Development of Polish SDI

International Spatial Data Workshop 2026

Ewa Surma - Head Office of Geodesy and Cartography

9th of October 2026

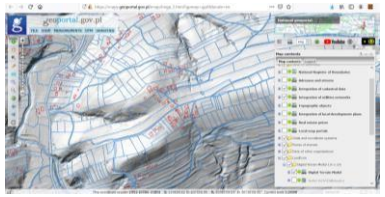
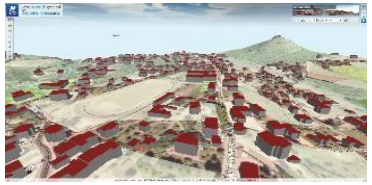
Surveyor General of Poland

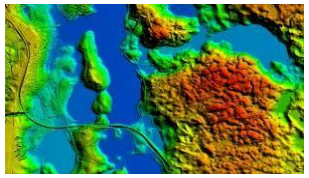
Head Office of Geodesy and Cartography (GUGiK) is Polish National Mapping and Cadastral Authority

The Head of GUGiK is the Surveyor General of Poland (GGK) Main tasks :

- supervises implementation of national policy in geodesy and cartography
- manages central geodetic and cartographic data resource and geoportal
- elaborates and establishes registers and databases
- grants professional entitlements (licences) in geodesy and cartography and manages a register of authorised persons
- cooperates with foreign and international, specialised institutions and authorities as well as with local governments and professional organisations

- Head Office of Geodesy and Cartography (GUGiK) is Poland's main spatial data provider. The role of GUGiK is to provide access to current spatial data and manage national spatial data infrastructure (NSDI).
- Spatial data in Poland is collected in the registers by many central institutions and local government units at all levels.
- The largest and the most important resources of spatial data is collected on the basis of the Geodetic and Cartographic Law.
- GUGiK is focused on data acquisition, digitalisation of geodesy and integration of e-services providing easy access to data for a wide range of users (environment, investment process, spatial planning, energy, etc.).

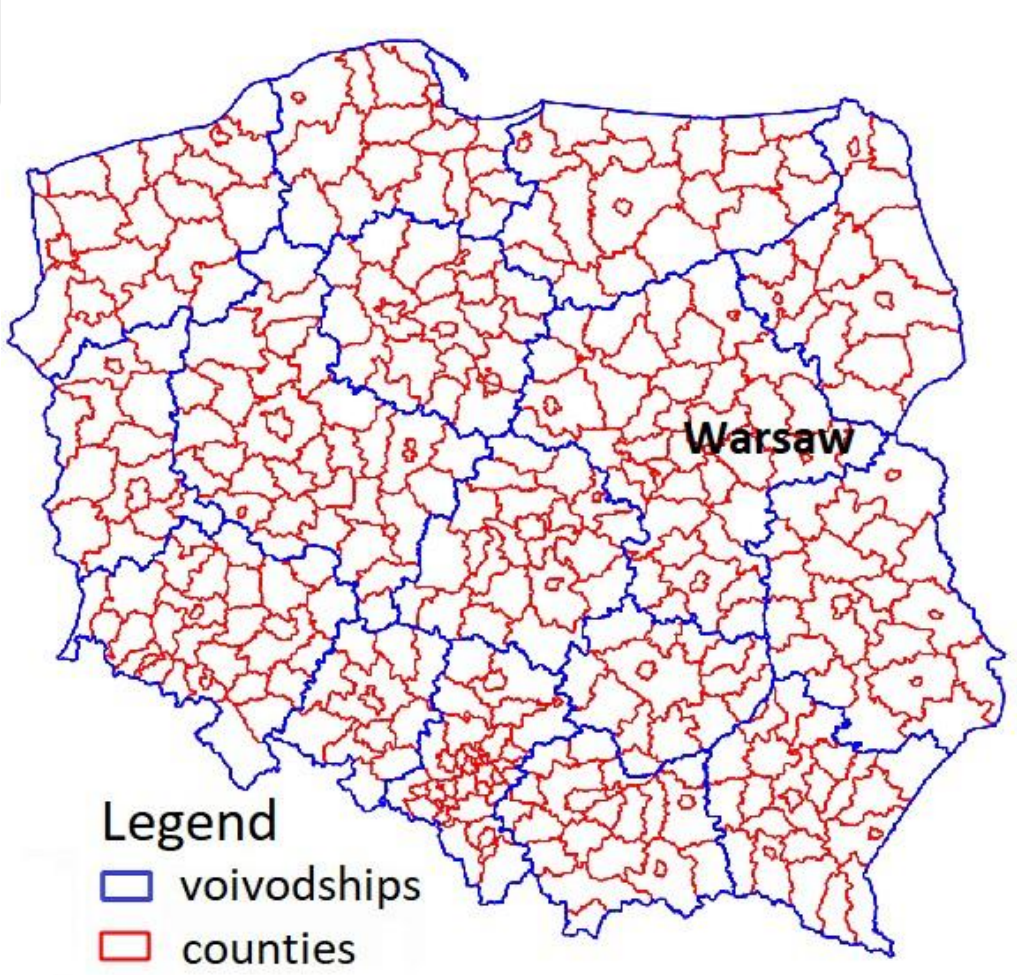






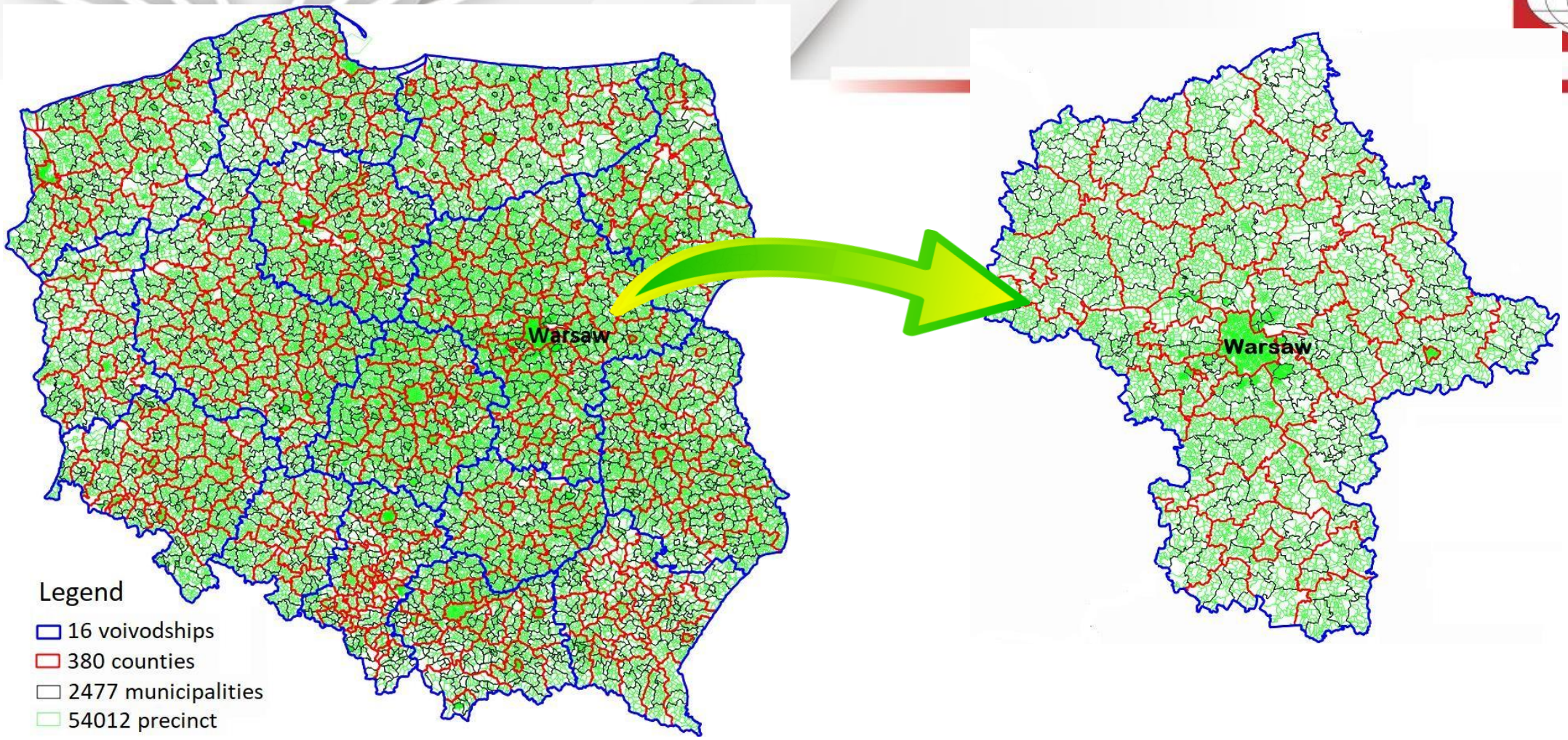
BUDAPEST9THOFOCTOBER2026

Administrative division in Poland

- 16 voivodships
- 380 counties



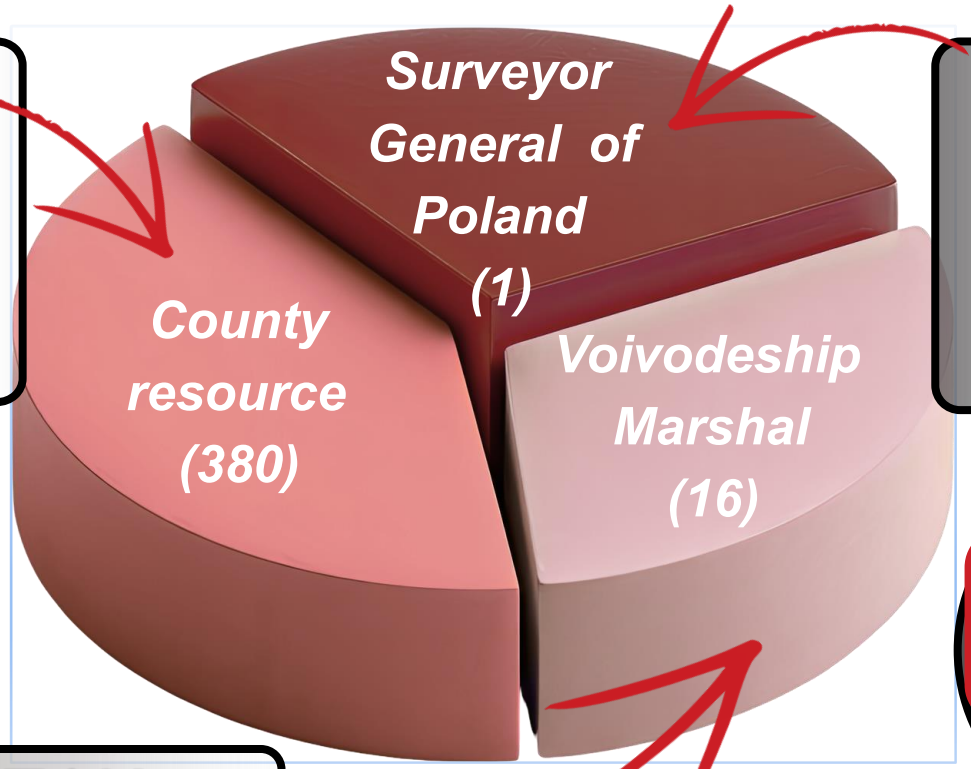
Administrative division in Poland


Warsaw
Warsaw
Legend
16 voivodships
380 counties
2477 municipalities
54012 precinct

GEODETIC DATA IN POLAND

- EGIB
- Utilities
- BDOT500
- BDSOG
- RCiWN

Basic Map



- BDOO
- ORTO
- NMT
- PRNG
- BDPOG
- PRG- addresses

Municipal Head/Mayor/City Mayor (2477) MPZP

BDOT10k
Highly dispersed data

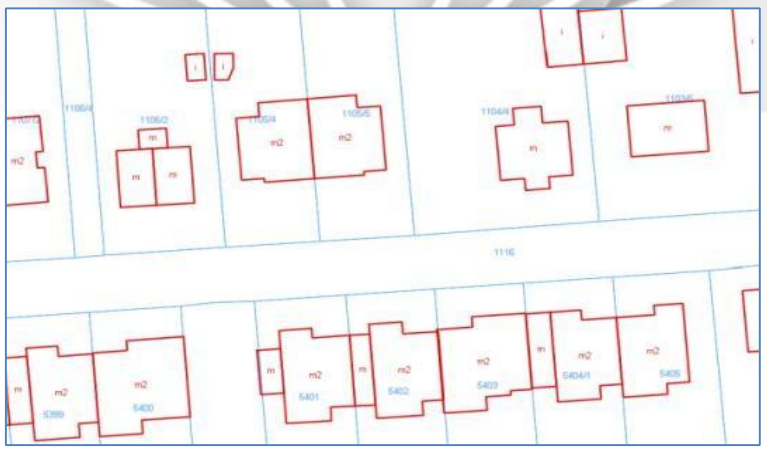
The POWER of our DATA

PZGiK accounts for over 70% of spatial data collected in public registers.
~2 PB (Petabytes !) of data

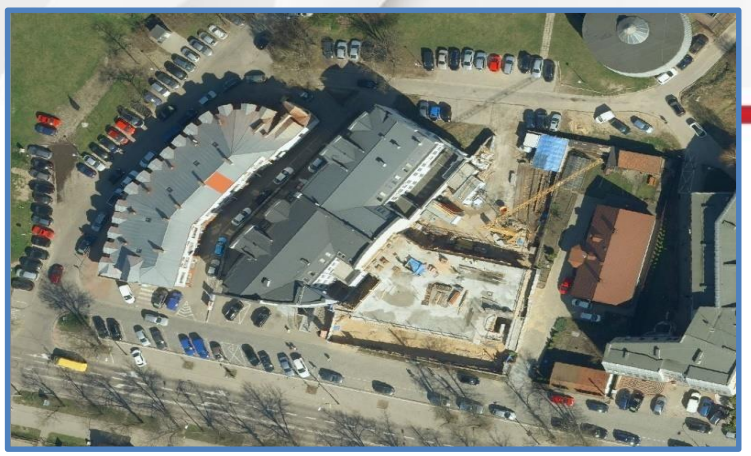
- ~ **8 000 000** address points
- ~ **39 000 000** cadatral parcels and ~ **17 000 000** buildings
- ~ **62 000 000** topographical objects in BDOT10k
- ~ **5 000 000** aerial photographs since 1950
- **~3 210 000 000 000** measurements points (X,Y,Z) from ALS



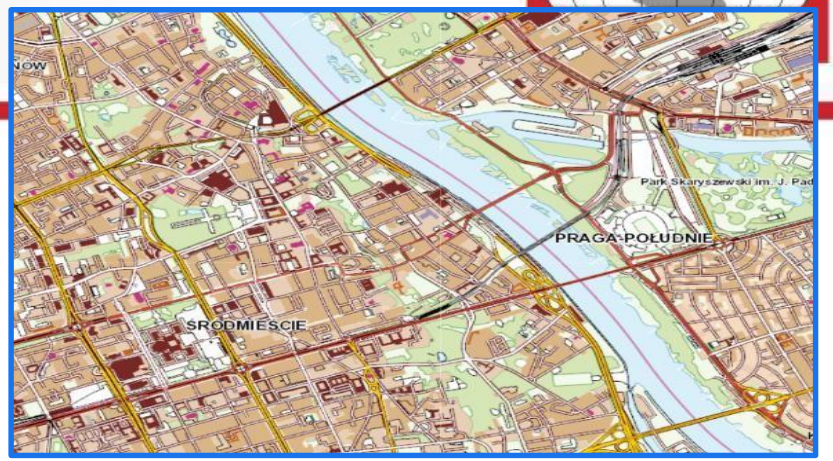
Open data from 2020



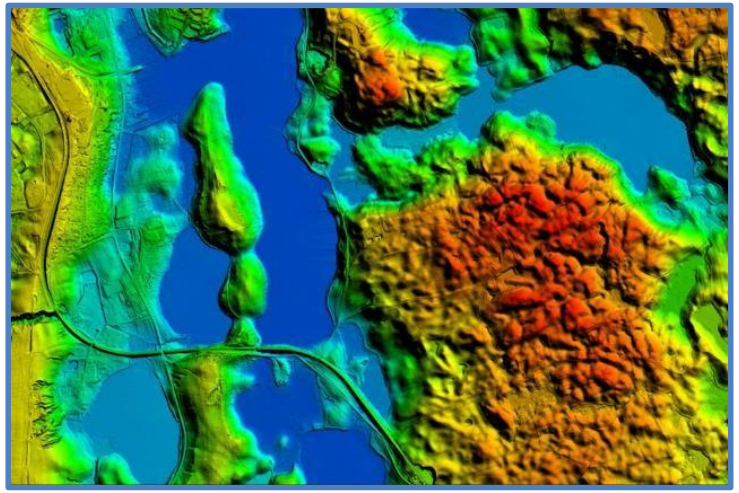
Basic data on parcels and buildings



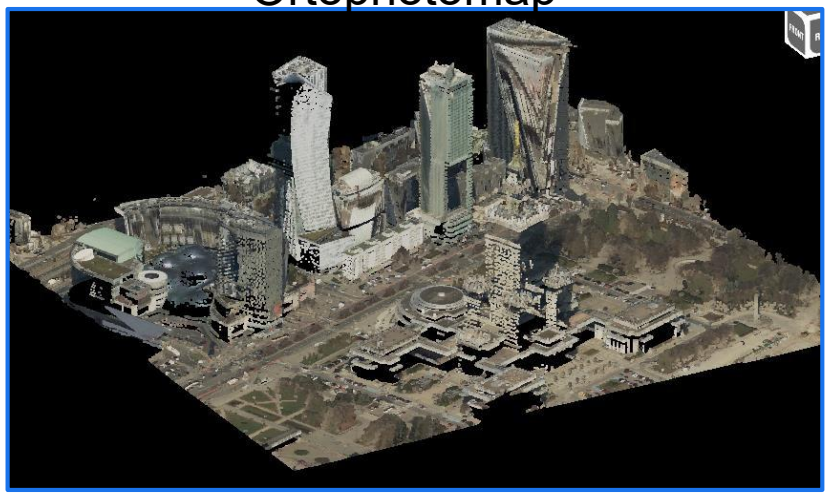
Ortophotomap



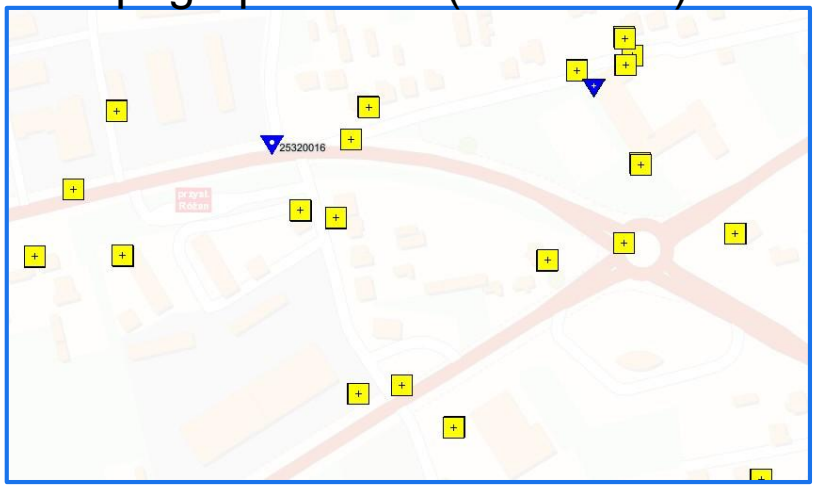
Topographic data (BDOT10k)



DEM



Laser scanning (ALS)



Geodetic control networks data

CENTRAL RESOURCE



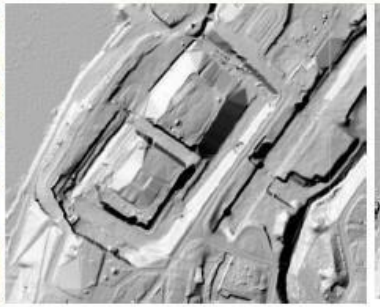
VERTICAL DATA



OBLIQUE DATA



LIDAR DATA



DEM



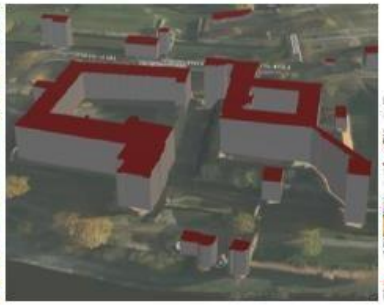
DSM



INTENSITY IMAGES



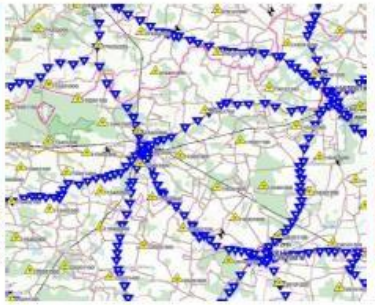
3D MESH



BUILDINGS, TREES 3D



CADASTRAL DATA



GEODETIC, MAGNETIC, GRAVIMETRIC NETWORK



BDOT10k, BDOO, GEOGRAPHICAL NAMES



TOPOGRAPHIC, THEMATIC MAPS

GUGiK Data and Services in the National Information Infrastructure – open data - June 2020

Poland **ranks third in Europe** in terms of the ope

Open data in Poland



European Commission’s annual report:

The countries were evaluated in areas such as open data policy, the economic and social impact of open data, data quality and open data portals.

GUGiK's KEY systems

HEAD OFFICE OF GEODESY AND CARTOGRAPHY

geoportal.gov.pl

GEOPORTAL



INTEGRATED REAL ESTATE INFORMATION SYSTEM (ZSIN)



REGISTER OF LOCALITIES, STREET AND ADDRESSES (EMUIA)



ASG-EUPOS



UNIVERSAL MAP MODULE



NATIONAL SECURITY THREAT MAP

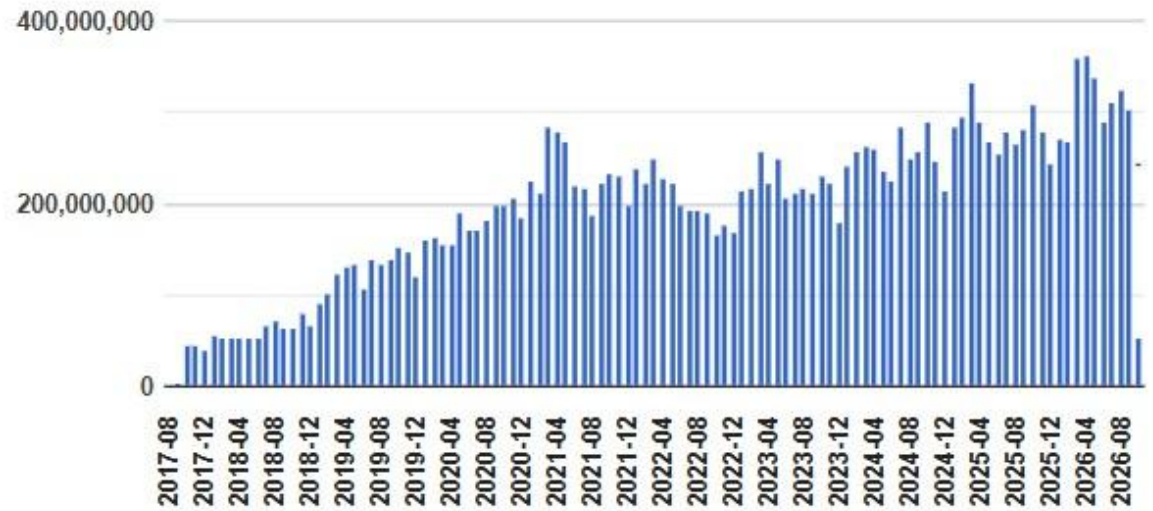
Good practice – integrated services

- GUGiK integrates local WMS services published by local governments (counties)
- Integrating service allows users to access cadastral parcels and buildings data from one endpoint instead of 380 local endpoints
- This way of integrating spatial data was recognised as INSPIRE Good Practice



Good practice – integrated service

A graph showing service usage



Service statistics

Number of included services - 385

Map showing administrative units included in the service



INSPIRE influence

- **I** - Interoperability
- **N** – Networking/Network services
- **S** - Standardization
- **P** - Point of access - Geoportal
- **I** – Integration of registries
- **R** – Regional development
- **E** – Education /Evolution

INSPIRE in Poland

HEAD OFFICE OF GEODESY AND CARTOGRAPHY

European Commission

Minister of Economic Development and Technology

Surveyor General of Poland

SDI Council

Minister competent over environment

Chief Geologist of Poland

Minister competent over construction and spatial and housing planning

President of the Central Statistical Office

Minister competent over culture and national heritage protection

Chief Nature Conservator

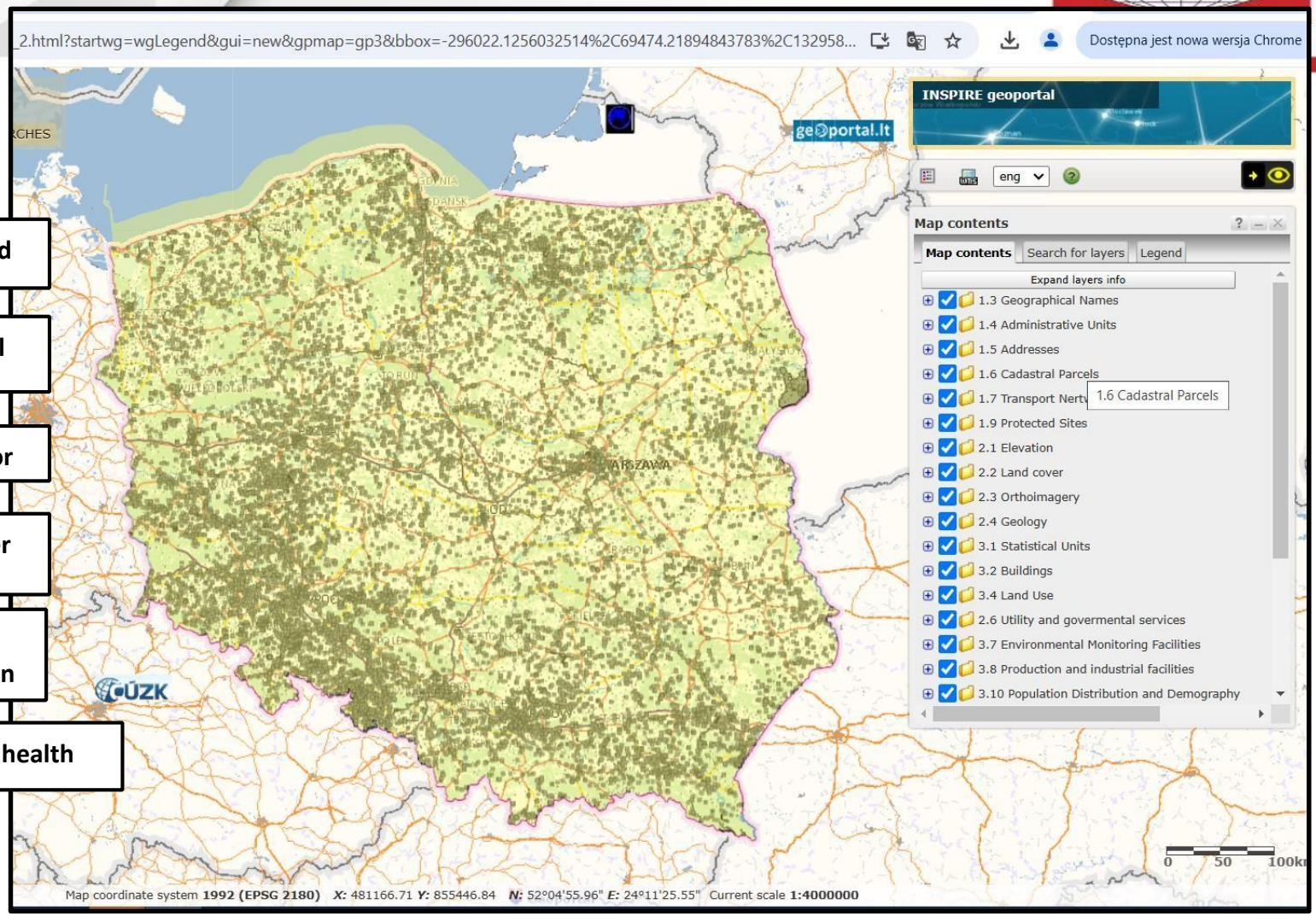
Minister competent over maritime economy

Minister competent over agriculture

Chief Inspector of Environmental Protection

President of Polish Waters

Minister competent over health



GUGiK activities on infrastructure

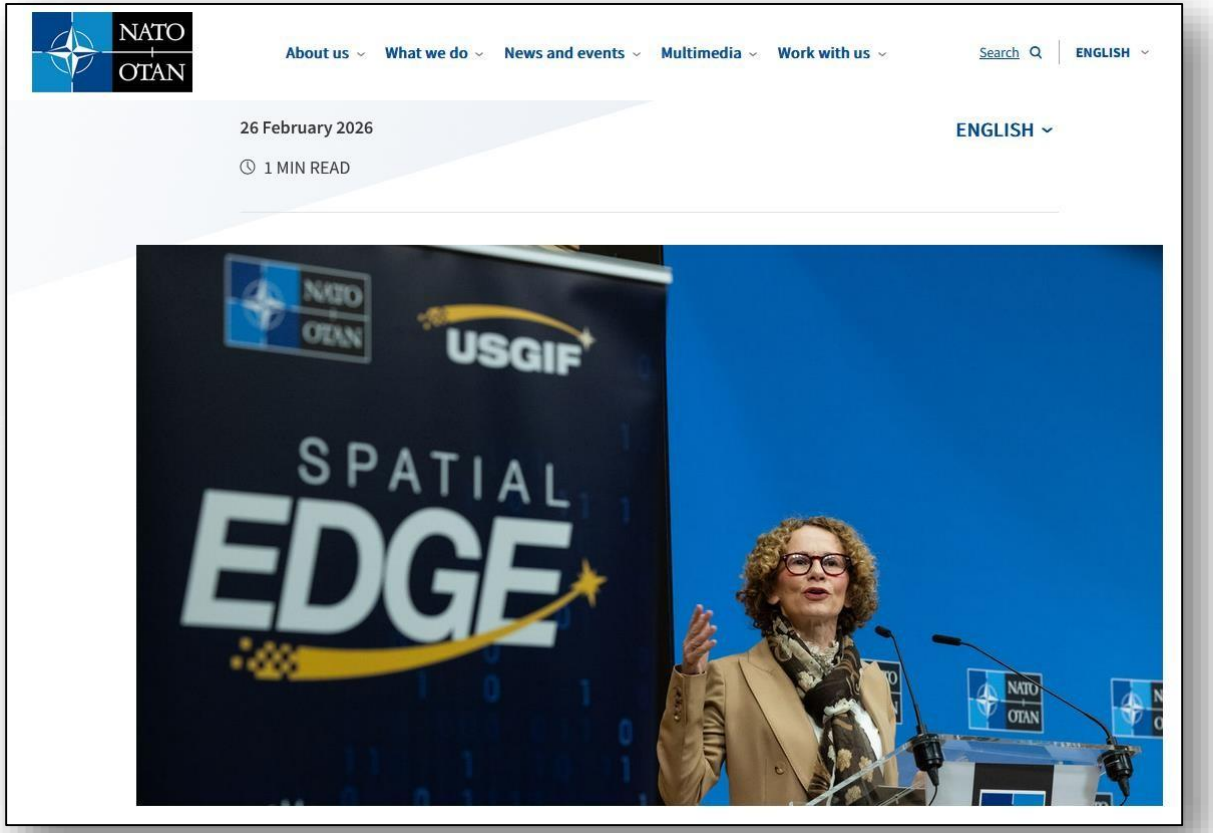
- GUGiK has modernised its server infrastructure and threat monitoring systems, ensuring full alignment with rigorous data protection standards. This overhaul **enhanced its resilience against hybrid attacks**, automated incident detection and developed staff digital security competencies.
- In addition, we introduced advanced validators (as a QGIS plugin) for key registers: the Land and Building Register (EGiB), the Real Estate Price Register (RCN) and the Database of Topographic Objects (BDOT10k).
- These IT tools automatically verify the consistency of data transmitted from county (powiat) to central levels, eliminating errors at the source and ensuring strict adherence to GML application schemas. Through automated testing, GUGiK maintains total spatial data **consistency across all administrative levels.**
- Cyclical training on SDI – wide audience

The importance of spatial data

NATO explores the role of geospatial intelligence in strengthening deterrence and defence

- NATO Deputy Secretary Radmila Shekerinskaya underlined the growing importance of geospatial intelligence for situational awareness and operational effectiveness across the Alliance

- The discussion contributes to NATO's broader efforts to strengthen intelligence cooperation and leverage emerging technologies to enhance the readiness and resilience of the entire Alliance.



Źródło: https://www.nato.int/en/news -and-events/articles/news/2026/02/26/nato -explores-the-role-of-geospatial-intelligence-in-strengthening-deterrence-and-defence

SPATIAL INFORMATION AS THE FOUNDATION OF THE NATIONAL ECONOMY



Geodesy and cartography - the most accurate data



The state has certainty of control over the territory and precise data on critical infrastructure



Rapid response in crisis situations, coordination of administrative, military, and emergency services activities, and planning for the country's strategic development

The development of geoinformation systems and maintaining consistent data resources is a key element of the national security strategy



Poland continues to strengthen its national digital resilience and modernise spatial information services to enhance cybersecurity and public-sector efficiency

- Under the Cybersecure Government program, the Head Office of Geodesy and Cartography (GUGiK) has reinforced its infrastructure resilience while also piloting a GNSS signal-interference monitoring system to enhance the quality of spatial information e-services.
- The pilot is part of a European Space Agency (ESA) programme project carried out in cooperation with the National Institute of Telecommunications). As a result, GUGiK implemented a system comprising selected stations of the ASG-EUPOS network along with data-centre infrastructure that provides analysis results via a dedicated web portal for users. The service is publicly available at https://rtgms.pl.

National cooperation – key aspect of SDI

HEAD OFFICE OF GEODESY AND CARTOGRAPHY

Ministerstwo Rozwoju i Technologii

Ministerstwo Cyfryzacji

Państwowe Gospodarstwo Wodne Wody Polskie

IMGW

GUNB

National cooperation

PORTAL GEOSTATYSTYCZNY

GDDKiA

NARODOWY INSTYTUT DZIEDZICTWA
NATIONAL HERITAGE BOARD OF POLAND

LASY PAŃSTWOWE

Krajowy Ośrodek Wsparcia Rolnictwa

AGENCJA MIENIA WOJSKOWEGO

PKP POLSKIE LINIE KOLEJOWE S.A.

Zarządca narodowej sieci linii kolejowych

POLICJA

LOTNICZE POGOTOWIE RATUNKOWE

Ministerstwo Zdrowia

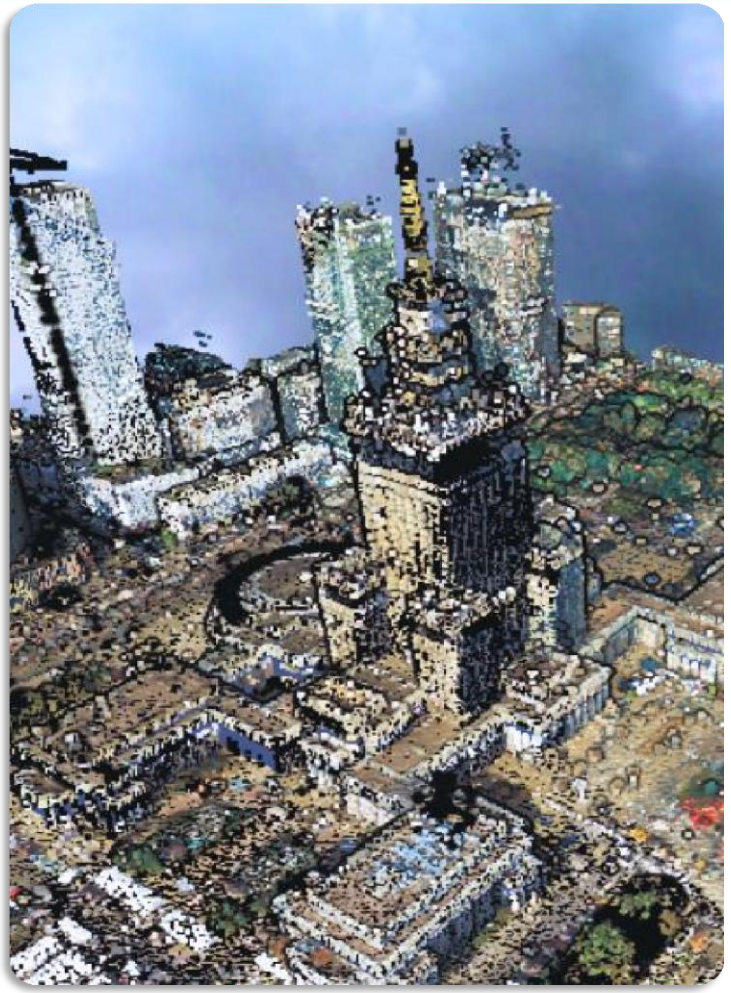
PAŃSTWOWA STRAŻ POŻARNA

Ministerstwo Spraw Wewnętrznych i Administracji

CENTRALNE BIURO ŚLEDCZE POLICJI

SDI – important components

- User needs, national requirements and wide scope
- Easy intuitive access , different posibilities – analysis validation etc
- Reliable data
- Open data and data protection
- Constant development and improvement of key – systems
- Education and cooperation crucial aspect of SDI



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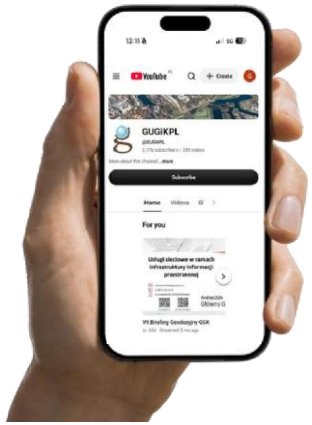
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SERVICE GEOPORTAL

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