposals for Web 2.0 tools use in spatial planning

- For e-participation in spatial planning, an informal form of public participation is appropriate. As Andrej A. Lukšič (2003) says, conversation and linked instruments (e.g., forums, e-mail, RSS, videoconferencing, e-surveys, etc.) could be used for this purpose.
- An advantage that is offered by Web 2.0 (e.g., RSS) is certainly providing information about changes on the website where a certain spatial plan is presented. A user that does not wish to go through pages every day can receive news about certain new events and visit the page

only if he thinks the information is important, and then respond to it.
- Certain Web 2.0 tools allow the organisation of a social network, and civil initiatives can profit from this. Social networks enable the spread of ideas and organising like-minded internet users that gain more power and influence in this way to change a spatial plan or implement interests.
- Web 2.0 tools enable the creation of educational content that can be presented to e-participatory page visitors. The public can be educated about a spatial-planning process or expert terminology that they are not familiar with.
- When a certain number of abusive participants become involved (with offensive comments, hostile speech, etc.), this can affect the course of e-participation. Spatial planners must have certain leverages or tools from Web 2.0 and use them to enable participation by the part of the public that is prepared to collaborate creatively and not destructively.
- The influence of online criminals or hackers may also be significant; this can stop web servers that run e-participation pages and disable participation. Of course, this can be alleviated with some security mechanisms used by web-page providers.
- In most cases, spatial planning uses large quantities of information of a cartographic nature (various thematic maps; e.g., maps of allotments, various protective regimes, etc.) that are technically challenging to present. In these cases, GIS tools are very appropriate to use because they make it possible to input new data and change existing data. GIS tools are ideal for spatial planners (for creating spatial plans) and for users of web pages (for reviewing plans).
- A technical platform to establish e-participation is very expensive and complex. Because the public usually has no means of its own to establish an independent technical platform, the solution could be independent organisations leasing or lending such systems and sustaining them.

5 Conclusion

Based on the SWOT analysis and studying numerous sources, it is anticipated that the advantages and opportunities outweigh the weaknesses. It is important for e-participation to be implemented correctly. The most important contribution of Web 2.0 tools is that the public can participate in all phases of spatial planning. They can be familiar with all information that is the basis of preparing the plan through the internet. The procedure for preparing plans becomes transparent and clearer to the public. The public is also able to understand problems that authorities and planners have to deal with. On the one hand, they understand citizens' wishes and, on the other hand, they cannot always consent to them. However, one must be aware that execution of e-participation is not simple to carry out. It demands a good technical platform and support, much preparation by the planners and also some quality expert publicity to include as many people in e-participation as possible. Further research should focus on executing a range of Web 2.0 tools that can be applied to e-participation in spatial planning. These tools are blogs, wikipages, GIS tools, various educational content in videocasts and so on. New tools should be suggested to facilitate successful e-participation in spatial planning. Various technical platforms (web servers, software, Web 2.0 tools and so on) should be investigated and solutions found for cheaper accessibility, user-friendliness and easier maintenance and independence of platform providers.

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Notes

[1] According to estimates made public by the internet provider *Yahoo* in 2005, there were more than 19.2 billion web pages worldwide. In the same year, the web provider *Netcraft* stated that there were 72 million active web domains. This means that an average of 263 web pages belong to a domain. Data on the latest statistics of active web pages that have their own domain show that in October 2011 there were more than 504 million of them, 170 million of these active (see Internet 1). If then each active web domain has at least 263 pages, it means that currently there are 45.5 billion web pages in the world. This is an estimate because it is impossible to encompass all websites.

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