

INFORMATION DIGEST OF THE CAPACITY DEVELOPMENT PROJECT FOR UTILIZING THE NATIONAL GEOSPATIAL DATA INFRASTRUCTURE IN UKRAINE

CONFERENCE INTERGEO 2026 CONFERENCE INTERGEO 2026



The International Scientific and Practical Conference and Exhibition on Geoinformation Technologies INTERGEO is the leading global event in the field of geodesy, geoinformatics and land management, which brings together experts from all over the world. The event is organized by DVW GmbH – the German Society for Geodesy, Geoinformation and Land Management and is held annually in various cities in Germany.

The Conference, which took place on September 15-17 in Munich, became a historical record in terms of scale – more than 600 international leading companies – industry leaders, and the number of visitors from 121 countries reached almost 19,000. The Ukrainian delegation, headed by the Chairman of the State Service of Ukraine for Geodesy, Cartography and Cadastre Dmytro Makarenko, was present at INTERGEO 2026, consisting of specialists from the StateGeoCadastre, state enterprises “Ukrainian State Aerogeodetic Enterprise” and “Research Institute of Geodesy and Cartography”.

As part of the main program of the Conference, the Chairman of the StateGeoCadastre presented to the international professional community the results of the Capacity Development Project for Utilizing the National Geospatial Data Infrastructure in Ukraine, which is being implemented with the support of the Japan International Cooperation Agency (JICA).

During the INTERGEO 2026 Exhibition, representatives of the Ukrainian delegation ensured the operation of the Ukrainian stand, which presented the latest achievements of Ukraine in the field of geospatial information, namely: the National Geoportal of the National Spatial Data Infrastructure, its functionality and the State Cartographic and Geodetic Fund of Ukraine. Special attention was paid to the results of the development of the National Spatial Data Infrastructure, the functionality of the National Geoportal of the NSDI, technologies for creating, processing, publishing and using geospatial data, as well as experience in the development and implementation of modern geoinformation systems.

During INTERGEO 2026, the Ukrainian delegation got acquainted with the latest achievements and technologies in the field of geodesy, geospatial information and land management, and also exchanged experience with leading world experts in the Global Navigation Satellite System (GNSS), geoinformatics, land management and other disciplines related to geospatial data infrastructure.

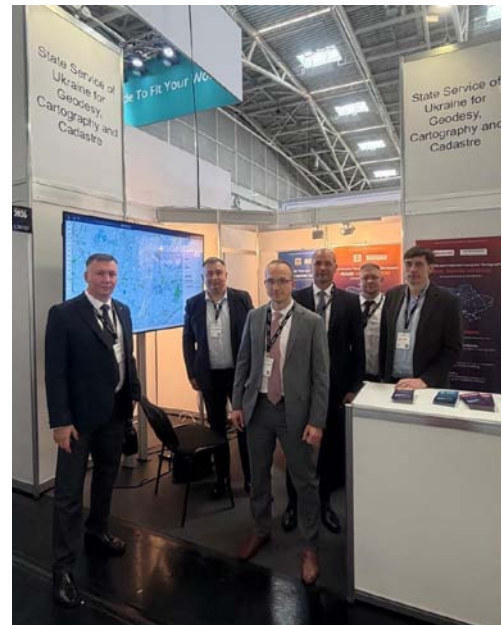
Acting as an international platform of high status, INTERGEO forms a vision and global perspective for the development of the industry. This year, the focus of the program and the interest of the participants were focused on the concept of digital twins, information modeling of buildings and infrastructure, the development of satellite observation technologies and engineering monitoring, and the use of unmanned systems.

Participants noted that technological breakthroughs in reality capture, technology integration, automation of LiDAR data processing and the further penetration of artificial intelligence will have an increasingly growing impact on the industry.

The segment of practical use of geospatial data for real estate and infrastructure management has also finally formed, which finally confirmed the merger of the physical and digital worlds into single working ecosystems.

INTERGEO is an effective platform for establishing cross-border cooperation and exchanging experience and developments to find a collective response to global challenges.

The next INTERGEO 2027 conference will be held in Frankfurt am Main, Germany, October 12-14, 2027.



TRENDS

Large international industry events, such as the INTERGEO conference, provide an opportunity for industry professionals to form an idea of the key forecasts and directions of industry development. Some of the trends in geodesy and geoinformation technologies voiced by the participants of this year's exhibition are only beginning to take shape, and some have already gained their full manifestation in Ukraine.

- 1 The scope of geodetic knowledge has expanded. Now it is not limited to determining the location of an object, but is becoming a full-fledged, often key component of management processes and substantiation of decisions regarding the development of territories, infrastructure and nature use.
- 2 Expanded use of agent-based GeoAI. This is a powerful comprehensive technology in which the user formulates tasks in plain language, and

a software agent helps to perform a sequence of operations with spatial data.

- 3 Growing requirements for competencies in working with geospatial data. The results of automatic data mining require verification, and the conclusions of the built models require professional interpretation.
- 4 Combination of satellite and optical measurements. Thanks to this synergy, the engineer gets more opportunities to adapt the measurement method to the conditions of the object.
- 5 Attention to the stability of satellite positioning – manufacturers provide means of counteracting jamming and signal substitution. Such technologies are designed to increase the reliability of operation in a complex radio frequency environment.



Dmytro MAKARENKO,
Chairman of the State
Service of
Ukraine for Geodesy,
Cartography
and Cadastre

“ The StateGeoCadastre is currently responsible for national geospatial management, state land cadastre, geodesy, cartography, and spatial data infrastructure development.

In the conditions of a full-scale war, our work has changed significantly.

Restrictions on open access to a number of geospatial resources, cyber threats, risks of damage to equipment and data, and financial constraints have made the issues of continuity and protection of critical infrastructure particularly important.

That is why the current JICA project is not just a continuation of the work on the creation of the NSDI. Its task is to ensure the sustainability of geospatial infrastructure and its practical use by state bodies and other users.

After the start of a Russia's full-scale military invasion of Ukraine, the emphasis was shifted to five key areas: protection of critical systems and data, technical

stabilization, adaptation to the current needs of the state and communities, restoration of cartographic and geospatial services for reconstruction and scaling of developed solutions. That is, it is not only about creating technologies, but also about preserving the operability of the country's geospatial «framework» today and its development for recovery tomorrow.

A separate direction is the development of the NSDI National Geoportal. Today, it is a controlled operational platform that combines data and tools for decision-making. The portal has more than 58 thousand metadata, almost 3,800 spatial data sets and about 4,500 active users every month. Among the new practical tools are work with objects of the Nature Reserve Fund, profiles of oblasts and communities and a Universal Data Quality Validator.

And, finally, one of the key goals of the Project is to transfer not only equipment and technologies, but also knowledge. Training, expert support and exchange of experience should ensure the ability of Ukrainian institutions to independently maintain, develop and scale the created solutions.

Cooperation with JICA helps Ukraine simultaneously solve two tasks: ensuring the stability of geospatial infrastructure in war conditions and creating a modern digital foundation for the future recovery of the country.



Keiji YAMADA,
Project Manager,
Kokusai Kogyo o., Ltd.

“ From the perspective of the project team, we offer the following reflections on the presentation of project outcomes by Dmytro Makarenko, Head of the State Service of Ukraine for Geodesy, Cartography and Cadastre (StateGeoCadastre). His presentation was highly insightful, illustrating the critical role that surveying and geospatial information play during a national crisis. From Peacetime to Wartime: A «Paradigm Shift» in Data Management: The central theme of the presentation was a «paradigm shift from peacetime to wartime and the subsequent recovery phase.» It was emphasized that, following the Russian invasion, the priorities for Ukraine's National Spatial Data Infrastructure (NSDI) project underwent a dramatic transformation—shifting from a focus on «open data access» to «system continuity, robust security, and strict access control.»

Four Initiatives Supporting a Resilient Digital Infrastructure: Mr. Makarenko outlined four specific actions taken to maintain and develop the digital infrastructure, even amidst wartime conditions:

1. Strengthening Technical Capabilities: This included the procurement of equipment such as servers and drones, as well as the establishment of a maintenance system for critical infrastructure, including backup power supplies.

2. Secure Operation of Digital Services: Rigorous access control was implemented for the national geoportal. This enabled the secure provision of over 3,700 spatial datasets to approximately 4,500 monthly users, facilitating data utilization directly linked to recovery efforts.

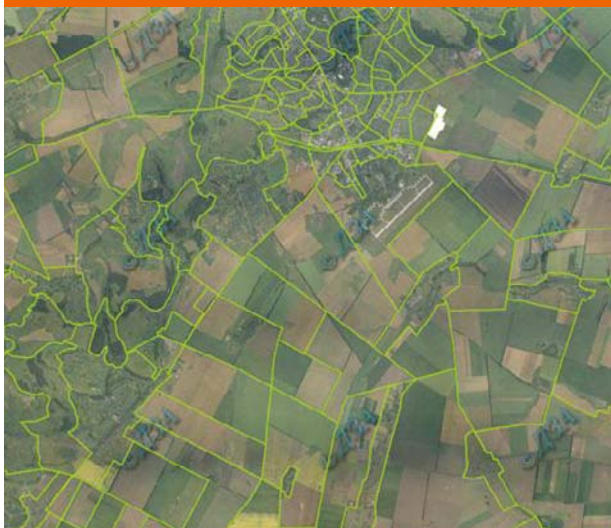
3. Mapping as a Foundation for Recovery: Topographic maps were produced for major cities like Odesa (at a scale of 1:10,000) and for the southern regions (at a scale of 1:25,000). Additionally, GIS templates were developed to ensure efficient future updates.

4. Human Resource Development and Knowledge Sharing: This involved the transfer of technical expertise regarding data quality, as well as the sharing of insights gained through a study tour to Japan, which took place in June 2026.

Reception from European Nations and Recognition as a «Security Infrastructure»: This session, which drew a large number of government officials, was well-received. Participants from various European nations—including Poland and the United Kingdom—viewed the approach as a potential model for other European countries to follow, serving as a practical example of secure operations during times of crisis. Furthermore, private-sector providers of map data expressed interest in the security aspects of the initiative.

This presentation underscored to the international community that geospatial technology is far more than a mere management tool for peacetime; it is a «critical security infrastructure» that directly supports a nation's survival and post-conflict reconstruction. At the same time, it served as a significant opportunity to highlight how Japan's ongoing technical cooperation is making a profound contribution to strengthening Ukraine's resilience.

DEVELOPMENT OF NSDI



The development of the National Spatial Data Infrastructure is strategically important for Ukraine, especially in wartime and in the context of future post-war reconstruction. The creation of such a system brings Ukraine closer to the standards of the European Union, in particular, the INSPIRE directive.

This direction is a priority for the StateGeoCadastrе, the status of work on which is actively updated. At the current stage of the Project implementation:

- The supply of space imagery to the missing territory – 133 sq. km.
- The orthotransformation, reference and assessment of the accuracy of space imagery have been performed;
- The territory has been vectorized by 95% in total for all experts (16 sheets);
- The control map sheet has been vectorized by 100%;
- During vectorization, over 600 questions/comments/suggestions regarding the Geodatabase and Specification template were additionally formulated and entered into a common table, most of which were reflected in the Geodatabase and Specification template.
- Work was carried out to establish an unambiguous connection between the symbols for topographic maps and the objects of the Geodatabase. The fields, values, and data classes necessary for the correct display of database objects in symbols, including when designing publishing originals of topographic maps, were determined, and appropriate recommendations were provided for making changes to the Geodatabase and Specification template.
- The following were received and entered into the reference sheets: clarified relief data, data on points of the State Geodetic Network, boundaries of settlements, address register data, etc.

Together with international partners, this work does not stop and, despite the current risks and restrictions in the operation of the registers, is carried out in strict accordance with the approved timing.

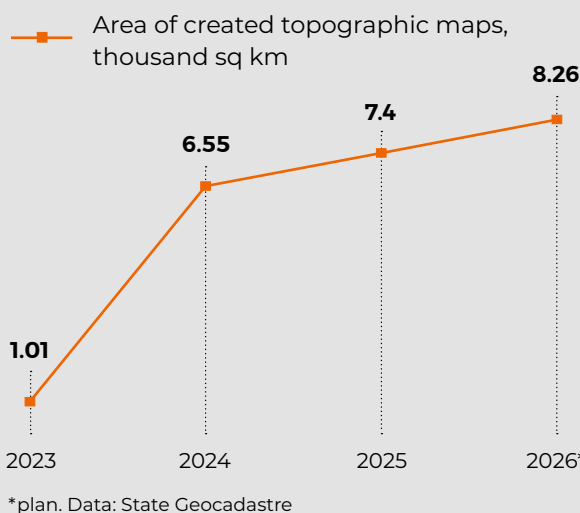
CARTOGRAPHY

Creating topographic maps and updating the cartographic base is one of the main priorities of the StateGeoCadastrе, which managed to launch these works within the framework of state budget financing and 100% fulfill the planned indicators of the program in 2024–2025.

In 2026, the StateGeoCadastrе will reach a volume of 23 thousand sq. km of created topographic maps. This is comparable to the territory of one medium-sized region of Ukraine. The works are focused on those zones that are defined as priority, based on strategic, economic and security indicators.

Thanks to international technical assistance, in particular from the Japan International Cooperation Agency (JICA), since 2023, topographic maps of the cities of Odesa (173.31 sq. km), Mykolaiv (248.8 sq. km) and Kherson (87.18 sq. km) have been created and updated at a scale of 1:10,000, with a total area of 509.29 sq. km. As part of the MATRA government program (Netherlands), about 2,000 sq. km of satellite images have been obtained for the organization of topographic, geodetic and cartographic works.

DYNAMICS OF CREATION OF TOPOGRAPHIC MAPS IN UKRAINE AT A SCALE OF 1:10,000



In 2026, with the support of JICA, it is planned to create and update topographic maps of the territories of Zhytomyr (291.67 sq. km) and Chernihiv (437.5 sq. km) oblasts at a scale of 1:10,000, with a total area of 729.17 sq. km.

Since before the Russia's full-scale military invasion of Ukraine, there was practically no work on updating the topographic base, a large amount of urgent tasks was created, the estimated completion time of which is measured in tens of years.

Therefore, the support of international partners, both financial and expert, is very relevant and invaluable.

These are not just maps – these are basic data for cadastre, spatial planning, infrastructure protection, damage assessment and future reconstruction.