

# Engaging expert communities in development of content of Russia's regional geoportals (case study: "River basins in European Russia" geoportal)

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**Abstract.** The purpose of this study is to attract expert communities' intellectual resources to the process of developing a geoportal entitled "River Basins in European Russia". The results of a survey of experts (n=100) have shown that more than half of respondents had used a variety of geoportals' data in their professional life. Data on digital relief models, streamflows and landscape maps are of greatest interest. In order to obtain a comprehensive social and ecological analysis of the territory, experts have expressed interest in placing data on population in the basins and its density, the volume of used natural resources, and recreational zones on the designed geoportal. In practical sense, our study can be viewed as a fruitful ground for the development of upward vertical communication (from citizens to the government) and partially horizontal communication among citizens via their engagement in the environmental decision-making process.

## 1. Introduction

Nowadays the new virtual network resources and services are arising. They are aimed at enabling work of users with geoinformation – cards, atlases, satellite images, digital models and other types of information. Improvement and development of these resources and services implement mainly by development of specialized geoportals.

The concept 'geoportal' employs not only in the professional circle of geographers, but also in a wide public media discourse [1, 2]. Two key definitions of this concept are recognized. In professional discourse the geoportal conceptualizes as 'the portal that allows to organize search in network or in separate network resources based on binding properties of geo-information' [3, p 89]. In this arena, the geoportal is understood as a uniform point of access to geo-information of various sources and types. The functions of geoportals include search, visualization, loading of metadata and also downloading and the publication of spatial data (according to access rights and a type of the license for use of materials).

In general sense geoportals are understood as systems of directory type with maps and plans of settlements on which elements of infrastructure and other social objects are displayed. In this meaning geoportals can provide coordinates of interesting objects, a possibility of calculation of their areas or perimeters, laying of routes, printing of maps, etc. However their tasks do not conclude neither the search of internal nor external distributed resources of spatial data; a search as a part of functions of visualizers is limited to search of "offline" objects [4]. Geoportals in this understanding are a subject of



discussion under the concept of 'neogeography' which is understood as set of methods of cartography and geographic information systems [5].

Today practically all industrial countries of Europe, America and Asia have national geoportals such as Geospatial One-Stop (USA), the Australian catalog of spatial data of ASD, the geoportal of the European Union INSPIRE, etc. These geoportals are full-function portals which contain hundreds of thousands of sets of spatial metadata with good functions of data visualization. It is important that international geoportals support search of the data on their metadata, it is the main criterion by which we judge whether the geoportal is 'real' or represents only means of cartographical data visualization and even the website or the portal with the loud name 'geoportal', 'GIS-portal' or 'geoinformation portal' [4]. In Russia there is no federal geoportal with uniform bank of metadata. All works in the field of creation of geoportals are conducted in the conditions of lack of regulatory framework and normative and technical standards.

This article is the result of a joint interdisciplinary project on development of the geoportal "River Basins in European Russia" on the basis of the Institute of Environmental Sciences of the Kazan Federal University [6]. Today, in the process of creation of geoportals and their further maintaining a great attention is paid to crowdsourcing, engagement of stakeholders in activities within geoportals. This process coincides with the new paradigm of actors' interaction changes – citizens become not only consumers of information but also its active creators [7, 8, 9, 10].

The interaction between citizens and public authorities changes radically. Civil participation in environmental decision-making processes in the "digital era" is expanding because of the proliferation of laptops, smartphones with Internet access, cameras, availability of geolocation function and specialised mobile applications that keep the public posted about urban issues in a real time mode [11, 12, 13, 14].

However, the analysis of literature has shown that in Russia a practice of involving concerned population groups into development of geoportals is not widespread. As a result, most of the data released by government are of no practical interest to users of geoportals [15, 16]. To fill this gap when developing the geoportal "River Basins in European Russia" methods of sociological science have been applied to obtain feedback on metadata that are of interest to professional groups of ecologists with further addition of these layers to the geoportal.

The novelty of the research project is that it identifies the intellectual resources of expert communities contributing to raising the profile of regional geoportals in experts' professional life. In addition, according to the concept of H. Lefebvre [17], city's decision-making processes should be reoriented from the government level to the level of micro-groups, residents, and urban communities. Moreover, the right refers not only to the right to housing, work, and education, but, in a broader sense, the right to be a part of the city, to dwell in it, and to change it.

Thus, the involvement of different groups of citizens in recommendation development (during a sociological survey, within the framework of a research and practice workshop, and via the project's web page) will increase their role in urban policy, what in turn, will reduce the degree of skepticism, paternalism and apathy inherent in the Russian population on ecological issues [18, 19, 20]. In the Russian Federation no similar study has previously been conducted.

## **2. Research methods**

The objective of the study is to analyse the qualitative and quantitative characteristics of geoportals, in particular, the geoportal "River Basins in European Russia" such as the frequency and nature of the use of data of international and Russia's geoportals in professional activities, study the content of interest depending on the target audience, suggest measures for optimization of the work of the designed geoportal based on professional interests of experts.

To achieve the objective, at the first stage, we have conducted semi-structured expert interviews with faculty and research fellows (ecologists, geographers, social ecologists, sociologists, and etc.), representatives of project and environmental organizations, representatives of the public sector, mass media, and environmental NPOs. A total of 100 experts from different regions in Russia have been

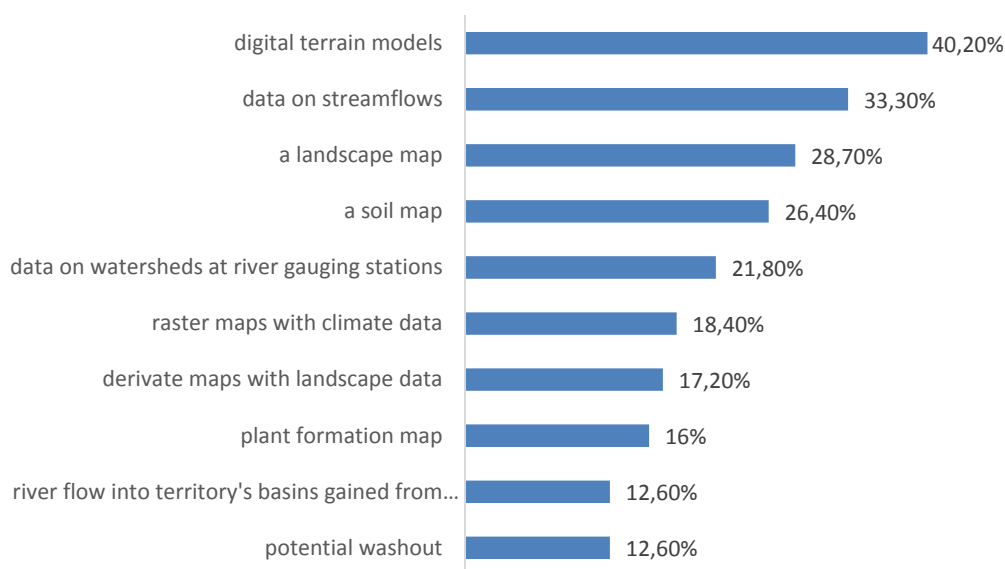
interviewed. The survey and data analysis were carried out via the online questionnaire builder *Testograf*. In future, it is planned to attract broad segments of population to the development of geoportal.

### 3. Results and discussion

Most experts have used the data of geoportals in their practice. The most popular resources are Google Earth, Google Maps, Yandex Maps, Open Street Map, 2GIS, Wikimapia, Earth Explorer (USGS), Roskosmos geoportal, and private portals of Ulyanovsk, Belgorod, and Samara Regions, the Republic of Tatarstan, and etc. Thus, more than half of the experts surveyed had used a variety of data from geoportals in their professional life. Data on digital relief models, streamflows, and landscape maps are of the greatest interest.

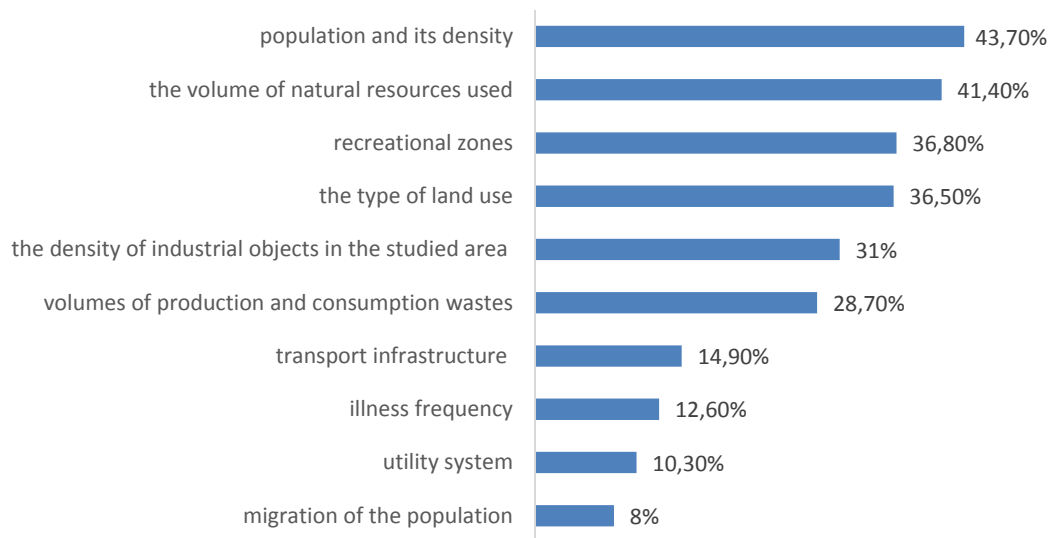
In their work experts have turned to various data sources: land use type maps, geological maps, thematic maps of nature and images of Earth landscapes, morphometry of rivers and river basins, wildfire maps, property boundaries of cadastral plots of land, mobile signal strength, commercial objects' density, unauthorized waste disposal, location of buildings, information on land plots, their cost, number and proprietors, maps of characteristics of agriculturally used lands and others.

Experts have noted that the most useful data for placing on the geoportal are first and foremost digital terrain models; then, data on streamflows, a landscape map, a soil map and data on watersheds at river gauging stations (figure 1).



**Figure 1.** 'Which geocological data are you interested in to visualize on the boundaries of the basins at the given geoportal?', %

Experts have also pointed out the importance of presenting social and environmental data that are direct and indirect factors for a full-scale analysis of the territory. Experts are interested in the following data in descending order: data on population and its density in the basins, the volume of natural resources used, recreational zones, the type of land use, the density of industrial objects in the studied area (including accidents at industrial enterprises), volumes of production and consumption wastes, transportation infrastructure, incidence rate, utility system and telecommunications infrastructure (figure 2).



**Figure 2.** 'Which social and environmental data will you be interested to see at the given geoportal?', %

In order to obtain a comprehensive social and ecological analysis of the territory, experts have expressed interest in placing data on population and its density in the basins, the volume of natural resources used and recreational zones on the designed geoportal. In practical sense, our study can be viewed as a fruitful ground for the development of upward vertical communication (from citizens to the government) and in part, horizontal communication among citizens via their engagement in the environmental decision-making process

There are limitations that must be taken into account when considering the findings presented here. In this study, the ethnographic research approach is adopted because of its capacity to provide detailed, "thick" description of data to produce key research hypotheses that can be tested and further reinterpreted by employing the qualitative methods to build a theory. This means that no generalisation of results can be made at this stage of the research.

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