

МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ
НАЦІОНАЛЬНИЙ УНІВЕРСИТЕТ БІОРЕСУРСІВ І
ПРИРОДОКОРИСТУВАННЯ УКРАЇНИ
ІНСТИТУТ МЕХАНІКИ ТА АВТОМАТИКИ АПВ НААН
ДЕРЖАВНИЙ БІОТЕХНОЛОГІЧНИЙ УНІВЕРСИТЕТ



**ЗБІРНИК
ТЕЗ ДОПОВІДЕЙ**

*XI Міжнародної науково-технічної конференції з нагоди
117-ї річниці від дня народження
доктора технічних наук, професора,
віцепрезидента УАСГН
КРАМАРОВА
Володимира Савовича
(1906-1987)*

«КРАМАРОВСЬКІ ЧИТАННЯ»

*22-23 лютого 2024 року
м. Київ*

УДК 631.17+62-52-631.3

Збірник тез доповідей XI Міжнародної науково-технічної конференції «Крамаровські читання» з нагоди 117-ї річниці від дня народження доктора технічних наук, професора, віцепрезидента УАСГН Крамарова Володимира Савовича (1906-1987) 22-23 лют. 2024 р., м. Київ / МОН України, Національний університет біоресурсів і природокористування України. К.: Видавничий центр НУБіП України, 2024. 505 с.

Proceedings of the XI International Scientific and Technical Conference dedicated to the 117th anniversary of the birth of Doctor of Technical Sciences, Professor, Vice President of the UAAS Kramarov Volodymyr Savovych (1906–1987), February 22–23, 2024, Kyiv / MES of Ukraine, National University of Life And Environmental Sciences of Ukraine. Kyiv: Publishing center of NULES of Ukraine, 2024. 505 p.

В збірнику представлені тези доповідей науково-педагогічних працівників, наукових співробітників, аспірантів та студентів НУБіП України, провідних вітчизняних і закордонних вищих навчальних закладів та наукових установ, в яких розглядаються завершені етапи розробок.

The Proceedings presents abstracts of reports of scientific and pedagogical workers, research staff, graduate students and students of the NULES of Ukraine, leading domestic and foreign higher educational institutions and scientific institutions, in which completed stages of development are considered.

THE ROLE AND IMPORTANCE OF THE NATIONAL GEOSPATIAL DATA INFRASTRUCTURE OF UKRAINE IN THE CONTEXT OF MODERN LAND LEGISLATION

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Ukraine is diligently enhancing its geospatial data infrastructure as part of its efforts to modernize land legislation, mirroring a broader global trend. This initiative is pivotal not merely as a testament to technological advancement but also serves a strategic function in facilitating efficient land management, advancing sustainable development, and ensuring adherence to legal standards. The significance of Ukraine's National Geospatial Data Infrastructure (NGDI) within this framework is

evident through its contribution to information accessibility, bolstering decision-making processes related to land relations, promoting legal integrity and certainty, and fostering innovation.

The National Spatial Data Infrastructure (NSDI) plays a crucial role in providing access to a wide array of geospatial data, encompassing cadastral details, delineations of land plots, land utilization patterns, environmental constraints, and more. By making this information readily available, the NSDI significantly enhances the efficiency of land resource utilization and fosters transparency in management practices. Consequently, land legislation that is formulated on the foundation of this accessible, comprehensive data is inherently more logical and efficacious.

The National Institute of Geospatial Data and Utilization (NIGDU) supplies critical data that underpins analysis and decision-making within the domain of land relations. It is instrumental in addressing disputes related to land ownership, usage, and conservation, and plays a vital role in the planning of territories and development of infrastructure. Utilizing this data, land management strategies are devised to align with the stipulations of contemporary legislation, ensuring that policy and practice meet current legal and regulatory standards.

The establishment of the National Institute of Geospatial Data and Utilization (NIGDU) significantly aids in the development of a comprehensive digital cadastre, serving as the foundational element for land rights registration. This framework ensures legal certainty in the acquisition, ownership, and transfer of land rights, thereby enhancing transparency and security in land transactions. Furthermore, the Geospatial Policy Authority (GPA) leverages this infrastructure to identify and deter unlawful activities within the sphere of land relations, effectively mitigating instances of corruption and the misappropriation of land resources.

The advancement of the National Spatial Data Infrastructure (NSDI) catalyzes innovation in the realm of land relations, facilitating the integration of novel technologies and management approaches. The application of geospatial analytical instruments and Geographic Information Systems (GIS) enhances the optimization of land management procedures and bolsters the efficacy of land legislation. This technological infusion not only streamlines administrative processes but also elevates the precision and reliability of land-related decision-making, thereby contributing to more informed and sustainable land use policies.

The National Geospatial Data Infrastructure (NGDI) is an intricate assembly of interrelated components that encompass organizational frameworks, hardware and software systems, foundational and thematic geospatial datasets, metadata, services, as well as standards and technical regulations. This comprehensive infrastructure is crucial for the processing, storage, utilization, and dissemination of geospatial data and metadata. Moreover, it facilitates a range of operations pertaining to these datasets, ensuring that geospatial information is effectively managed and leveraged to support various applications, from urban planning and environmental management to emergency response and national security. The integration of these components within the NGDI enables a seamless flow of geospatial information across different

levels of government, private sector entities, and the public, thereby enhancing decision-making processes and policy formulation.

The establishment of a National Geospatial Data Infrastructure (NGDI) necessitates the development of a sophisticated network of geoportals, orchestrated through specialized geoinformation services. This intricate network serves to integrate a federation of database systems, which, although potentially geographically decentralized, are unified in their objective to constitute a cohesive system. This initiative is pivotal in facilitating seamless access and exchange of geospatial data, underpinning a broad spectrum of applications from urban planning to environmental management, thereby enhancing the efficacy and efficiency of spatial data utilization across various sectors.

The National Spatial Data Infrastructure (NSDI) comprises several critical components, including the national official geoportal, which facilitates the publication and accessibility of geospatial data and metadata. Additionally, a network of geoportals integrates database systems containing geospatial information, which, despite their geographical dispersion, operate as a singular, cohesive network. Moreover, metadata plays a crucial role by providing essential reference information about datasets or services. This structured framework is instrumental in ensuring the systematic management and dissemination of geospatial information, thereby supporting a wide array of applications and enhancing decision-making processes across various sectors.

The national geoportal offers unrestricted access to geospatial data and metadata, eliminating the necessity for registration or authorization for users. To facilitate this, a search service enables the location of geospatial data and metadata via the geoportal search page and the CSW metadata catalogue interface. Additionally, a metadata viewer is accessible through the geoportal webpage and the CSW metadata catalogue interface, enhancing user interaction with the data. Furthermore, the geoportal website provides users the capability to engage with geospatial data through electronic maps, utilizing interactive electronic maps and interfaces provided by the WMS mapping web service and/or the WMTS mapping tile geoinformation service. This comprehensive access framework underscores the geoportal's commitment to enhancing the accessibility and usability of geospatial information for a wide range of applications.

Both official and unofficial cartographic resources may serve as foundational maps within the geoportal framework. Specifically, the geoportal is capable of showcasing a variety of base maps, including: the orthophoto map of Ukraine; an overview map of Ukraine; the Planet Scope orthophoto map; and various regulatory and technical documents. This flexibility in the selection of base maps ensures a comprehensive and multifaceted view of geospatial information, catering to diverse user needs and applications.

The foundational legal framework for the National Geospatial Data Infrastructure in Ukraine is established by a series of pivotal documents, including: The Law of Ukraine "On the National Geospatial Data Infrastructure"; the Resolution of the Cabinet of Ministers of Ukraine dated 9 September 2020, No. 812, "On the

Establishment of the Council for the National Geospatial Data Infrastructure"; the Procedure for the Functioning of the National Geospatial Data Infrastructure, sanctioned by the Resolution of the Cabinet of Ministers on 26 May 2021, No. 532; and the Order of the Ministry of Agrarian Policy and Food of Ukraine dated 10 November 2021, No. 347, officially registered with the Ministry of Justice of Ukraine on 12 January 2022, No. 21/37357, "On Approval of Technical Requirements for Geospatial Data Infrastructure". These documents collectively constitute the legal basis for the operation, management, and development of the National Geospatial Data Infrastructure, ensuring its alignment with national objectives and international best practices.

The document in question sets forth the technical standards for metadata pertaining to geospatial datasets and geoinformation services within the framework of the National Geospatial Data Infrastructure. It articulates the technical specifications for geospatial data of the national infrastructure, along with the technical criteria for geoinformation services provided by geoportals within this framework. Furthermore, it outlines the requisite technical protocols and methodologies to guarantee interoperability and compatibility among geospatial datasets and geoinformation services. This regulatory guidance is crucial for upholding the integrity, accessibility, and effectiveness of the geospatial information ecosystem, ensuring that it meets both current and future needs of diverse stakeholders.

Ukraine's key geographic information standards are DSTU ISO 19101:2009, the "Geographic Information - Reference Model," and DSTU 8774:2018, "Geographic Information - Rules for Modelling Geospatial Data." These standards ensure consistency and quality in geospatial data handling and modeling.

Geographic information plays a crucial role in contemporary geoinformation technologies, with the evolution of national geospatial data infrastructures necessitating advancements in digital mapping. This evolution signifies a shift from conventional cartographic methodologies to contemporary geoinformation strategies. Standardization within this domain typically adheres to international benchmarks, notably the ISO 19100 series formulated by ISO/TC211, alongside the stipulations set forth by the Open Geospatial Consortium (OGC). These standards and requirements are pivotal in ensuring interoperability, quality, and efficiency in the handling and exchange of geospatial data.

The National Geospatial Data Infrastructure (NGDI) of Ukraine is instrumental in bolstering contemporary land legislation. Its progression facilitates the provision of critical information, underpins decision-making processes, upholds legal frameworks and certainty, and fosters innovation within the realm of land relations. Through the NGDI, Ukraine is empowered to execute its land legislation efficiently, thereby advancing sustainable development and equitable land relations. This infrastructure's impact is profound, ensuring that stakeholders have the necessary tools and data to navigate the complexities of land management and policy implementation effectively.