Today's Mapping
Tomorrow's Future

National Geographic
Information Institute

92, World Cup-ro, Woncheon-dong, Yeongtong-gu, Suwon-si, Gyeonggi-do, Republic of Korea
WEB www.ngii.go.kr

NATIONAL GEOGRAPHIC INFORMATION INSTITUTE

National Geographic
Information Institute

From the National Geodetic Datum to Future Growth Industries, NGII Shapes Korea's Geospatial Information

As national land development and utilization accelerated, the government recognized the importance of surveying and mapping for national land construction plans. On November 1, 1974, the National Geographic Information Institute (formerly the National Geographic Institute) was established to take charge of modern surveying and mapping.

In 1995, the first master plan for the National Geographic Information System (NGIS) was formulated. Starting with the digitization of paper maps, followed by digitalization, and now reaching digital transformation, NGII has advanced tirelessly.

NGII establishes the National Geodetic Reference System and produces and provides a wide range of Geospatial Information, including the National Base Map. Through this, it strengthens national competitiveness and supports the safety and convenience of the people.

Today, a hyper-connected society and the development of advanced ICT technologies such as artificial intelligence are rapidly transforming industries and daily life. International competition in new industries such as AI-based smart city design and digital twin technology is fiercer than ever. NGII is determined to respond proactively to these changes and take the lead in preparing for the future.

Going forward, NGII will enhance the authority and reliability of national spatial data through thorough management of surveying, geodesy, and positioning. We will continuously innovate the National Base Map and deliver the latest Geospatial Information promptly, reinforcing public trust. Furthermore, by building and providing next-generation geospatial information to support future growth industries such as autonomous driving and smart cities, NGII will lead the data-driven economy and strengthen communication with the public to advance steadily.

Thank you.

Recording Today's National Land Opening Tomorrow's Path

On the maps that connect Korea's land, sea, and sky
lies not only the present but also the future.

With precise Geospatial Information, the National Geographic Information Institute records today's territory,
and shapes tomorrow.

Every line drawn on a map lays the foundation for national growth
and the lives of our people.
These lines guide the next generation to new horizons.

Recording the present with accuracy
and preparing for the future — this is our mission.

Designing Korea's Future with Smart Geospatial Information

+ MISSION

Establishment of the National Reference System and Infrastructure

National Geographic Information Institute (NGII)

As an affiliated organization of the Ministry of Land, Infrastructure and Transport (MOLIT), NGII is Korea's national agency for Geospatial Information. It surveys, produces, and manages geographic information of Korea with accuracy and expertise.

+ VISION

Leading Korea's digital transformation of geographic information and infrastructure

MAJOR STRATEGIC INITIATIVES

National Reference System Establishment	National Geospatial Database Development	Digital Twin Development	Promotion of Korea's Geospatial Industry
Establish a reliable national reference for improved coordination of spatial information	Build the national geospatial database to meet diverse spatial data needs	Digitize Korea's geospatial data to build the national digital twin platform	Uplift geospatial industry as the future strategic sector

+ Korea's Geospatial Journey: Opening the Path Walking Together +

1958 ~ 1980

1958.04.18.
Establishment of the Geographic Research Institute under the Ministry of National Defense

1962.01.01.
Enactment of the Land Survey Act (Act No. 938)

1966.01.01.
Production of 1:25,000-scale Topographic Maps

1974.04.01.
Production of 1:5,000-scale Topographic Maps

1974.11.01.
Establishment of the National Geographic Institute

1981 ~ 2000

1985.12.24.
Establishment of Korea's Geodetic Horizontal Origin Point (NGI Notice No. 57)

1986.02.22.
Enactment of the Rules for Digital Mapping

1993.04.01.
Production of 1:5,000-scale Digital Topographic Maps

1995.01.01.
Production of 1:1,000-scale Digital Topographic Maps

1998.09.01.
Distribution of Digital Maps to the Private Sector

2001 ~ 2010

2003.07.26.
Renaming as the National Geographic Information Institute (Presidential Decree No. 18067)

2004.11.01.
Opening of the National Map Museum

2007.01.01.
Publication of the National Atlas of Korea

2009.01.01.
Antarctic surveying activities

2010.01.01.
Adoption of the World Geodetic System 1984 (WGS84)

2011 ~ 2020

2012.03.27.
Completion of the Space Geodetic Observation Center

2014.05.11.
Production of Braille Maps for the Visually Impaired

2015.09.13.
Development of High-Definition Road Maps for Autonomous Driving

2016.02.28.
Free Access to National Geospatial Information Implemented

2019.11.01.
Opening of the National Land Satellite Center

2021 ~

2021.03.22.
Launch of Korea's First National Land Satellite (CAS500-1)

2022.11.15.
Hosting of the PAIGH International Training Program

2024.11.01.
50th Anniversary of NGII

2025.09.26.
14th UN-GGIM-AP Plenary Meeting Held (Elected as Co-Chair)

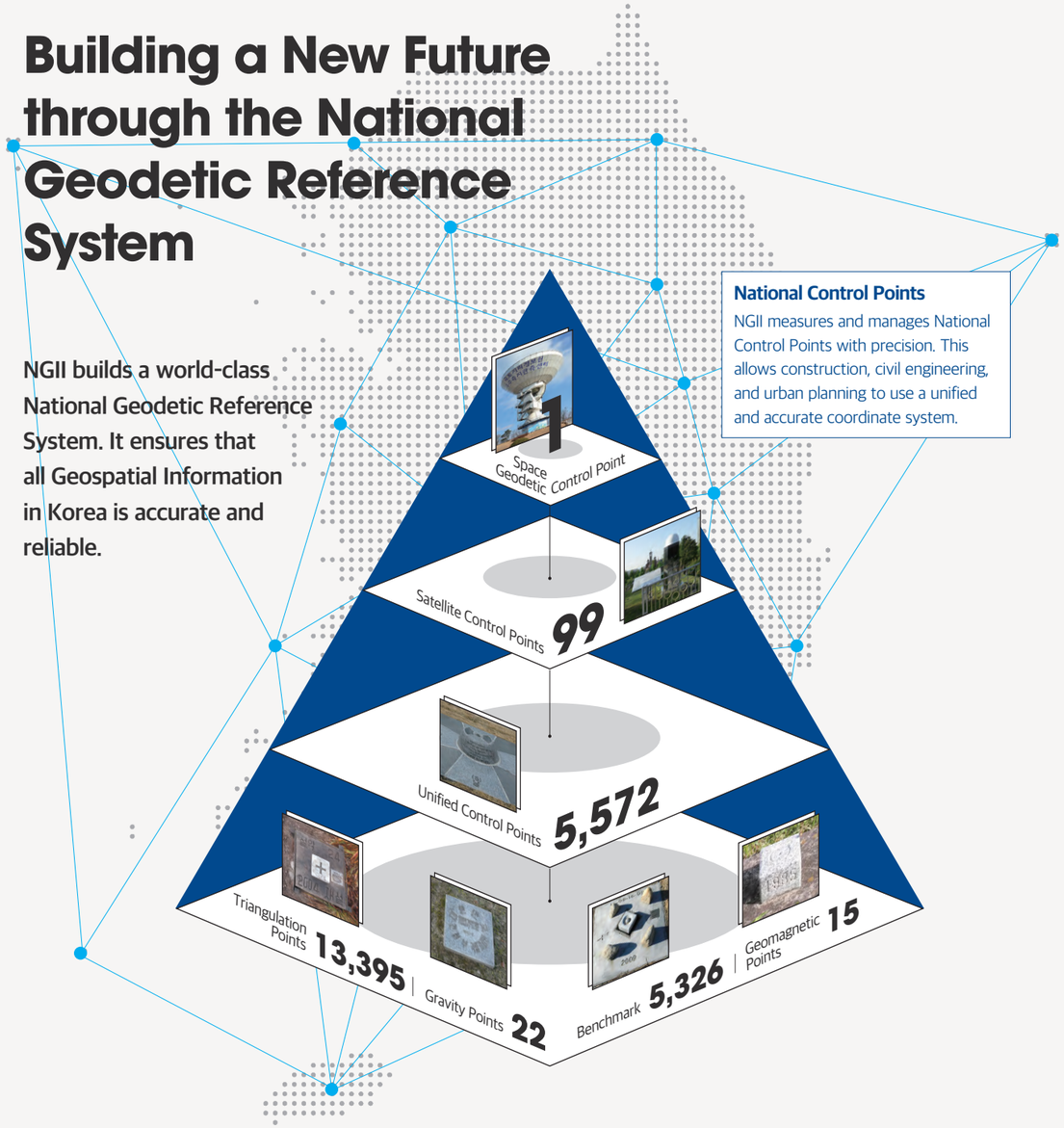
ORGANIZATIONAL STRUCTURE

Director General

Planning & Policy	General Services	Geodesy	Geographic Information	SmartSpatial Information	National Geographic DataMonitoring	National Land Satellite Center
Planning and Coordination	General Affairs	National Geodetic Reference	National Base Map	Geospatial Data Planning	Survey Planning	Satellite Planning
Public Survey	Accounting	Geophysical Survey	Aerial Photogrammetry	3D Geospatial Data	Geographic Names Management	Satellite Operation
Regulation and Standardization	Customer Services	Space Geodetic Observation Center	Thematic Map	DataSecurity	IT Management	Satellite Utilization
—	Museum	—	—	—	—	—
—	—	—	—	—	—	—

Building a New Future through the National Geodetic Reference System

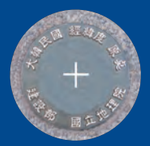
NGII builds a world-class National Geodetic Reference System. It ensures that all Geospatial Information in Korea is accurate and reliable.



National Control Points

NGII measures and manages National Control Points with precision. This allows construction, civil engineering, and urban planning to use a unified and accurate coordinate system.

Origin Points of Surveying in Korea



Geodetic Origin Point (Horizontal Datum):

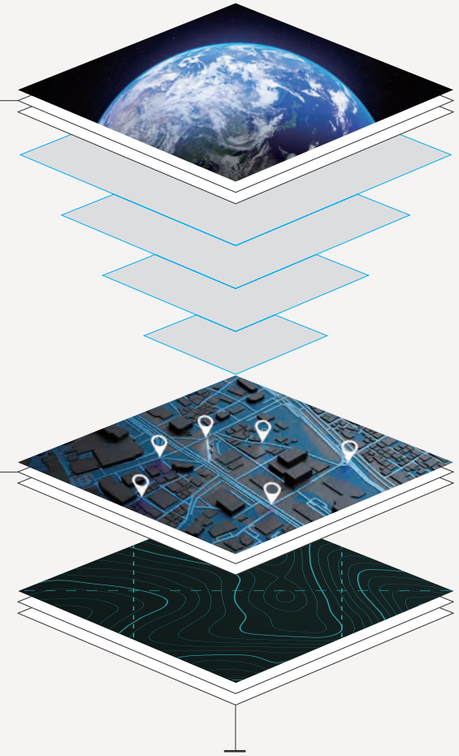
A metallic cross marker located at NGII. Its coordinates are Longitude 127°03′14.8913″E and Latitude 37°16′33.3659″N.

Vertical Origin Point (Vertical Datum):

The central point of the reference monument at Inha Technical College. It is based on the mean sea level of Incheon (+26.6871 m).

Core Geodetic Technologies

NGII applies world-class geodetic technologies. It observes and manages National Control Points with precision.



Space Geodetic Technologies

The International Terrestrial Reference Frame (ITRF) is the world's most precise terrestrial reference system, realized by integrating space geodetic technologies such as VLBI, GNSS, SLR, and DORIS. NGII aligns and manages Korea's National Geodetic Reference System with the ITRF. This enables millimeter-level positioning accuracy nationwide and provides geodetic services that meet international standards.

VLBI (Very Long Baseline Interferometry) - Determines position by receiving radio waves from quasars billions of light-years away.
GNSS (Global Navigation Satellite System) - Determines position by receiving signals from satellites such as GPS, GLONASS, Galileo, and BeiDou.

Real-Time Positioning Service

Provides cm-level positioning in real time. Correction information is transmitted from GNSS reference stations to mobile stations. It is applied in surveying, cadastral management, construction, agriculture, autonomous driving, and drones.

GNSS Correction Information Service

Improves satellite positioning accuracy by correcting orbital, clock, and atmospheric errors. Since 2007, NGII has provided free real-time correction via the Internet, with about 3 million cases as of 2024.

OSR (Observation Space Representation) Aggregates all GNSS error values into one correction.
SSR (State Space Representation) Separates errors by source such as orbit, clock, ionosphere, and troposphere.

Enhancing the Accuracy of National Surveying Standards

NGII updates the position and elevation of National Control Points with the latest technologies. This ensures that all maps, surveys, and designs use a unified and accurate coordinate system.

Composite Geoid Model "KNGeoid24" - In 2024, NGII developed KNGeoid24. This model reflects Earth's gravity variations and provides consistent altitude nationwide.

NGII Space Geodetic Observation Center

The center is equipped with advanced instruments such as VLBI, GNSS, and SLR. It serves as a national and global geodetic station. The Center observes and maintains Korea's National Geodetic Reference System and Control Points through Space Geodetic Technologies. The center has a public exhibition hall. Visitors can learn about space geodesy and experience the value of geospatial information.

Address: 125, Ujucheukji-gil, Sejong Special Self-Governing City | **Tel:** +82-44-860-4003

MAIN TASK

Recording Korea with Precision

NGII records and manages Korea's terrain and features with accuracy. It provides high-quality Geospatial Information accessible to everyone. This Information is the foundation for national and public activities in administration, construction, environment, and disaster management. NGII uses the latest surveying technologies and systematic data management. It establishes and operates the National Base Map, Geographic Names, and Geospatial Information Platforms.
These platforms reflect changes in the national territory promptly and accurately.

Production of the National Base Map Database

NGII produces the National Base Map of Korea and updates it regularly with aerial imagery and surveying data. This Database is the framework of the nation's territory. It supports administration, construction, environment, disaster management, and other fields.

- 1:5,000-scale National Standard Map (nationwide coverage)
- 1:1,000-scale High-precision Map (urban coverage)
- 3D National Base Map (LoD1-2) - 3D maps including building heights and terrain models

Development of Geospatial Databases for Various Fields

NGII builds customized Geospatial Databases for urban planning, environmental conservation, transportation, and agriculture. It provides timely and accurate information for industries and policymaking.

- Integrated Database combining aerial imagery, orthophotos, and numerical data
- Geospatial information services available to both public and private sectors
- Technology development and infrastructure expansion for updating, standardization, and automation
- Design of the National Spatial Data Infrastructure (NSDI) and promotion of sectoral linkages

Development of Polar Geospatial Information

NGII develops and provides Polar Geospatial Information. It conducts related activities to support polar research and secure future sovereignty over Antarctic territories. This enables precise analysis of glacier changes, sea-ice conditions, and ecosystem variations. It also supports international joint research and climate-change response policies.

- Geospatial Information development around Antarctic research stations and activity areas (e.g., 1:5,000- and 1:25,000-scale Digital Topographic Maps)
- Installation of Geodetic Surveying Infrastructure (e.g., Unified and Satellite Control Points) within Antarctic research stations
- Designation of Korean place names for 27 research sites around King Sejong Station and registration in the Composite Gazetteer of Antarctica (CGA)

Ensuring Data Quality and Updating Geographic Names

NGII conducts precise National Land Surveys. It improves data quality and regularly updates the location, name, and spelling of Geographic Features across the country.
The updated data increases the accuracy of maps, navigation systems, administrative documents, and other services.

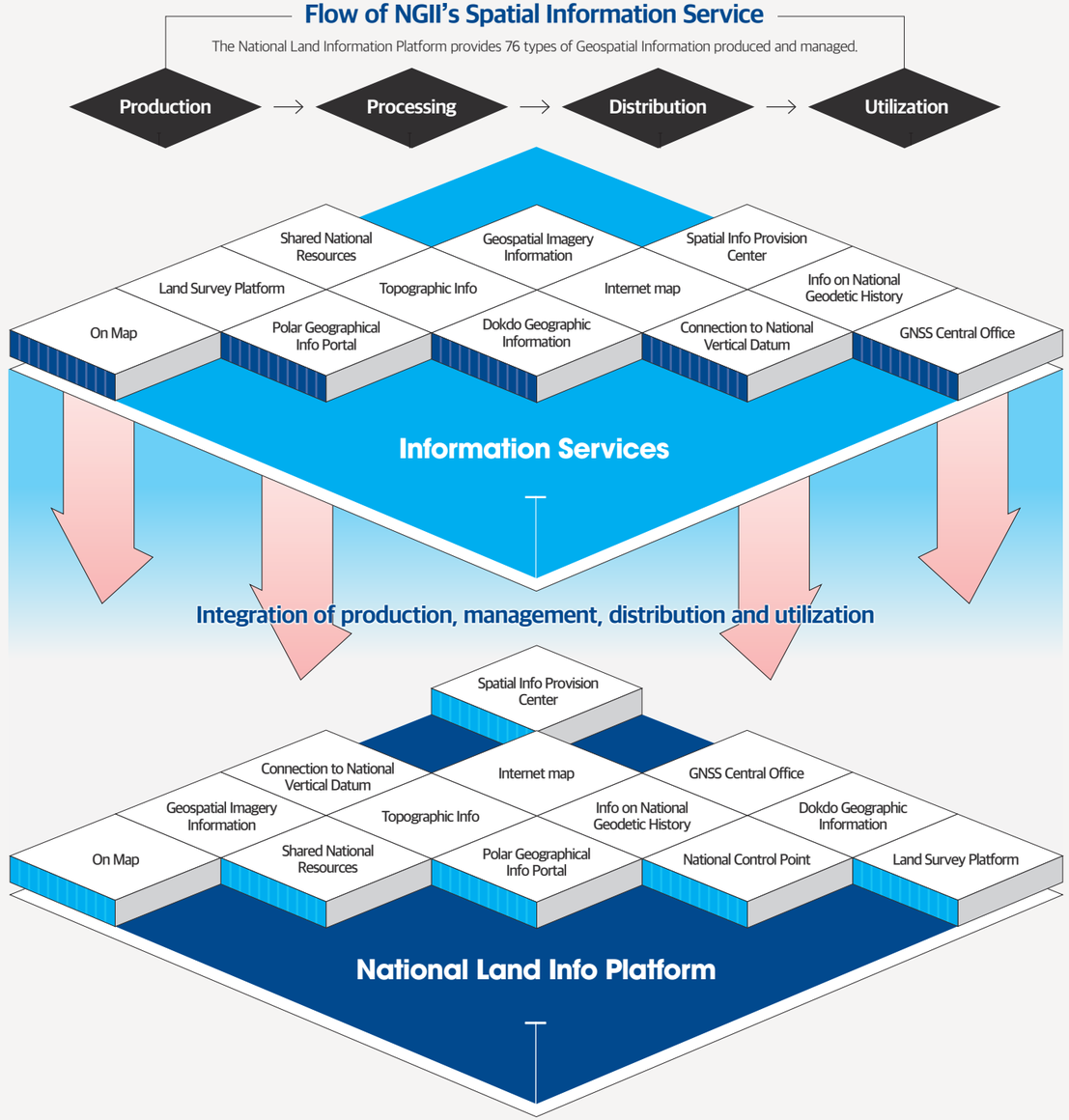
- About 100,000 officially registered Geographic Names nationwide
- Data used to improve the accuracy of maps, navigation systems, and administrative documents

The Customized National Land Information Platform Service

NGII produces Object-based Maps with information on buildings, roads, rivers, and other features. It also operates the National Land Information Platform (map.ngii.go.kr) based on these maps. Services such as the National Internet Map, ON-MAP, and POI (Point of Interest) allow the public to access customized Geospatial Information anytime and anywhere.

Flow of NGII's Spatial Information Service

The National Land Information Platform provides 76 types of Geospatial Information produced and managed.



National Digital Twin Platform, Connecting the Virtual and the Real

NGII integrates precise Geospatial Information with advanced imaging technologies. It records changes in the national territory and develops Korea's National Digital Twin Platform. By combining the National Base Map, 3D Geospatial Information, and satellite and aerial imagery, NGII provides a future-oriented platform for the national territory. This platform supports administration, industry, disaster management, and environmental fields.

Development of 3D Indoor and Outdoor Spatial Information

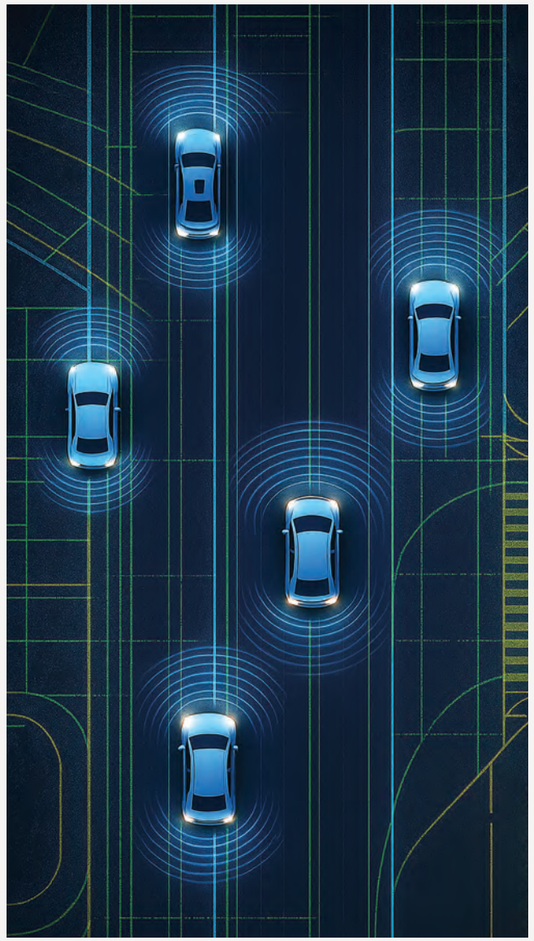
NGII builds high-precision 3D Spatial Information for buildings, roads, terrain, public facilities, and the interiors of complex buildings. By integrating structural, locational, and height information indoors and outdoors, NGII provides Geospatial Data that supports advanced industries such as smart cities, disaster response, and augmented reality.

- LoD1-2 terrain and building models (outdoor)
- LoD0-3 indoor structure and facility models (indoor)
- Applications: AI training, UAM, smart city design, disaster response simulations, and AR/VR services

Development of High-Precision Road Maps

In preparation for the release of Level 4 autonomous vehicles in 2027, NGII is developing High-Definition Road Maps. These maps enhance autonomous driving safety, support the development of C-ITS (Cooperative Intelligent Transport Systems), and provide essential data for road management. The HD Maps represent lanes, signs, and roadside facilities with high accuracy. They are used for vehicle positioning, route navigation, and recognition of traffic regulations.

- Goal: Nationwide High-Precision Road Maps (118,000 km) completed by 2030
- Status: 36,000 km completed, including expressways and national highways
- Composition: 14 data types including networks, road sections, traffic signs, and facilities (accuracy: within 25 cm)
- Applications: Autonomous vehicle development and testing, C-ITS base map production, and digital road register development



National Land Satellite - Recording Korea More Broadly and Frequently

Launched in March 2021, the National Land Satellite (Compact Advanced Satellite 500-1, CAS500-1) is Korea's first high-resolution Land Observation Satellite. It captures global imagery at 50 cm resolution on a regular basis. This enables precise monitoring and management of land changes and conditions.

- 100% coverage of the Korean Peninsula with the National Land Satellite
- Satellite imagery provided for international disaster response (International Charter, UN ESCAP)
- Data products available free of charge via the National Land Information Platform
- Products: Orthophotos, user-friendly imagery, mosaic images, image maps, emergency geospatial data
- Applications: Geospatial data production, land management, disaster response

Specifications of the National Land Satellite

Size: 1.4 m × 1.5 m × 2.9 m
Weight: Approx. 540 kg (with fuel)
Orbit altitude: 497.8 km
Spectral bands: MS (Red, Green, Blue, NIR), PAN
Spatial resolution: 0.5 m (panchromatic), 2 m (multispectral)
Swath width: 12 km
Revisit cycle: 4.6 days (same area)

Enhancing the Timeliness and Accuracy of Aerial Imagery

NGII uses state-of-the-art aerial photography equipment. It regularly captures the entire country to produce high-resolution orthophotos. Distortions are removed during acquisition and post-processing. The final orthophotos provide high accuracy, improve land-change detection, and enhance the reliability of administrative decision-making.

- Annual high-resolution aerial photography (12 cm for urban areas, 25 cm for non-urban areas)
- Production and updates of orthophotos
- Change-detection analysis (e.g., land-use changes, development status)
- Applications: urban planning, environmental monitoring, and illegal building control

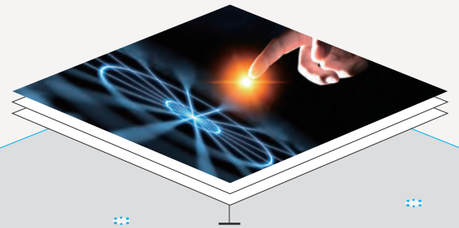
Satellite-Aerial Imagery Fusion Data Services

NGII provides integrated data that combines satellite imagery, aerial imagery, orthophotos, the Digital Elevation Model (DEM), and 3D Geospatial Information. This enables spatiotemporal analysis. By leveraging the strengths of both satellite and aerial imagery, the data supports tailored analyses for national and industrial applications. It also supports the implementation of the National Digital Twin Platform.

- Combined satellite-aerial analysis
- Geospatial simulation support
- Data fusion-based services
- Applications: Implementation of the national digital twin platform, defense and security monitoring, customized industrial map production

Opening Tomorrow with Data, Shaping the Future of Our Land

NGII places accurate and reliable Geospatial Data at the core of its work. It strengthens quality, standardization, competitiveness, services, and capabilities to build a sustainable ecosystem for Korea's Geospatial Information Industry. It also fosters an open environment for public-private use, and advances innovation and citizen convenience.



Establishing a Foundation for Data Quality and Standardization

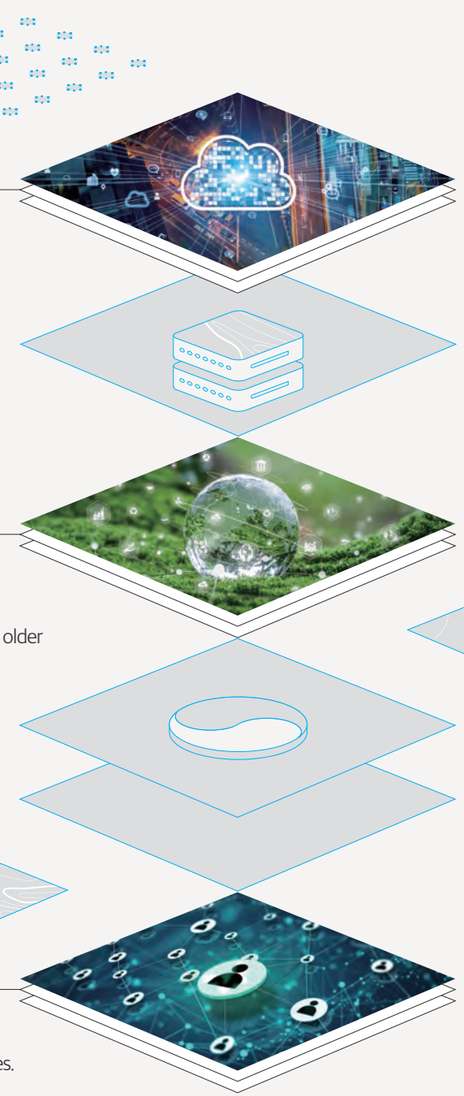
NGII provides accurate and consistent Geospatial Data by strengthening its quality management system and setting standardization guidelines. It ensures precision and interoperability for all datasets, including the National Base Map, 3D Geospatial Information, and positioning data. This builds a trusted foundation that can be used by both the public and private sectors.

- Operation of a Geospatial Data quality verification and management system
- Reliability ensured through alignment with international (ISO) and national (KS) standards

Supporting the Competitiveness of the Geospatial Information Industry

NGII cultivates geospatial professionals with convergence-oriented practical skills. It expands the education infrastructure to enhance the industry's competitiveness.

- Operation of convergence-based geospatial training programs for central and local government officials and military personnel
- Designation of specialized geospatial education institutions and establishment of an online training system



Expanding Citizen-Oriented Geospatial Services

NGII expands Geospatial Services in transportation, safety, environment, and disaster management—areas closely connected to daily life. It enhances web-and mobile-based platforms for easy access by all. These platforms deliver real-time, tailored information to improve everyday convenience for citizens.

- Provision through the Public Data Portal and mobile services
- Development of integrated services linking real-time disaster, traffic, and environmental information

Social Value in Practice

NGII expands social contribution initiatives based on Geospatial Information. It develops and operates public-interest services such as monitoring disaster-vulnerable areas, mobility support maps for persons with disabilities and older adults, and programs to improve living environments in rural and island regions. These services reduce spatial inequality and promote balanced regional development.

- Disaster and safety support
- Mobility support for vulnerable groups
- Production of Braille Maps and color-vision-friendly maps
- Improvements to living environments in rural and island regions
- Expanded access and utilization of Public Data
- Geospatial solutions for social challenges

Strengthening Institutional Capabilities and Efficient Operations

NGII reinforces its organizational structure, workforce, and technical competencies. It establishes an efficient operational framework for Geospatial Services. Efficiency is enhanced across the full lifecycle of data production, processing, and distribution. This enables rapid responses to evolving needs.

- Training of Geospatial professionals and operation of technical qualification systems
- Implementation of automated systems for data processing and distribution

NGII National Map Museum

The National Map Museum is Korea's only museum dedicated to maps. It displays historic maps, surveying artifacts, and digital Geospatial Information. Exhibits such as the globe in the central hall and satellite models invite visitors to appreciate Korea's national territory and the value of Geospatial Information.

Address: 92, Worldcup-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do **Tel:** +82-31-210-2667

Engaging the World with Korea's Geospatial Information

NGII enhances Korea's national brand by expanding the international use of Korean Geographic Names, strengthening intergovernmental cooperation, and conducting joint projects with international organizations. It also leads international standardization and the exchange of advanced technologies. These efforts broaden Korea's role in the global geospatial community.

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International Promotion of Korean Geographic Names

NGII promotes global recognition and use of Korean Geographic It hosts academic conferences, exhibitions, and online outreach to highlight their historical and cultural value. It also promotes the use of internationally standardized spellings.

- Participation in United Nations Group of Experts on Geographical Names (UNGEGN) activities
- Production and distribution of promotional content on Geographic Names
- Joint promotion with international academic and cultural events

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International Cooperation

NGII presents Korea's Geospatial Technologies and policies on global platforms such as UN-GGIM Asia-Pacific (UN-GGIM-AP), and the Eurasia Spatial Data Infrastructure (ESDI). It contributes to the modernization of the Global Geodetic Reference Frame, international standardization, and joint research. It also supports developing countries through technology transfer and training, fostering shared growth with the international community.

- Participation in the UN-GGIM expert committee and the UN-GGIM-AP plenary Sessions
- Operation of the Eurasia Spatial Data Infrastructure (ESDI) cooperation platform
- Geospatial capacity building for developing countries through ODA programs

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Bilateral Cooperation

NGII signs bilateral agreements with key countries and institutions. It promotes technology and policy exchange. It also carries out joint projects in advanced fields such as Artificial Intelligence (AI), satellite and aerial imagery, and Geospatial Big Data. Through joint research and personnel exchange, NGII strengthens global technical capabilities.

Today's Mapping Tomorrow's Future

The lines and points on a map are more than marks.
They hold people's lives, the breath of the land, and the traces of time.

NGII safeguards these records.
It passes our history and heritage to the next generation.
Powered by technology and data, today's maps become tomorrow's history.
They serve as milestones guiding the next generation toward a wider world.

To connect the past, the present, and the future—
this is why we make maps and record our land.