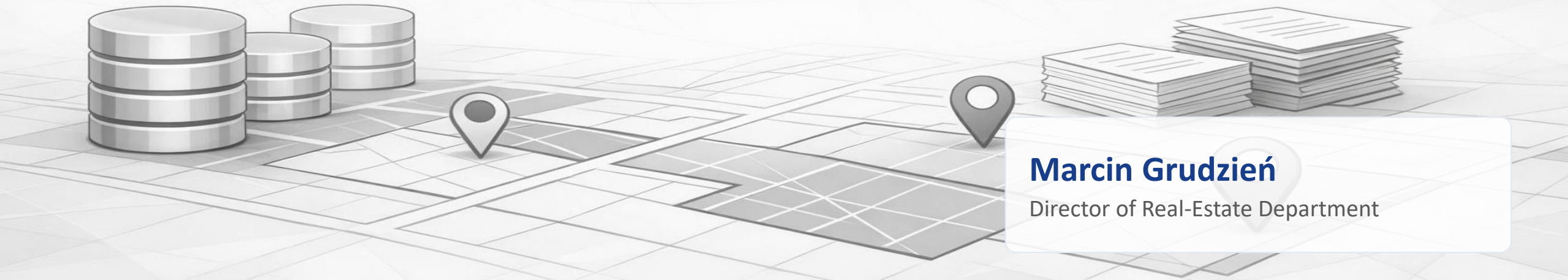
Closing the Digitalisation Gap in a Decentralised Cadastre

GUGiK's Project on Integration of the State Geodetic and Cartographic Resource



Marcin Grudzień
Director of Real-Estate Department

Joint PCC-EuroGeographics CLRKEN Conference and Plenary in Dublin; 4–5 November 2026

Agenda

1. **The Polish geodetic and cartographic service (SGiK)**
   Who does what, and which databases they keep
2. **Challenge 1 – Creating spatial databases**
   EGiB, GESUT and BDOT500 held by 380 counties
3. **Challenge 2 – Digitising technical survey reports**
   Paper documentation is still in circulation
4. **Challenge 3 – Ordering paid data**
   380 points of filing instead of one
5. **Our answer – the Integracja PZGiK project**
   Digitisation, progress to date and the eWnioski PZGiK e-service
6. **Summary**
   Expected results of the project, and your questions

THE SYSTEM IN NUMBERS

1
Surveyor General of Poland

16
voivodeships

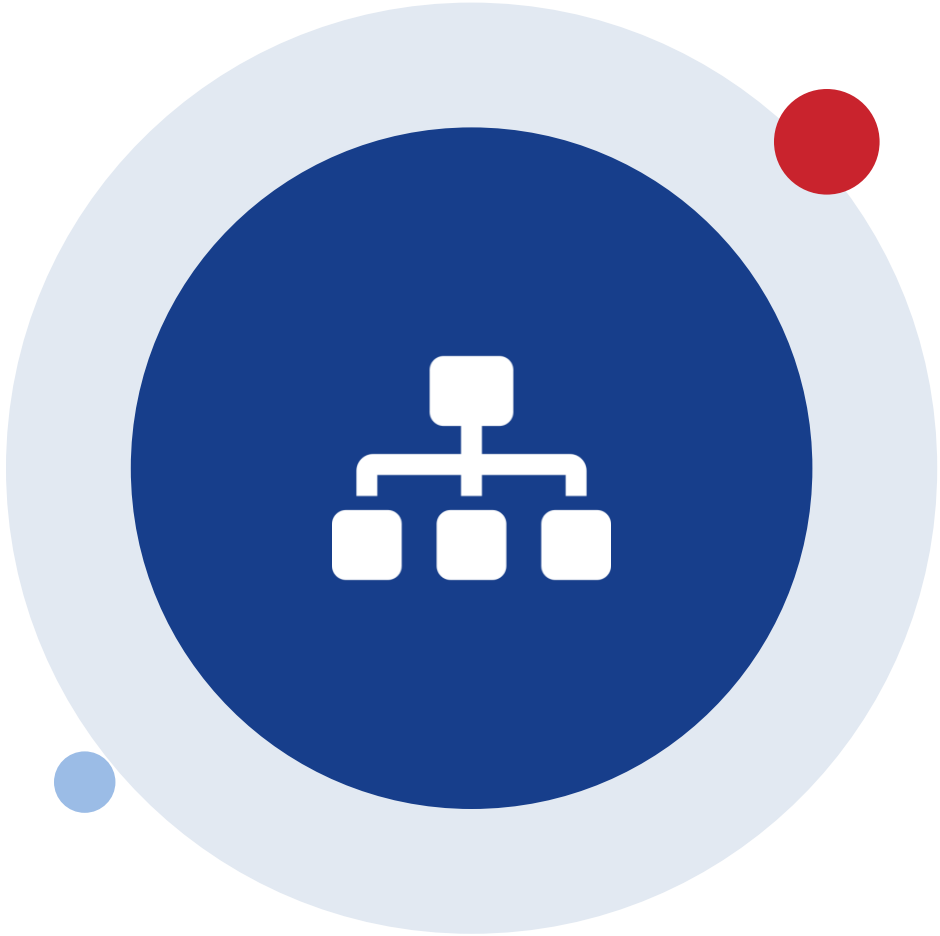
380
counties

PZGiK *– Państwowy lub Powiatowy Zasób Geodezyjny i Kartograficzny: the State or county geodetic and cartographic resource*

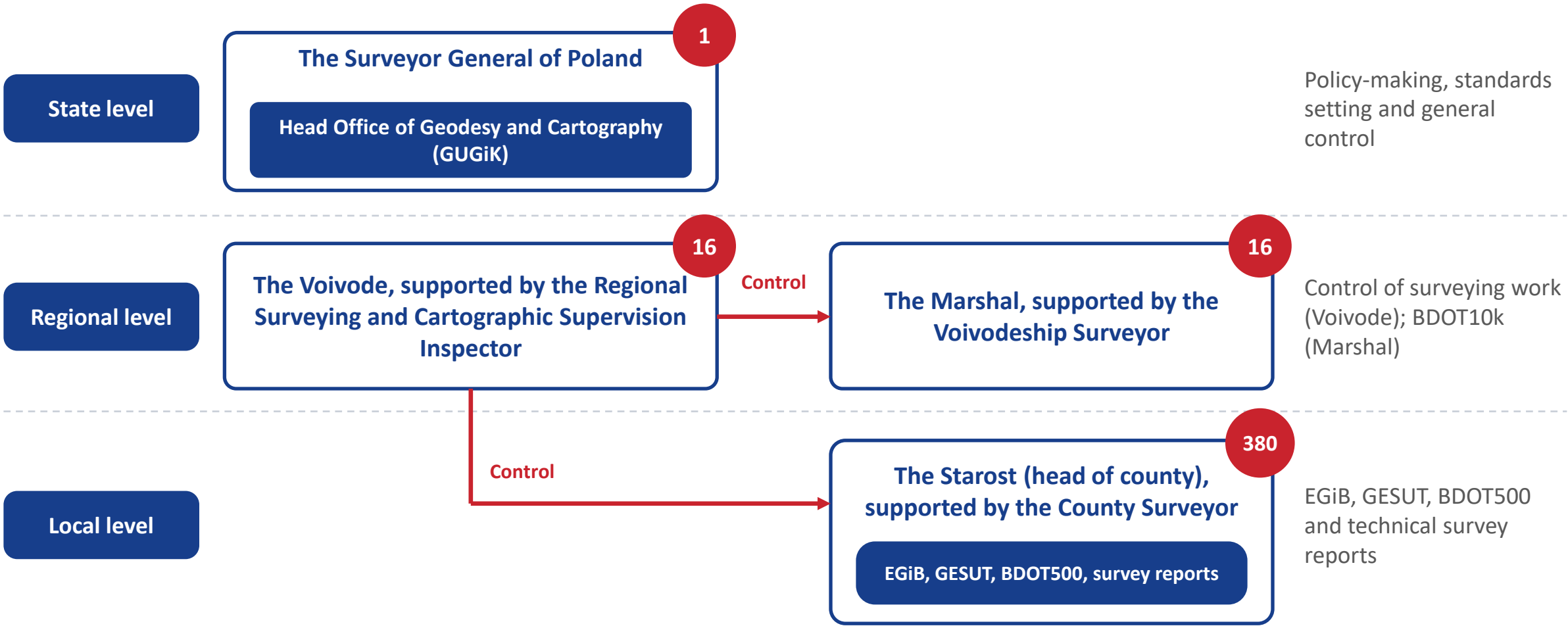
1 · SETTING THE SCENE

The Polish geodetic and cartographic service (SGiK)

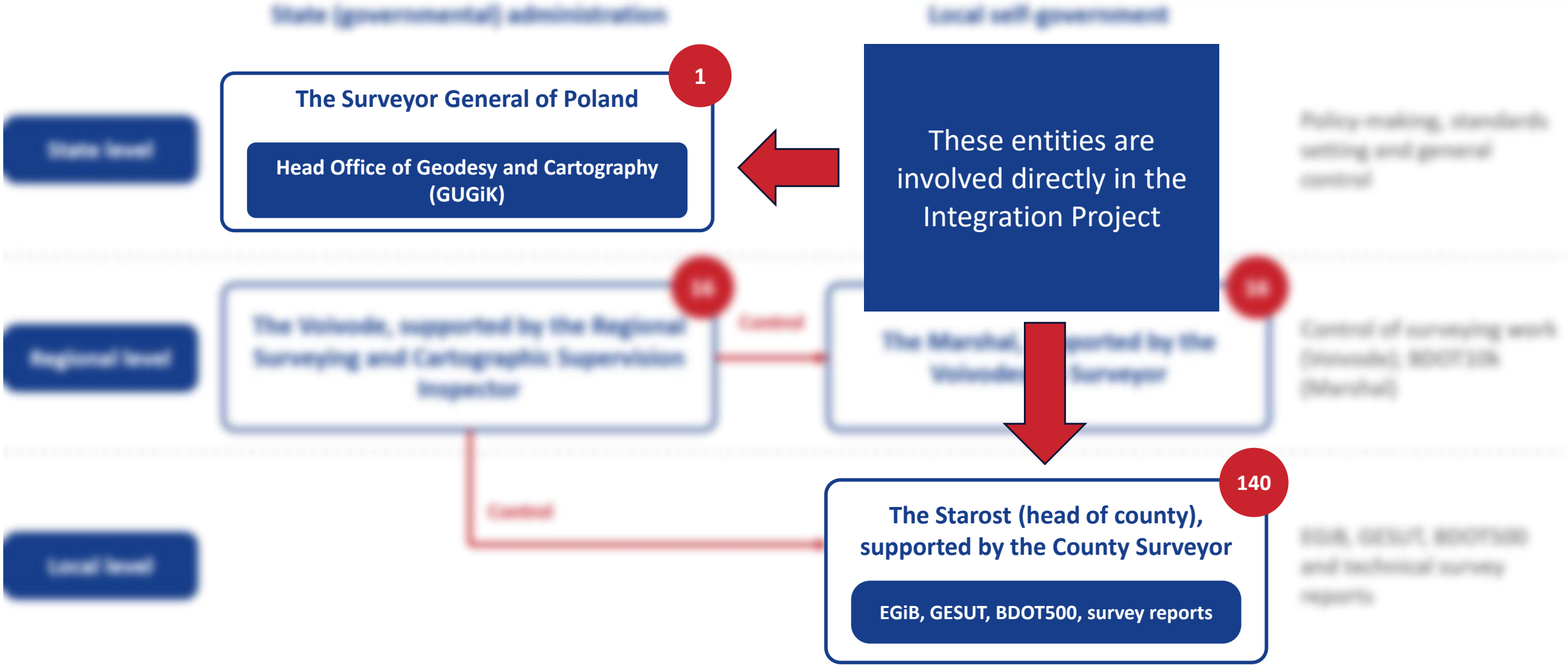
A decentralised system: central standards, local ownership of the data



Structure of the Polish geodetic and cartographic service (SGiK)



Structure of the Polish geodetic and cartographic service (SGiK)



Decentralisation: central standards, local data owners

One system, three levels

1 Surveyor General
sets policy and standards

16 voivodeships
control and regional data

380 counties
keep EGiB (cadastre), GESUT (utilities) and BDOT500 (topography)

What this means for the data

380 data owners
Each county owns and updates its own EGiB, GESUT and BDOT500.

Many IT systems
About 10 systems; three providers serve around 90% of counties.

Different maturity
Object, hybrid and analogue databases exist side by side.

Central standards
The Surveyor General sets the standards; counties implement them.

Terms used in this presentation

Polish term	English term used here	Meaning
PZGiK Państwowy lub Powiatowy Zasób Geodezyjny i Kartograficzny	**State or county geodetic and cartographic resource**	All data, maps and documents kept by the surveying authorities, at state or at county level
SGiK Służba Geodezyjna i Kartograficzna	**Geodetic and cartographic service**	The authorities with surveying and mapping tasks, from the Surveyor General to the county surveyors
GGK Główny Geodeta Kraju	**Surveyor General of Poland**	Head of the SGiK: sets policy and standards and maintains the national databases
GUGiK Główny Urząd Geodezji i Kartografii	**Head Office of Geodesy and Cartography**	The office that supports the Surveyor General
Wojewoda Wojewoda	**Voivode**	Government representative in the voivodeship; controls surveying work
Marszałek Marszałek województwa	**Marshal of the voivodeship**	Head of the voivodeship self-government; maintains the BDOT10k database
Powiat / Starosta Powiat / Starosta	**County / Starost**	380 counties, including cities with county status; the Starost heads the county and keeps its databases
Operat techniczny Operat techniczny	**Technical survey report**	Documentation of a geodetic work, created by a licensed surveyor and submitted to the county resource

SGiK databases – national level

Integracja PZGIK

GŁÓWNY URZĄD GEODEZJI I KARTOGRAFII

Maintained by the Surveyor General of Poland



PRNG

Surveyor General

The National Register of Geographical Names

Official names of localities and physiographic features, and Polish exonyms for features located outside Poland.

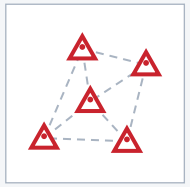


PRG

Surveyor General

The National Register of Boundaries

Boundaries and areas of the fundamental three-level administrative division of the country (i.e. communes, counties and voivodeships), linked with addresses.



PRPOG

Surveyor General

The National Register of Basic Geodetic, Gravimetric and Magnetic Networks

Fundamental control points with coordinates, heights, gravity values and topographic descriptions.



K-GESUT

Surveyor General

The National Utility Network Database

Nationwide database of utility networks, fed with data from the county GESUT databases.



Z-BDOT10k

Surveyor General

Integrated copy of the topographic objects databases, level of detail 1:10 000

Nationwide, consistent copy of the 16 voivodeship BDOT10k databases maintained by the voivodeship marshals.

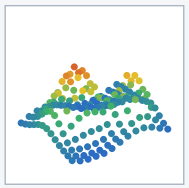


BDOO

Surveyor General

The Database of General Geographical Objects, level of detail 1:250 000

BDOO has been created for the entire territory of the country as a result of a quantitative and qualitative generalisation of BDOT10k.



DEM

Surveyor General

The Digital Elevation Model

Airborne laser scanning (ALS) point clouds, digital terrain models (DTM) and digital surface models (DSM).



ORTHO

Surveyor General

The orthophotomap

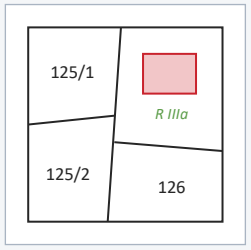
Aerial images and orthophotomaps derived from them – an up-to-date image of the country's surface.

SGiK databases – voivodeship and county level

Integracja PZGIK

GŁÓWNY URZĄD GEODEZJI I KARTOGRAFII

Maintained by the Marshal of the voivodeship and the Starost (head of county)

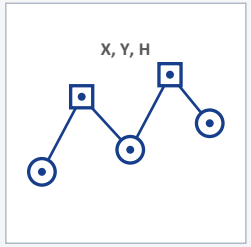


EGiB

Starost

The Land and Building Register (real estate cadastre)

Parcels, buildings and premises with their owners and holders, land use types and soil quality classes.

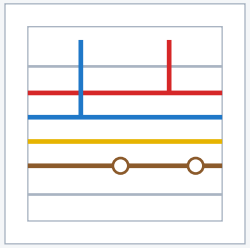


BDSOG

Starost

The Detailed Control Network Database

Detailed horizontal and vertical control points with coordinates and descriptions – the framework for geodetic surveys.



GESUT

Starost

The Utility Network Database

Water supply, sewerage, gas, district heating, power and other utility lines and facilities.

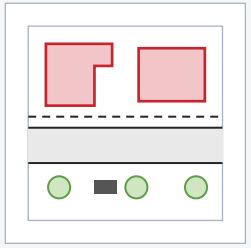


RCN

Starost

The Register of Real Estate Prices

Prices of real estate from notarial deeds, court rulings and administrative decisions, with property attributes – a data source for valuation.



BDOT500

Starost

The Topographic Objects Database, level of detail 1:500–1:5 000

Structures, roads, fences and other detailed terrain features; together with EGiB and GESUT it forms the basic map.



BDOT10k

Marshal

The Topographic Objects Database, level of detail 1:10 000

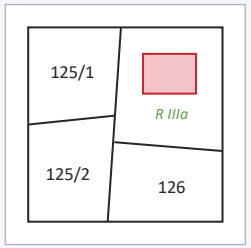
Hydrographic and transport networks, buildings, land cover – the basis for topographic maps; created in consultation with the Surveyor General.

SGIK databases – voivodeship and county level

Integracja PZGIK

GŁÓWNY URZĄD GEODEZJI I KARTOGRAFII

- Maintained by the Marshal of the voivodeship and the Starost (head of county)

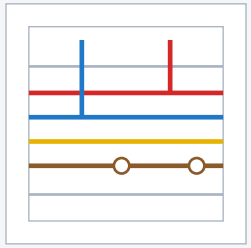


EGiB

Starost

The Land and Building Register (land cadastre)

Parcels, buildings and premises with their owners and holders, land use types and soil quality classes.

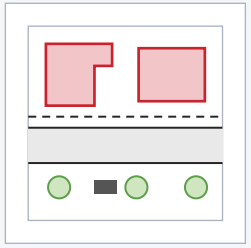


GESUT

Starost

The Utility Network Database

Water supply, sewerage, gas, district heating, power and other utility lines and facilities.



BDOT500

Starost

The Topographic Objects Database, level of detail 1:500–1:5 000

Structures, roads, fences and other detailed terrain features; together with EGiB and GESUT it forms the basic map.



BDSOG

Starost

The Detailed Control Network Database

Detailed horizontal and vertical control points with coordinates and descriptions – the framework for geodetic



These databases are the primary focus of the Integration Project



BDOT10k

Marshal

The Topographic Objects Database, level of detail 1:10 000

Hydrographic and transport networks, buildings, land cover – the basis for topographic maps, created in consultation with the Surveyor General

2 · CHALLENGE 1

Creating spatial databases managed by Starosts

Counties must hold EGiB, GESUT and BDOT500 as complete digital databases – the legal deadline is 31 December 2027

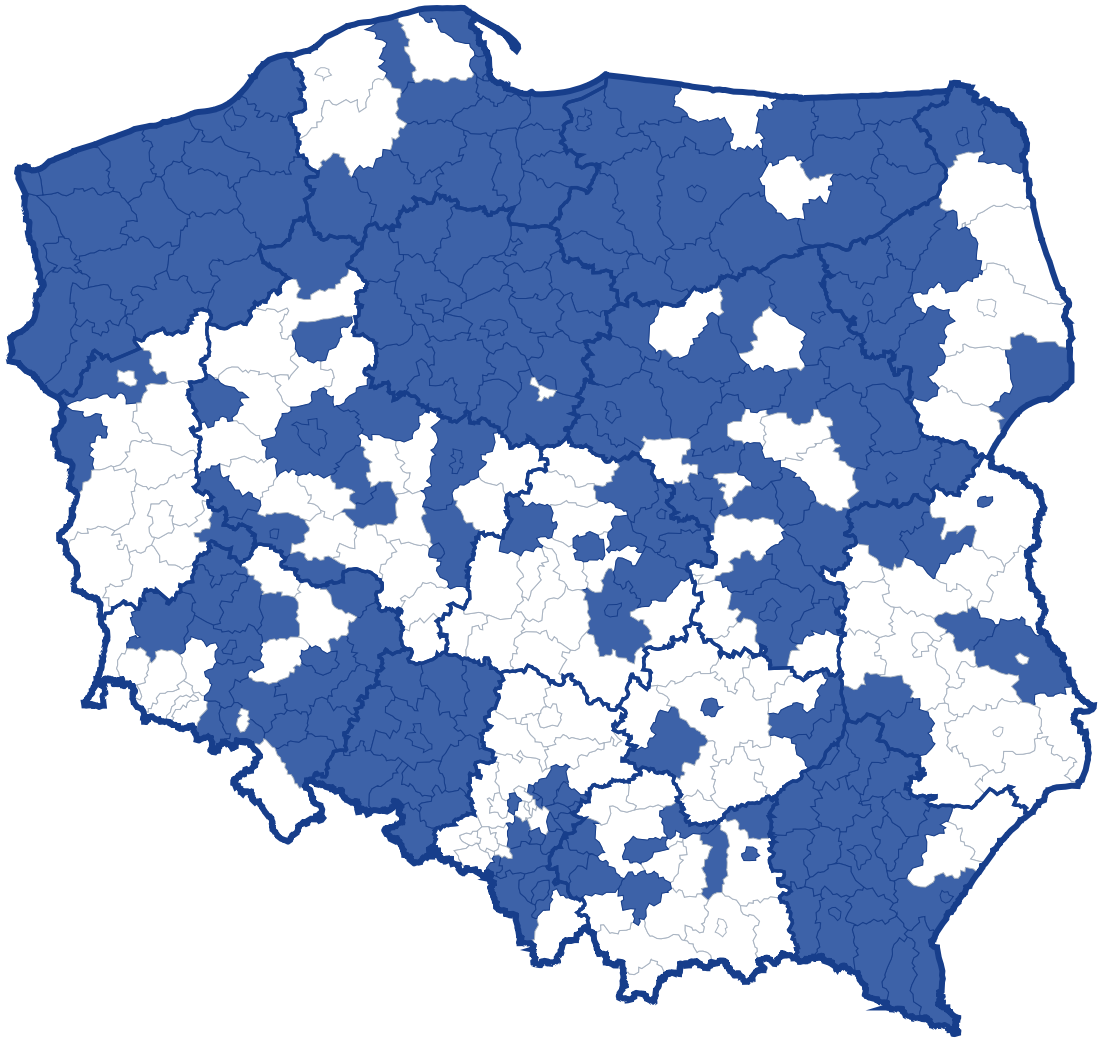
Most Starosts have succeeded

Only some are still struggling

Counties with the database created, Q3 2026 (out of 380)



Database creation status: starting point in 2024



2024

239 / 380
counties with all three databases created

141 / 380
other counties

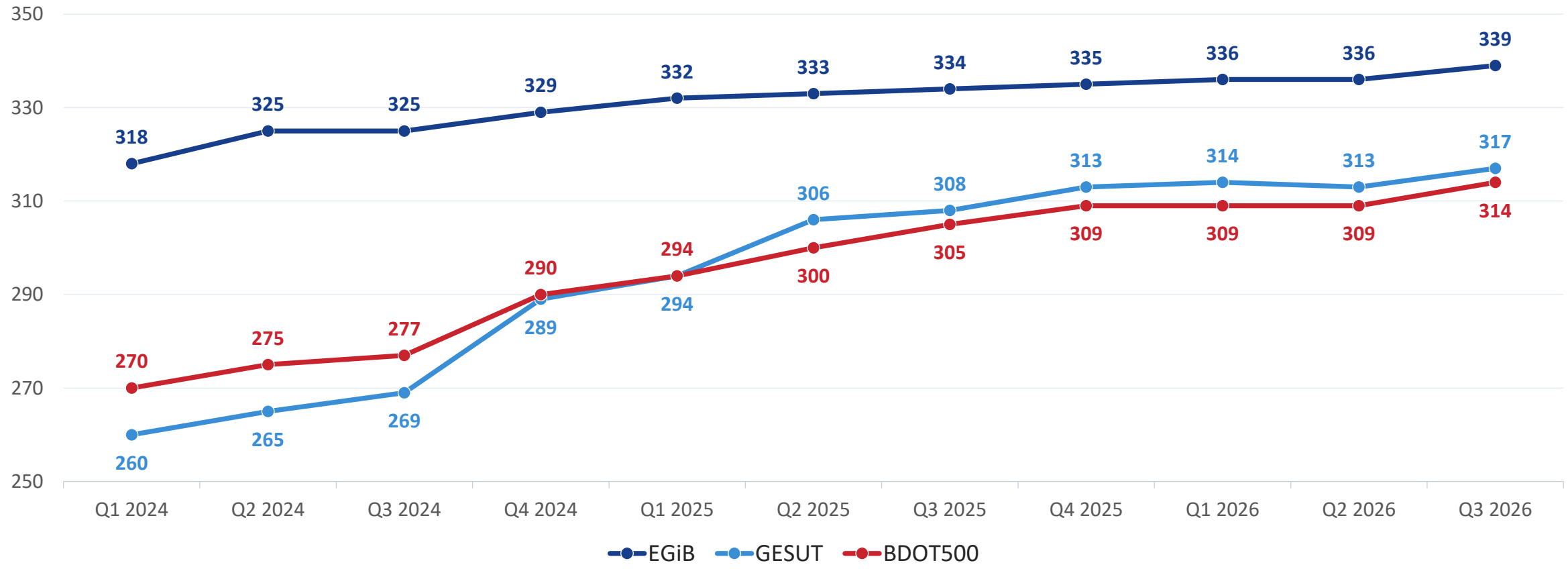
before the implementation of the Integracja PZGiK project

Database creation status: Q1 2024 – Q3 2026

Integracja PZGIK

GŁÓWNY URZĄD GEODEZJI I KARTOGRAFII

Number of counties (out of 380) with fully created EGiB, GESUT and BDOT500 databases



What does “database not created” mean?

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GŁÓWNY URZĄD GEODEZJI I KARTOGRAFII

■ Type of problem – any one of types 1–3

type 1

Analogue materials + non-spatial database

maps on paper or drafting film, paper registers and survey reports; attributes may be stored in a separate object database

type 2

Hybrid: raster + CAD vector + non-spatial database

calibrated rasters and a CAD drawing (e.g. DXF) – attributes may be stored in a separate object database, not compliant with the model

type 3

Database with content gaps

the database exists, but some objects or attributes are missing, e.g. buildings, some utility networks

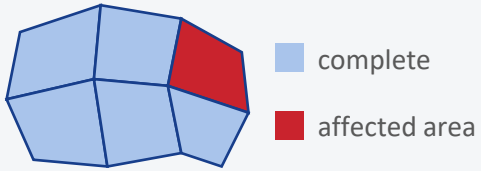
AND

■ Extent of the problem

extent: partial

Gaps in database coverage

database complete only in some cadastral zones or communes; in the rest of the county, one of types 1–3 applies



target state

Complete database

database created

- all objects and attributes
- full area cover
- data model compliance
- services published

=

Database not created

counted for the entire county – even if only part of the county is affected

3 · CHALLENGE 2

Digitising technical survey reports

The paper reports behind every change in the three databases are still in circulation in many counties



Why digitise technical survey reports?

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GŁÓWNY URZĄD GEODEZJI I KARTOGRAFII

Role of the technical survey report in the resource

step 1
Licensed surveyor

performs geodetic work and prepares the documentation – the technical survey report

step 2
Geodetic resource

the report is accepted into the county geodetic and cartographic resource

step 3
Evidence of changes

the report substantiates changes entered into the EGiB, GESUT and BDOT500 databases

From analogue to digital documentation

until 2021

reports submitted to the resource mainly in analogue (paper) form

since 2021

obligation to submit reports in digital form only

hence the need for
Integracja PZGiK

analogue reports are still in circulation

not all counties have managed to digitise them

4 · CHALLENGE 3

Ordering paid geodetic and cartographic data

380 counties and endpoints, around 10 IT systems – and users who need just one place to order



Ordering paid data: 380 points of filing for one user need

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GŁÓWNY URZĄD GEODEZJI I KARTOGRAFII

Applications for paid geodetic and cartographic materials must be submitted to the county authority competent for the area concerned – so applicants must first find out which one that is.

380 county authorities – each one a separate point of filing

~10 IT systems in use; three providers serve about 90% of counties

N× user accounts – one in every county system a user orders from

1. No single point of access for submitting requests
2. No unified communication channel with the authorities
3. Applicants must first identify the competent authority
4. Progress must be monitored in many independent IT systems
5. Often a separate user account in every county system
6. Inconsistent user experience – a different solution in each county

Who orders: Licensed surveyors | Property valuers | Designers and engineers | Business entities | Private individuals

Private individuals use the system only a few times in their lifetime, mostly for real estate transactions

Users need one place to order – not 380

5 · OUR ANSWER

The Integracja PZGiK project

Integration of the State Geodetic and Cartographic Resource: one project for all three challenges

Challenge 1	**Vectorisation** EGiB, GESUT and BDOT500 databases
Challenge 2	**Scanning** Survey reports and archives
Challenge 3	**eWnioski PZGiK** One national point of access

Project: Integration of the State Geodetic and Cartographic Resource (Integracja PZGiK)

Integracja PZGIK

GŁÓWNY URZĄD GEODEZJI I KARTOGRAFII

European Funds for Digital Development 2021–2027 programme, Measure FERC.02.01 High quality and accessibility of public e-services, co-financed by the European Regional Development Fund

Sources of funding

PLN 252,312,114

EUR 57,226,608

Co-funded by the European Union

PLN 201,117,986

EUR 45,615,329

Republic of Poland

PLN 51,194,128

EUR 11,611,279

NBP average rate of 28 Oct 2026 (table 210/A/NBP/2026): EUR 1 = PLN 4.4090

Implementation period: 2024–2028

Breakdown of project costs

scanning	42.3%	**PLN 106,715,876** EUR 24,204,100
databases	45.4%	**PLN 114,604,943** EUR 25,993,410
IT system	1.4%	**PLN 3,639,000** EUR 825,357
other costs	10.8%	**PLN 27,352,295** EUR 6,203,741

Project goal – digitisation of the county resource

Integracja PZGIK

GŁÓWNY URZĄD GEODEZJI I KARTOGRAFII

Challenge 1

Vectorisation of analogue maps

Analogue, raster and CAD-like maps converted into EGiB, GESUT and BDOT500 object databases



GML

EGiB
GESUT
BDOT500

Analogue map

Challenge 2

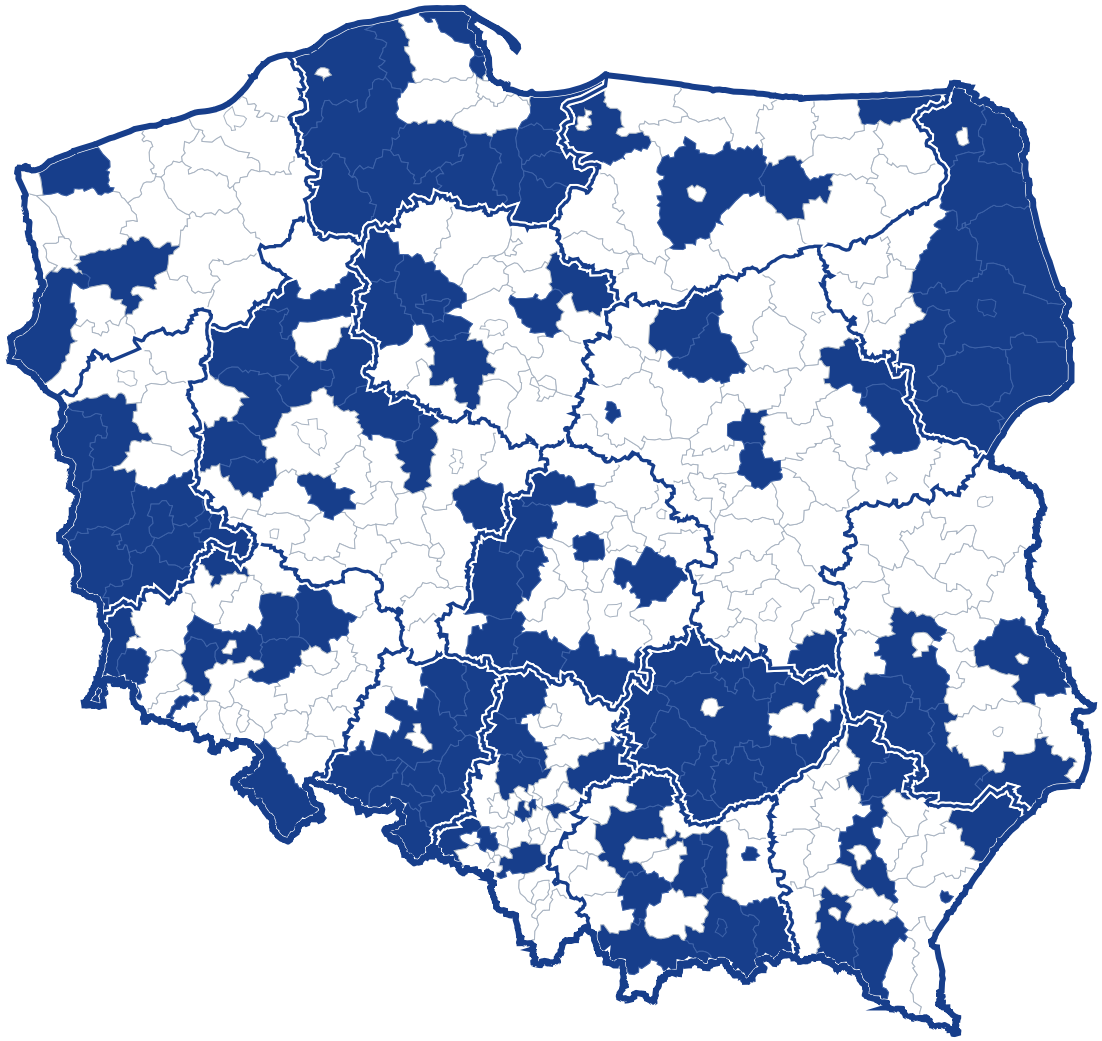
Scanning of analogue documentation

Analogue technical survey reports and other documents of the county geodetic and cartographic resource



Paper archive of the county resource

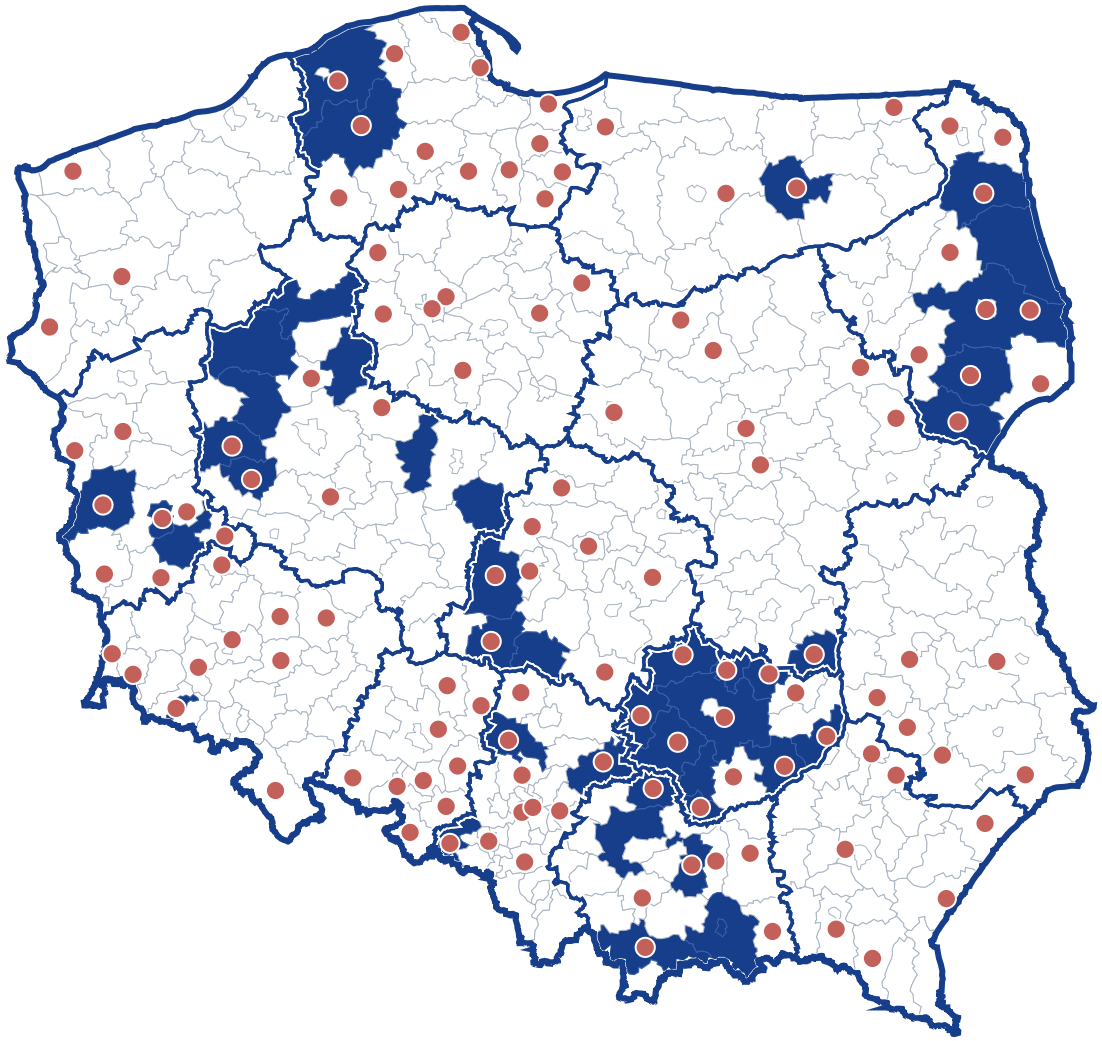
Counties covered by the Integracja PZGiK project



140 / 380
counties covered by the Integracja PZGiK project

240 / 380
other counties

Vectorisation and scanning in counties



43 counties

vectorisation – creation of the EGiB, GESUT and BDOT500 object databases

127 counties

scanning – of analogue resource materials

30 counties

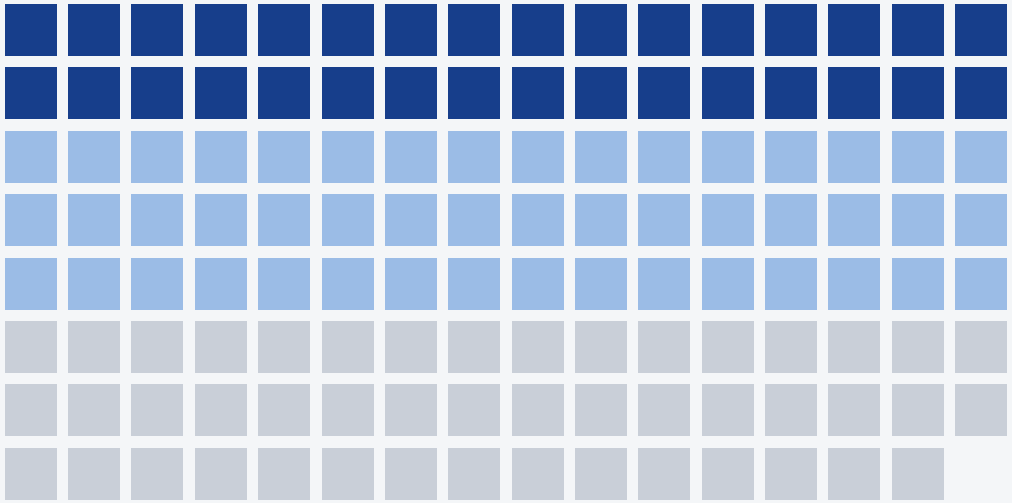
vectorisation and scanning – both types of work in one county

In total, 140 counties are covered by work under the Integracja PZGiK project (30 of them by both types of work)

Digitisation progress: counties

Scanning of analogue materials

127 counties



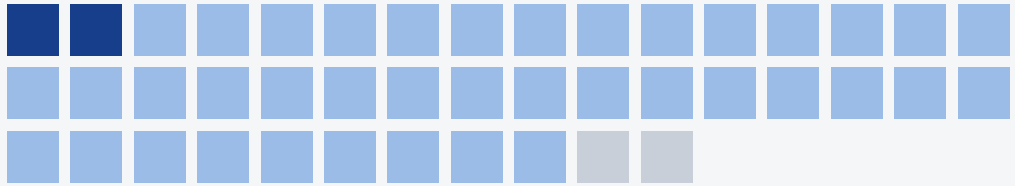
32 25% completed

48 38% in progress

47 37% not started

Creation of EGiB, GESUT and BDOT500 databases

43 counties



2 5% completed

39 91% in progress

2 5% not started

Digitisation progress: volume of work

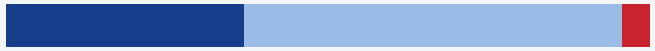
Integracja PZGIK

GŁÓWNY URZĄD GEODEZJI I KARTOGRAFII

lm linear metres

Scanning of technical survey reports

13,277 m



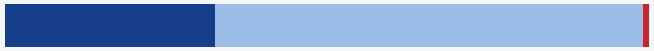
- **4,898 m** 37% completed
- **7,803 m** 59% in progress
- **576 m** 4% not started

≈ 132,770,000 pages to scan

pcs pieces

Scanning of original map sheets

74,820 pcs

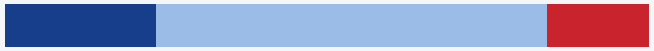


- **24,517 pcs** 33% completed
- **49,742 pcs** 66% in progress
- **561 pcs** 1% not started

ha hectares

Creation of EGiB, GESUT and BDOT500 databases

1,726,333 ha



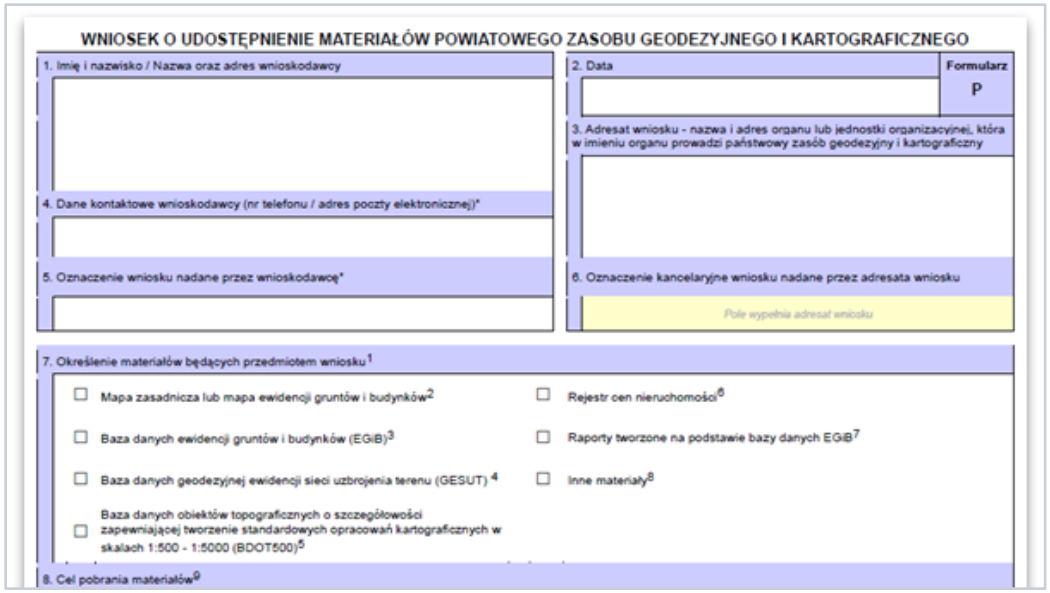
- **405,418 ha** 23% completed
- **1,047,285 ha** 61% in progress
- **273,630 ha** 16% not started

≈ 5.5% of Poland's territory

eWnioski PZGiK: one national point of access

An e-service for ordering materials from the county geodetic and cartographic resource – available in one place for any area of Poland

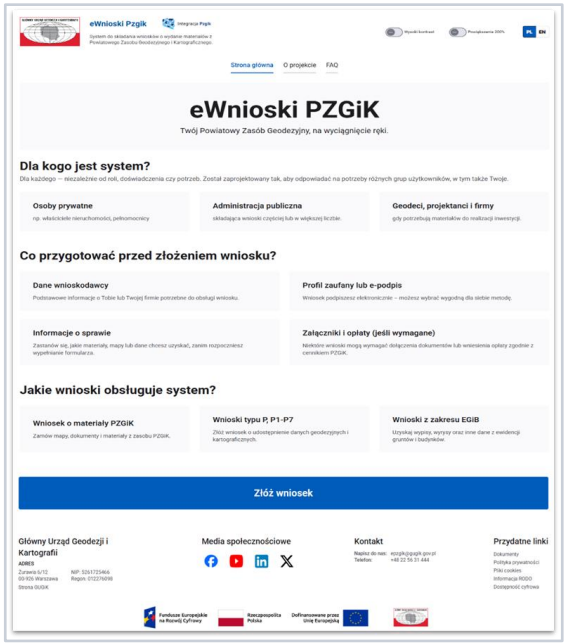
From an application form filed with each county…



WNIOSEK O UDOSTĘPNIENIE MATERIAŁÓW POWIATOWEGO ZASOBU GEODEZYJNEGO I KARTOGRAFICZNEGO

1. Imię i nazwisko / Nazwa oraz adres wnioskodawcy
2. Data
Formularz P
3. Adresat wniosku - nazwa i adres organu lub jednostki organizacyjnej, która w imieniu organu prowadzi państwowy zasób geodezyjny i kartograficzny
4. Dane kontaktowe wnioskodawcy (nr telefonu / adres poczty elektronicznej)*
5. Oznaczenie wniosku nadane przez wnioskodawcę*
6. Oznaczenie kancelaryjne wniosku nadane przez adresata wniosku
Pole wypełnia adresat wniosku
7. Określenie materiałów będących przedmiotem wniosku[1]
- Mapa zasadnicza lub mapa ewidencji gruntów i budynków[2]
- Baza danych ewidencji gruntów i budynków (EGiB)[3]
- Baza danych geodezyjnej ewidencji sieci uzbrojenia terenu (GESUT)[4]
- Baza danych obiektów topograficznych o szczegółowości zapewniającej tworzenie standardowych opracowań kartograficznych w skalach 1:500 - 1:5000 (BDOT500)[5]
- Rejestr cen nieruchomości[6]
- Raporty tworzone na podstawie bazy danych EGiB[7]
- Inne materiały[8]
8. Cel pobrania materiałów[9]

…to one national e-service



- Automatic routing to the competent county authority
- One account via the National Electronic Identification Node – and one place to follow every request
- The same user experience for every county
- API: users' own systems can communicate with eWnioski

Status: under testing – launch planned before the beginning of 2027

eWnioski PZGiK: from request to delivery

Integracja PZGIK

GŁÓWNY URZĄD GEODEZJI I KARTOGRAFII

1 Application preparation	2 Data validation	3 Digital signature	4 Dispatch via e-Delivery	5 Forwarding to the authority	6 Application processing
Choose the application type, define the scope of materials, indicate the location and complete the form	Automatic check of the accuracy and completeness of the application	The application is signed via the National Electronic Identification Node and the Signing Node	The signed application is sent through the e-Delivery registered electronic delivery service	Automatic forwarding to the county authority competent for the geodetic and cartographic resource	The competent authority processes the application and provides the materials

Integrated with

- National Electronic Identification Node
- National Signing Node (Węzeł Podpisu)
- National e-Delivery service (e-Doręczenia)
- Geoportal.gov.pl

Single national point of access – applications routed automatically to the competent county authority

Project timeline and the legal deadline

Integracja PZGIK

GŁÓWNY URZĄD GEODEZJI I KARTOGRAFII

2024 – starting point

239 of 380 counties have all three databases; 141 do not

31 Dec 2027 – legal deadline

Databases to be created in all counties

Legal obligation: counties create EGiB, GESUT and BDOT500 databases

2024 | 2025 | 2026 | 2027 | 2028

2024 – project starts

Integracja PZGiK, implementation period 2024–2028

Beginning of 2027 – eWnioski launch

Launch of eWnioski PZGiK planned

2028 – project ends

End of the implementation period

Two different clocks: the legal deadline for the databases is 31 Dec 2027, the project runs until the end of 2028

Expected results of the project

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Complete databases

Complete, standard-compliant EGiB, GESUT and BDOT500 databases in the counties covered by the project

Digital archives

Digitised technical survey reports and map archives of the county resource

One place to order

eWnioski PZGiK: one national e-service for ordering data, launch planned before the end of 2026

Reliable data for services

Reliable digital data feeding national services such as geoportal.gov.pl

Closing the digitalisation gap – county by county, with one national point of access

Thank you for your kind attention

Integracja PZGIK

GŁÓWNY URZĄD GEODEZJI I KARTOGRAFII

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GEOPORTAL

https://www.geoportal.gov.pl/

Integrated Real-Estate System

Contact us