

PROMOTING THE IMPORTANCE OF SPATIAL DATA AND RECOMMENDATIONS FOR NSDI IMPROVEMENT

Vesna Poslončec-Petrić, Vlado Cetl¹ and Željko Hećimović²

ABSTRACT

Improvement of NSDI greatly depends on promoting the importance of spatial data in society. One of the key factors in this promotion is education of NSDI subjects, the whole GI market and community in general. Although previously there has been some research on NSDI awareness, the WG for Capacity Building conducted new research with the main goal of analysing the existing situation of exchange of spatial data in Croatia. The intention was to get an insight into availability of spatial data and the mechanisms of their access, as well as into the legal framework and internal rulebooks that define exchange of data. Results of the research show that:

- the national services of spatial data are not functioning,
- the knowledge about existence, usage and possibility of data exchange is very limited, the procedure of obtaining data is not clear, and the problem of not being informed of the existence of individual data should be particularly emphasized.

In general, the subjects of NSDI are not well informed about the existence of NSDI and its possibilities. Promotion of the importance of spatial data should be directed mostly towards users and institutions that run individual registers. Raising NSDI awareness should be directed at the entire user community. Besides, it is extremely necessary to work on creating NSDI capacities for the training of user community to accept the NSDI concept.

Key words: *NSDI, Croatia, data exchange, capacity building.*

1. Introduction

Immediately after coming into this world we start to develop our perception of space and time that surround us. Space intelligence is a kind of intelligence developed in humans as a capacity for space memory and visualization of space, and understanding of space relations. Often we are not aware that we are solving space problems and using space understanding as a capacity to orient ourselves in the immediate surroundings every day. However, if we didn't have the capacity for space understanding, we would be lost in space (URL¹).

To pass from a subjective understanding of space to a collective one, and for economy and industry to be able to develop more efficiently, a standardization of spatial data, services, processes and other relations linked to spatial data is done, as one of the important development directions. With mass applications of portable displays of spatial data and global navigation systems, space literacy became a necessity in everyday life. INSPIRE and NSDI are initiatives that want to raise the use of spatial data to a higher level and enable a more efficient management and protection of environment, and enable a faster economic development.

Everyday needs for spatial data and their more efficient use led to the development of spatial data infrastructures, the aim of which is to enable a simple and transparent flow of spatial data and services, from producers to users. This development runs hierarchically, from local to global spatial data infrastructures. One of the very important initiatives at the European level, which is of special importance for Croatia on its way to a full EU membership, is the INSPIRE Directive which stipulates setting-up of a European spatial data infrastructure. It instructs all the EU member states to set up national spatial data infrastructures and to enable access to spatial data to all EU citizens.

2. National Spatial Data Infrastructure (NSDI) in Croatia

NSDI is a set of measures, norms, specifications and services, which are to enable efficient collection, storage, exchange and usage of georeferenced spatial data. The NSDI concept in Croatia is regulated

¹ Faculty of Geodesy, Zagreb, Croatia, vposlonc@geof.hr, vcetl@geof.hr

² State Geodetic Administration, Zagreb, Croatia, zeljko.hecimovic@dgu.hr

at national level by the *Law on State Survey and Real Estate Cadastre* (OG 16/07), which contains a section on National spatial data infrastructure; and at regional level by the EU INSPIRE directive which will, once Croatia enters the EU, become a binding legal framework. These two documents represent a turning point in the approach to spatial data and define a framework for collecting, processing, distribution and usage of spatial data in the future (URL ²).

The purpose of setting up NSDI is rationalization of spatial data collection and their standardization, as to be able to network them and use them accurately. Linking different types of spatial data and their interoperability will enable users to make complex searches and analyses, and link them to space. This will generate a condition for modern and efficient management of space and space resources, which directly stimulates and increases the economic growth.

It should be emphasized that at the time the Law was being developed, the INSPIRE directive was in its final phase so it was used in the development. As a result there is a high compatibility between the Law and the INSPIRE directive (Cetl et al. 2009c). The NSDI part of the Law is harmonized with INSPIRE, the main idea being accepted but only basic principles defined. A new Law on NSDI which will fully transpose the INSPIRE Directive is in a preparation phase.

The Law defines institutional framework for NSDI establishment. A three-level organisation was proposed (Figure 1). The highest SDI governing body is SDI Council appointed by the Croatian Government. It is a body at the highest, political level. At managerial level there is SDI Committee appointed by the Council and consisting of three representatives from the Council, two from the SGA and the heads of working groups. At operational level there are working groups (WG).

So far five working groups have been established:

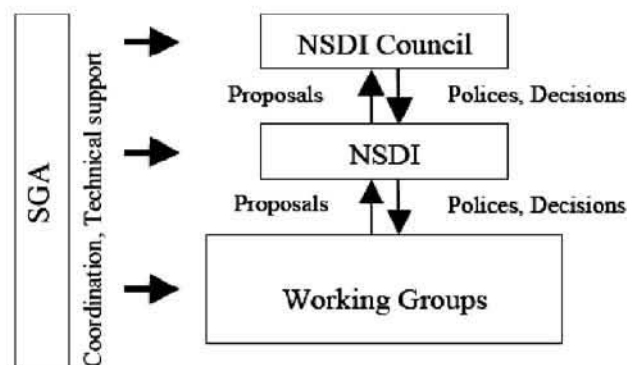


Figure 1: Institutional framework

- WG Technical Standards
- WG Data Sharing
- WG E-Government
- WG Capacity Building
- WG Business Models.

The SGA, in fact the NSDI Sector within SGA's Central office, acts as a Secretariat of the SDI Council, coordinates all SDI bodies and provides technical support. In 2010 the SGA was appointed the national INSPIRE Point of Contact (URL³).

3. Analysis of the existing state

So far there has been some research related to the creation and use of spatial data in Croatia (Bačić and Šainović, 2006; Cetl et al. 2009a; Cetl et al. 2009b) which showed a great need for arranging spatial registries and setting up a spatial data infrastructure, both from spatial data producers and users. The most recent research at national level was done in 2010 with the aim of analyzing the existing state of spatial data exchange, getting an insight into availability and mechanisms of access to spatial data by

other subjects, and into the legal regulations which define spatial data exchange in the Republic of Croatia (Poslončec-Petrić, 2010). For that purpose a poll questionnaire was made, of combined type, with 27 questions divided into 6 thematic sections. Questions related to the NSDI concept in Croatia and to interest of the NSDI subjects for spatial data exchange made a special thematic section, which is described in this paper below.

The research encompassed a wide range of spatial data users, so that it included members of the Croatian Cartographic Society, Croatian Geodetic Society, members of the NSDI working groups, some members of the Chamber of authorised geodesy engineers, employees of some faculties and institutes, of State administration for protection and rescue, Croatian mountain rescue service, and others who professionally use spatial data. Out of 390 addressed subjects one third gave answers, which enabled processing of data into four basic user groups with a representative number of subjects, and the analysis of data collected in this poll is a first research of such encompassing scale in Croatia.

3.1. Accepting the NSDI concept

Success of NSDI implementation depends on the readiness of user community to accept the NSDI concept. The carried-out research shows that the biggest number of respondents is familiar with the NSDI concept (Figure 2). This applies especially to the state and local administration, while among other respondents a certain number of negative answers is noted.

The NSDI concept is acceptable for all institutions from which the respondents come. The answers in Figure 3 show that.

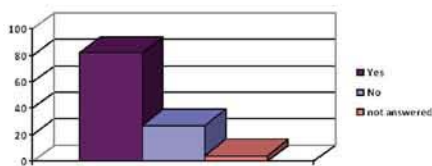


Figure 2: Are you familiar with the NSDI concept?

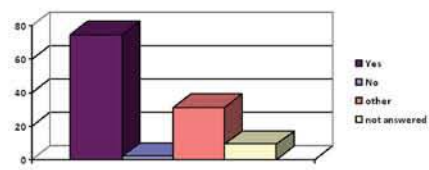


Figure 3: Is the NSDI concept acceptable?

The biggest number of respondents thinks that NSDI is acceptable for their institution, being a “*Conditio sine qua non*” for the future work and spatial data keeping in the Republic of Croatia. A significant number of respondents warn that all rights and obligations of the subjects, ie. data owners, are still not clear, while the number of negative answers is negligible.

To the question: Do you consider yourself an NSDI subject?, the number of positive and inconclusive answers is about the same (Figure 4). The reason for this division of answers is mostly unsettled rights and obligations of NSDI subjects. A more detailed analysis shows that employees of the state and local administration almost unanimously agree that they are NSDI subjects, while employees of other observed groups (faculties, institutes, private and public sector) mostly see themselves as potential NSDI subjects.

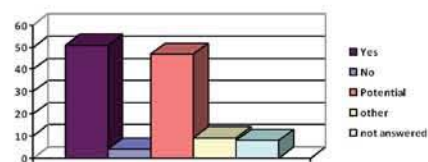


Figure 4: Do you consider yourself an NSDI subject?

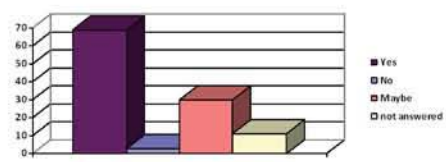


Figure 5: Data exchange with others?

Comparing the answers in figures 2, 3 and 4, we have to call attention to the fact, that although the biggest number of respondents is familiar with the NSDI concept, considering the targeted respondent sample, it is worrying that as high as 21,6 % gave negative answers, and that a significant number warns about undefined subjects' rights and obligations when it comes to intellectual property protection.

Interest for data exchange of particular respondents was examined with the question: Are you ready to participate in the NSDI and exchange data with other subjects? The readiness to participate in data exchange (Figure 5) is quite clear.

In their comments respondents emphasize the importance of access to updated data and express readiness to make their data more available. A big number of respondents is ready to exchange data which calls for a wider promotion of NSDI in the whole user community.

4. Promotion of NSDI in Croatia

4.1. Conferences

Today there is practically no scientific and/or professional conference in which at least one of the topics is NSDI or INSPIRE. Motivated by big interest, the need to promote spatial data infrastructure concept and to assemble the NSDI subjects, and with the aim to speed up the implementation of spatial data infrastructure in Croatia and the development of geo-enabled society, the State Geodetic Administration and the Croatian Cartographic Society on a regular annual basis organize the *NSDI and INSPIRE day* jointly with the *Cartography and Geoinformation Conference*. The aim of these conferences is to assemble NSDI subjects and give information on the spatial data infrastructure development at all levels.

The First Croatian NSDI and INSPIRE day and the 5th Cartography and Geoinformation Conference was held at the Faculty of Organization and Informatics in Varaždin in November 2009 (URL⁴). The aim of the conference was to assemble the representatives of institutions and NSDI subjects, as to promote the NSDI establishment and a faster implementation of the INSPIRE directive. At the *First Croatian NSDI and INSPIRE day* around 200 participants took part, among whom also guests from Austria, Bulgaria, Italy, Hungary, Macedonia, Norway, Slovenia and Serbia.



Figure 6. Participants of the 3rd NSDI day

The Second Croatian NSDI and INSPIRE day and the 6th Cartography and Geoinformation Conference was held in November 2010 in Opatija. The conference assembled 170 participants from Albania, Austria, Bosnia and Herzegovina, Bulgaria, Montenegro, Croatia, Macedonia, Serbia, Germany and Sweden, and a representative of EuroGeographics.

The Third Croatian NSDI day and 7th Cartography and Geoinformation Conference was held from 14 – 16 September 2011 in Split (Figure 6). The conference assembled 177 experts from Croatia, a big number of European countries, and Japan, and 48 presentations were held. This year's conference emphasized activities of the transposition of INSPIRE directive into the Croatian legislation which is being done in accordance with the Program for taking over and implementing the EU acquis.

The Croatian Cartographic Society and the State Geodetic Administration want to contribute to the development of geoinformatics, cartography, geography and related areas, with special emphasis on the spatial data infrastructure. A wide range of suggested topics and well-known lecturers guarantee interesting presentations and a contemporary approach to the issue.

What preceded these conferences were several organized workshops with foreign experts, with the aim to share the experience. Three workshops with the Swedish, Canadian, German and Norwegian colleagues were held in 2007, 2008 and 2009, where a cross-cut through the whole GI market was made and more than 100 participants invited.

Figure 7: Home page of the NSDI internet pages www.nipp.hr

4.2. NSDI internet page

Just before the *3rd NSDI day*, an NSDI internet page was launched (Figure 7). The internet page address is www.nipp.hr, and it is directed at NSDI subjects, spatial data users and other citizens who want to be informed about the NSDI establishment. The pages are an info platform which gives insight to the public into the NSDI and related processes.

The pages give insight into the vision and main goals of the Croatian NSDI development, as defined in the documents and legal regulations that can be also downloaded. The pages give first-hand information about the development of Croatian NSDI and main processes of development at international level (INSPIRE directive, UN GGIM, GSDI etc.)

The NSDI Council, Committee and Working Groups are presented in the NSDI Bodies section, to enable users a simpler finding of info about the spatial data infrastructure in Croatia and globally, and the Links section gives a big number of links to the pages of national spatial data infrastructures, geoportals, organizations, bodies and associations.

Also, the presentations from the held Croatian NSDI and INSPIRE conferences are given, as well as links to collaborative pages of the NSDI bodies within the CIRCA system and to a secured access for NSDI body members.

The calendar in the home page and News and events section give an overview of activities at national and international level.

4.3. Publications and journals

In May 2008 the SGA issued a publication on National Spatial Data Infrastructure in the Republic of Croatia (Figure 8) that was printed in Croatian with a circulation of 1,000 copies (SGA 2008). The intention was to familiarize professional audiences directly involved in the National SDI development, either at national, regional, local or commercial level, with the National SDI basics as well as to inform a wider audience, i.e. users (Bačić and Rašić, 2009).

The publication consists of two studies:

- Study on the National Spatial Data Infrastructure in Croatia (Remke et al., 2005)
- Croatia: National Spatial Data Infrastructure and INSPIRE, (Geolink Consulting Ltd, 2006)

Besides this publication, there are professional journals that promote NSDI: a monthly bulletin of the SGA entitled "Vizura", "Cartography and Geoinformation", "Geodetski list", "Ekscentar" etc. (URL ⁵).

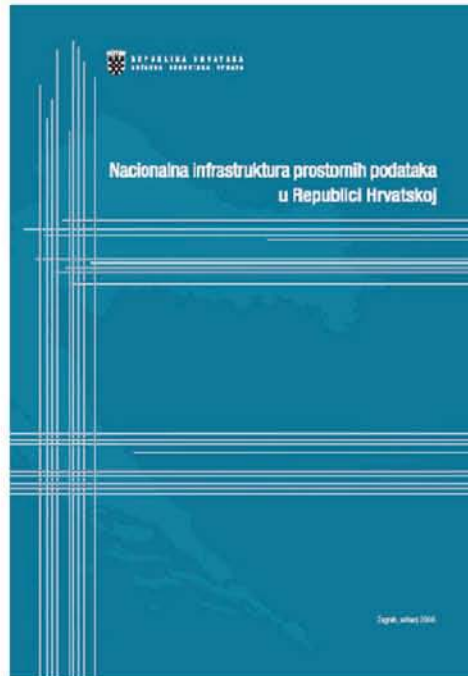


Figure 8. Front page of the publication

Also, the SGA published a brochure "NSDI and INSPIRE", and works on translating the regulations and studies published in other European countries (e.g. INSPIRE Directive, etc.)

5. Conclusion

Croatia is working intensely on the NSDI establishment, and the legal ground was set in 2007 with the Law on State Survey and Real Estate Cadastre. However, data from the most recent research at national level show that the NSDI subjects are not familiar enough with the NSDI concept and their obligations. Considering the targeted respondent sample, it is worrying that as high as 21,6 % are not familiar with the NSDI concept, and that a big number of respondents warn about undefined subjects' rights and obligations when it comes to intellectual property protection.

Promotion of the importance of spatial data is extremely important and the success of NSDI greatly depends on it. It can be argued that activities in this field are insufficient and should be directed towards both state and educational institutions, and spatial data users. It should be noted that, considering the hierarchy, promoting and understanding the importance of spatial data at local and county level will stimulate improvement of the existing SDI at those levels, which will reflect directly onto the national level.

An important factor is also NSDI capacity building, with the aim of preparing the user society for accepting the NSDI concept, and introducing them to work processes. Knowledge about the existence, use and possibilities of spatial data exchange is very limited, and better availability of data, a fast and simple access to spatial data are undoubtedly an imperative.

The key factors in all future steps will be strengthening the political support, capacity building, improvement of coordination between the subjects, and other activities linked to spatial data exchange. There is an important project currently being done: Service Provision for the Support of the National Spatial Data Infrastructure Development. The project aim is making a national metadata profile, as a support to

the INSPIRE Directive transposition and NSDI strategy improvement. The project should be completed by the end of 2011.

Development and promotion of the spatial data infrastructure greatly contributes to development of disciplines in the fields of geoinformatics, geodesy, geography, cartography and other related sciences, and to development of a Geo-enabled society.

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