

GeoTerrace-2020-059

The national spatial data infrastructure as the basis for the State Land Cadastre

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SUMMARY

The paper deals with the problem of the National Spatial Data Infrastructure (NSDI) development in Ukraine. Analyses of the NSDI history illustrates, that the issues of creation and further development of NSDI in Ukraine have always been considered through the prism of land relations. NSDI in our society is often misunderstood as an improved version of the State Land Cadastre, which ultimately undermines its importance. The authors propose to develop two government concepts: "Concept of the State Target Program for Development of Land Relations in Ukraine until 2030" (based on the NSDI) and separately "Concept of the State Target Program for Development of National Spatial Data Infrastructure in Ukraine until 2030".

Introduction

The main aims of the National Spatial Data Infrastructure (hereinafter – NSDI) are meeting the growing needs of society in all types of geographical information, as well as improving the use of geospatial data and GIS technologies in the context of sustainable development of society. It is not only an important element of public administration but also mandatory condition on the path of European integration of our country. In particular, Directive 2007/2/EC of the European Parliament and of the Council of Europe, adopted on 14 March 2007, establishes that the Infrastructure for Spatial Information in the European Community (INSPIRE) is based on the spatial data infrastructures created and operated by the member states of the European Union (European Parliament and Council, 2007). So, national spatial data infrastructures have to meet certain criteria in order to be integrated into the pan-European system.

Investigation

The scientific community began working on the creation of a national infrastructure of geospatial data in Ukraine in 1991, but true developments appeared in 2005 (Karpinsky, Lyashchenko, 2006). As a result, the Cabinet of Ministers of Ukraine approved the Concept of the draft Law of Ukraine “On the National Spatial Data Infrastructure” on 2007, November 21, but it did not go further. Among the main reasons that made it impossible to create NSDI at that time were the lack of a single coordinate system and consolidated information about real world objects, the low demand for spatial information in society.

In 2013 with the introduction of the National Cadastral System a systematic work on the NSDI creation began. In the same year, 2013, a pilot project was implemented to establish an NSDI in the Fastiv district of Kyiv region, the results of which formed the basis of the first draft Law of Ukraine "On Spatial Data Infrastructure" (Cabinet of Ministers of Ukraine, 2014).

In September 2015, the work on the project "Creation of the National Infrastructure of Geospatial Data in Ukraine" began. The donor of the project is the Government of Japan through the Japan International Cooperation Agency (JICA). The beneficiary of the project is the State Service of Ukraine for Geodesy, Cartography and Cadastre (StateGeoCadastre), while the recipient is the State Center for State Land Cadastre. The contractors are consulting companies "Kokusai Kogyo Ltd" and "PASCO Corporation". And in 2018, the StateGeoCadastre and the JICA presented a prototype of the National Spatial Data Infrastructure, which was created on the territory of 12 sq.km in Vinnytsia region. The prototype is a single cartographic basis with consolidated both basic and profile data groups, in particular, coordinates, boundaries of administrative-territorial organization, hydrographic objects, settlements and road network, industrial, agricultural and socio-cultural areas, objects, highways, railways, land plots in the specified territory. All data and their combinations are available online (StateGeoCadastre, 2018).

While the work on the technical side of the NSDI has been carried out by the StateGeoCadastre for seven years, the legal basis for this was created with the adoption on April 13, 2020 of the Law of Ukraine "On National Infrastructure of Geospatial Data" (Verkhovna Rada of Ukraine, 2020). The Law will come into force at the beginning of 2021, and by that time the relevant bylaws that will regulate the establishment and operation of the NSDI should be developed.

The model of NSDI functioning in Ukraine was published by O. Maliuk in 2018, but since then the situation has undergone some changes (Maliuk, 2018). The modern and refined scheme of NSDI functioning in Ukraine is given in Fig. 1.

Historically, the State Committee for Land Resources of Ukraine took care of the national spatial data infrastructure. Later it was reorganized into the State Agency for Land Resources of Ukraine, and then into the State Service of Ukraine for Geodesy, Cartography and Cadastre. Because of the specifics of this body of state executive power, the issues of creation and further development of

NSDI in Ukraine have always been considered through the prism of land relations. Even now, NSDI in our society is often misunderstood as an improved version of the State Land Cadastre, which ultimately undermines its importance.

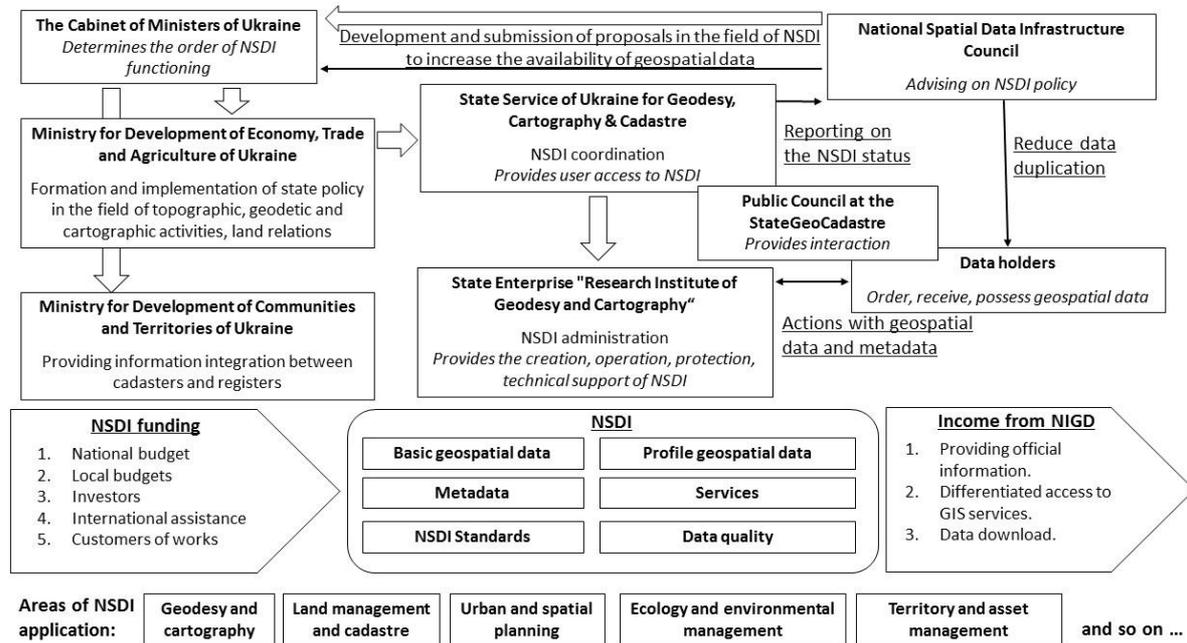


Figure 1 The model of NSDI functioning in Ukraine

A clear illustration of this approach is the Concept of the State Targeted Program for the Development of Land Relations and National Spatial Data Infrastructure in Ukraine until 2030. This Concept is currently under public discussion and its provisions should be considered in more detail (StateGeoCadastre, 2020). The proposed Concept is devoted mainly to the program of land relations development. In the definition of "Problems to be solved by the Program", after a detailed justification of the priorities of state policy in the field of land relations, only at the end of the text states: "In addition, there is a need for comprehensive solutions to improve the production system, updating, processing, storage, supply and use of geospatial data in various spheres of public life, expanding the market of modern geographic information products and geographic information services, integration into global and European geospatial data infrastructure through the introduction and development of national geospatial data infrastructure".

That is, the National Spatial Data Infrastructure (NSDI) is the last and not the priority in this document, is not its basis. Despite the fact that the Law of Ukraine "On the National Spatial Data Infrastructure" clearly states that NSDI is aimed at ensuring effective decision-making by public authorities and local governments, meeting the needs of society in all types of geographical information (Verkhovna Rada of Ukraine, 2020).

In addition, Article 20 of the Law of Ukraine "On topographic, geodetic and cartographic activities" states that "The use of geodetic and cartographic data in electronic form is carried out through geoportals:

- State Geodetic Network;
- topographic databases;
- national spatial data infrastructure.

The State Geodetic Network and topographic databases are the geodetic and cartographic basis for the State Land Cadastre, Urban Planning and Other Cadasters” (Verkhovna Rada of Ukraine, 1999).

At the same time, Article 36 of the Law of Ukraine "On Topographic, Geodetic and Cartographic Activities" defines the requirements for the publication of information of the State Land Cadastre. In particular, the cartographic basis, index cadastral maps (plans) and information of the State Land Cadastre provided by the Law are subject to promulgation. At the same time, the possibility of anonymous viewing, copying and printing of information should be provided on a publicly available and free basis (Verkhovna Rada of Ukraine, 1999).

The Law of Ukraine "On National Infrastructure of Geospatial Data", in order to establish a unified state policy on the NSDI development and operation, eliminate duplication of work and state budget expenditures for the creation of geospatial data at all levels of state and local government, amends the Code Of Ukraine on administrative offenses (Article 51-4 "Violation of rights to spatial data and metadata" is added). It should be noted that this Law amends the Subsoil, Land, Water and Forest Codes of Ukraine, Laws of Ukraine "On Topographic, Geodetic and Cartographic Activities", "On the State Land Cadastre", "On the Nature Reserve Fund of Ukraine", "On radioactive waste management", "On local self-government in Ukraine", "On topographic, geodetic and cartographic activities", "On flora" and other legislative acts (Verkhovna Rada of Ukraine, 2020).

It is obvious that the State Land Cadastre is the final geoinformation product, while the National Spatial Data Infrastructure is the basis for its creation. NSDI is a set of unified regional, sectoral and intersectoral information systems based on GIS technologies, use and produce unified geographic information resources using a single digital topographic and geodetic basis and a single system of technical regulations, standards, classifiers and data codifiers. And the basic sets of geospatial data are the core of geoinformation resources of the infrastructure, by which spatially and thematically combine all other geospatial and non-geospatial (attributive, profile, thematic) data.

Conclusions

Based on the above, we emphasize that combining into one target program for the development of land relations and the national spatial data infrastructure narrows the subject area of NSDI, which, in fact, applies to the whole complex of territorial management works, not just land relations. Land relations are only one of the areas of use of the national spatial data infrastructure, and their integration devalues the idea of NSDI. Summing up, in our opinion, two government concepts should be developed: "Concept of the State Target Program for Development of Land Relations in Ukraine until 2030" (based on the NSDI) and separately "Concept of the State Target Program for Development of National Spatial Data Infrastructure in Ukraine until 2030".

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