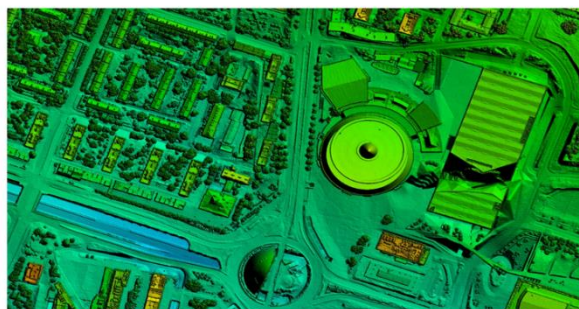
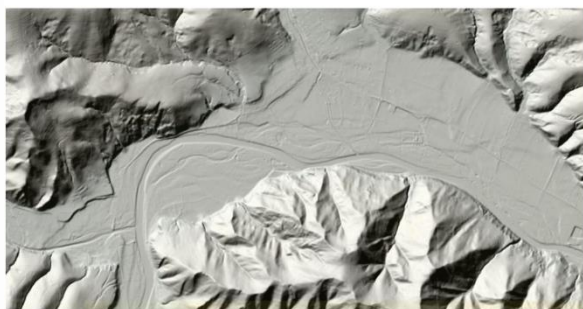
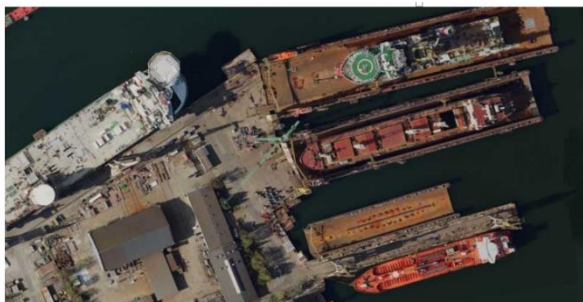


Photogrammetric data from the national resource geodetic and cartographic



Renata Brzozowska

head of the photogrammetry department
Department of Geodesy and Cartography
Head Office of Geodesy and Cartography

renata.brzozowska@gugik.gov.pl

gugik@gugik.gov.pl; www.gugik.gov.pl; www.geoportal.gov.pl

Regulations and guidelines



- ✓ Geodetic and cartographic law: art. 7a ust. 1 pkt 14 lit. c

The Chief Surveyor of the Poland creates, maintains and makes available a database of aerial and satellite imagery as well as orthophotomaps and digital terrain models

- ✓ Regulation of the Minister of Development and Technology of December 16, 2022 on databases regarding aerial and satellite imagery, orthophotomaps and digital terrain models (Journal of Laws of 2023, item 89)

- ✓ Guidelines for contractors of surveying works – BIP GUGIK:

http://www.gugik.gov.pl/_data/assets/file/0008/242279/Wytyczne_dla_prac_fotogrametrycznych-20230623.7z



Photogrammetric data available in the central geodetic and cartographic resource



**ORTHOPHOTOM
APS/ AERIAL
IMAGES**



LIDAR DATA



DEM



DSM

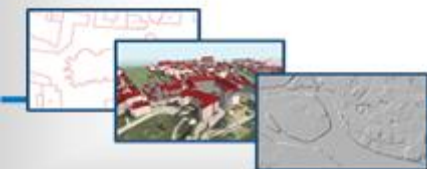


**IMAGES OF
INTENSITY**



3D MESH MODELS

800 TB data, 7 150 356 files

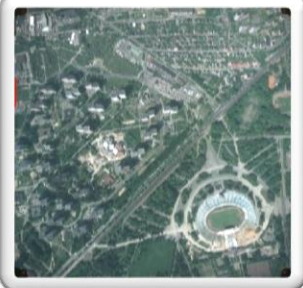


PHOTOGRAMMETRIC DATA – aerial images

Availability
 1955-2024 r.

GSD: 0,03-0,50 m
Scale: 1:800-40000

Colorful space:
 B/W, RGB, CIR



REQUIREMENTS	VALUE
Color	B/W, RGB, CIR
Format	Tiff
Radiometric resolution	8 bit/band
Overview	Gaussian method
Compression	JPEG, Q=4/Q=5
Cross coverage	>=60%
Cover lengthened	>=20%
Sun angle	>20 degree
Camera	Calibrated, tested, and certified

PHOTOGRAMMETRIC DATA – orthophotomap

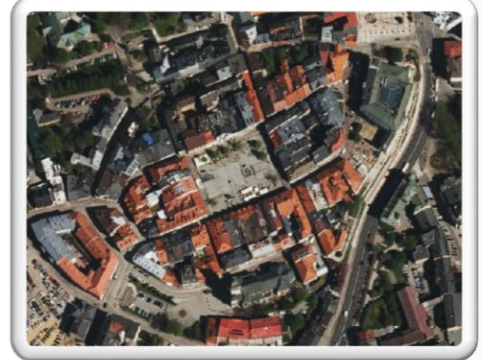


REQUIREMENTS	VALUE
Colour	B-W/RGB/CIR
Format	GeoTiff
Radiometric resolution	8 bit/band
Overview	Gaussian method
Compression	JPEG, Q=4/Q=5
Max. errorss XY	0,20 m
Aerotriangulation	Yes

orthophotomap – Black/White



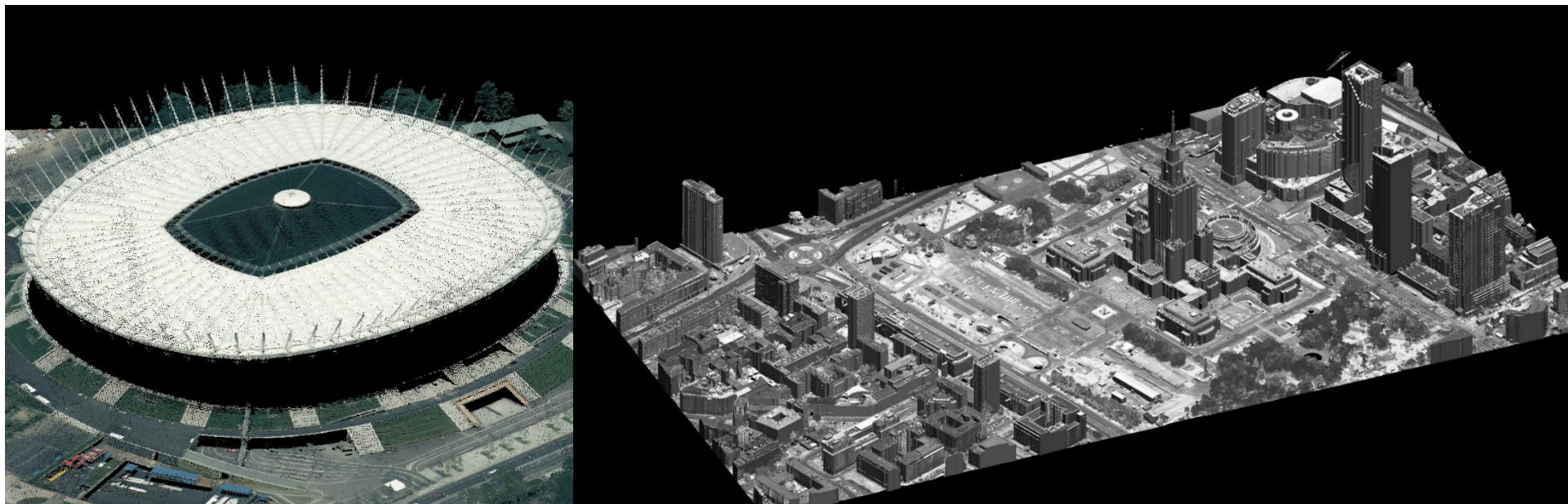
orthophotomap – RGB



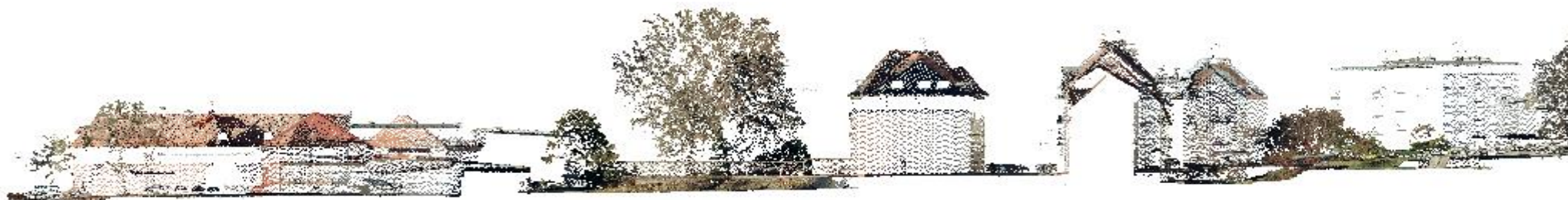
orthophotomap – CIR



PHOTOGRAMMETRIC DATA – LIDAR



Over 2 800 000 000 000 LIDAR points available



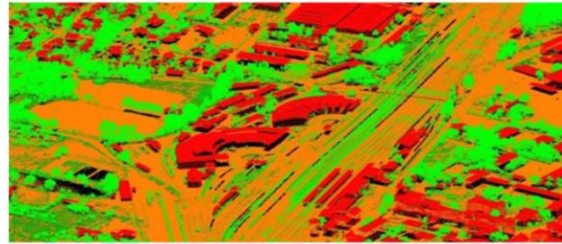
PHOTOGRAMMETRIC DATA – LIDAR



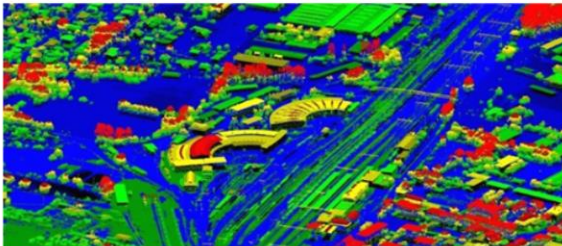
INTENSITY



CLASSIFICATION



HEIGHT

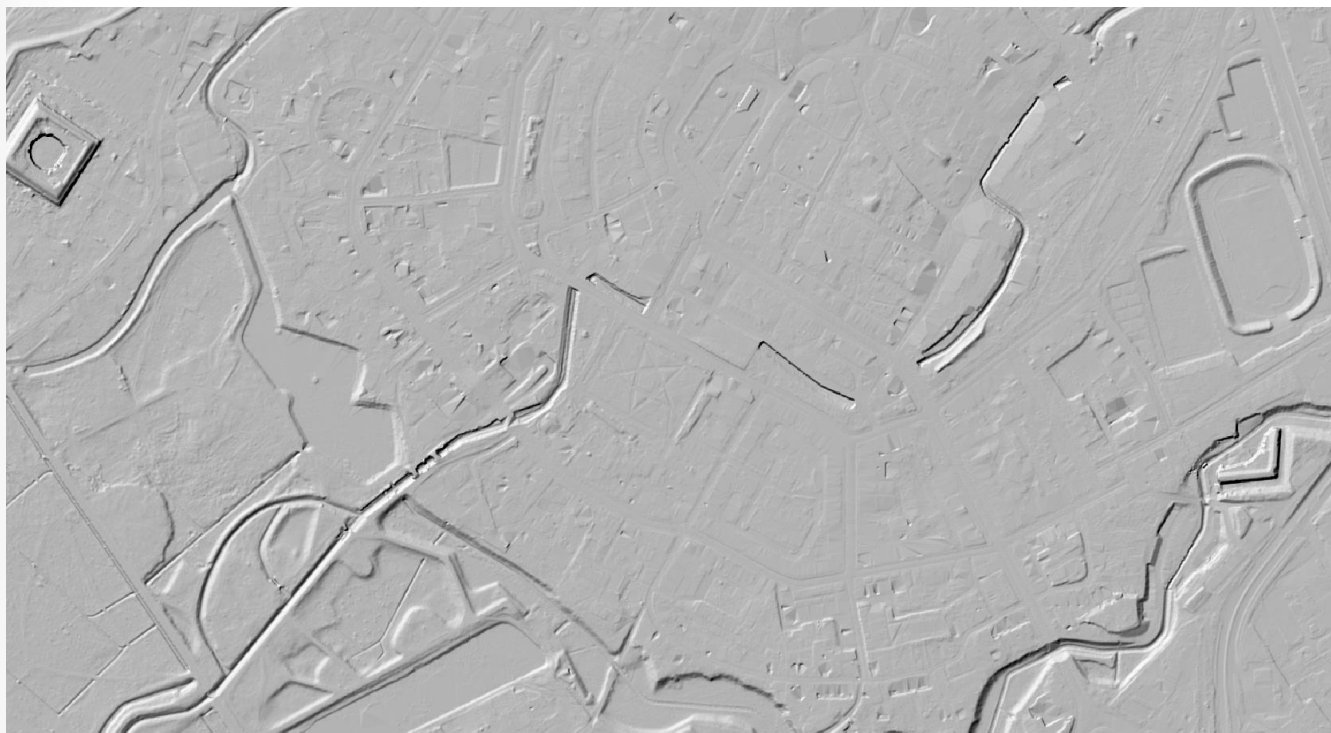


RGB

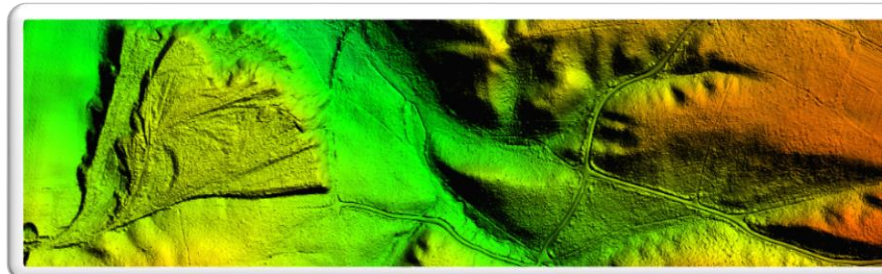


REQUIREMENTS	VALUE
max. errors H	$\leq 15\text{cm}$
max. errors XY	$\leq 30\text{cm}$
LIDAR density	12 p/m ² for cities 4 p/m ² for other areas
Format	LAS, version 1.2, POINT DATA RECORD FORMAT 3.
Classification	ASPRS Standard 99% LIDAR points must be correctly classified to ground class 95% LIDAR points must be correctly classified to class used to generation digital surface model.
Scan angles	$\leq \pm 25$ stopni
Echos	Min. 4
Intensity	Yes

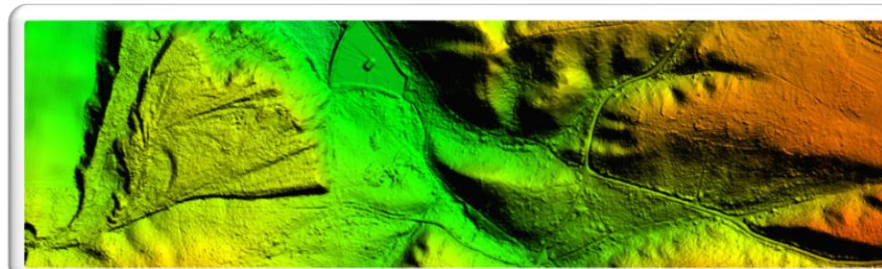
PHOTOGRAMMETRIC DATA – DTM



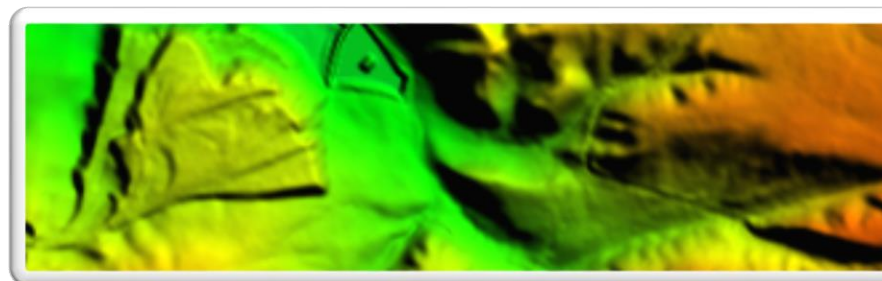
Product	Parameters		
DTM	GRID	$\leq 1,00$ m	5,00 m
	Absolute vertical accuracy	$\leq 0,20$ m	$\leq 0,50$ m
	format	ARC/INFO ASCII GRID	



DTM 0,50 m

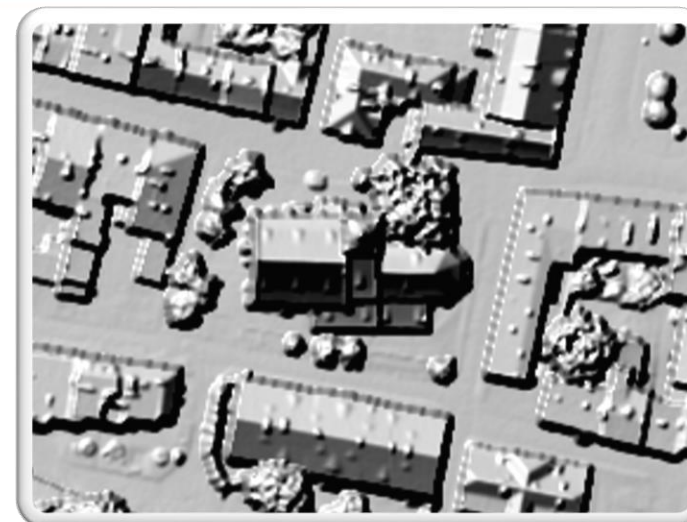


DTM 1,00 m



DTM 5,00 m

PHOTOGRAMMETRIC DATA – DSM



0,50 m



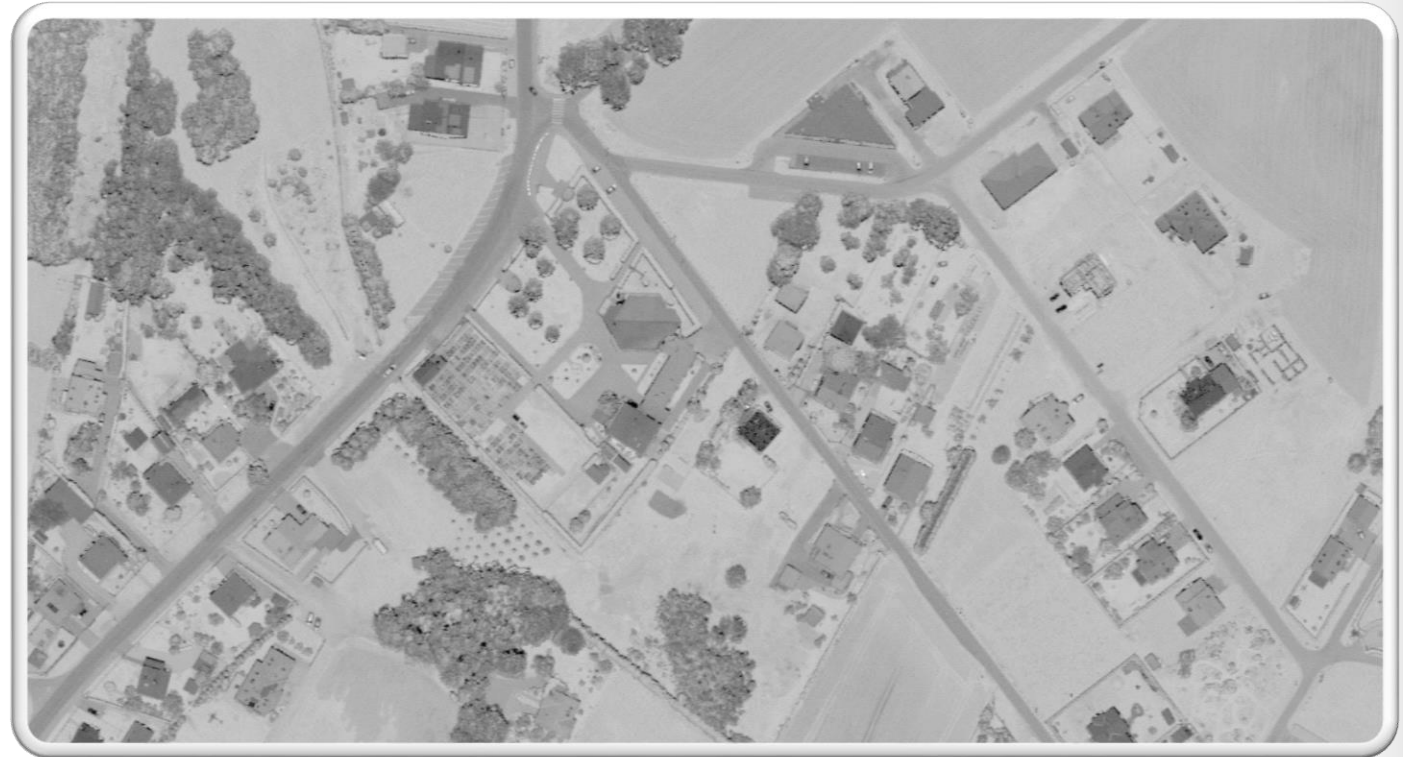
1,00 m

Product	Parameters		
DSM	GRID	0,50 m	1,00 m
	Absolute vertical accuracy	≤ 0,20 m	≤ 0,20 m
	format	ARC/INFO ASCII GRID	

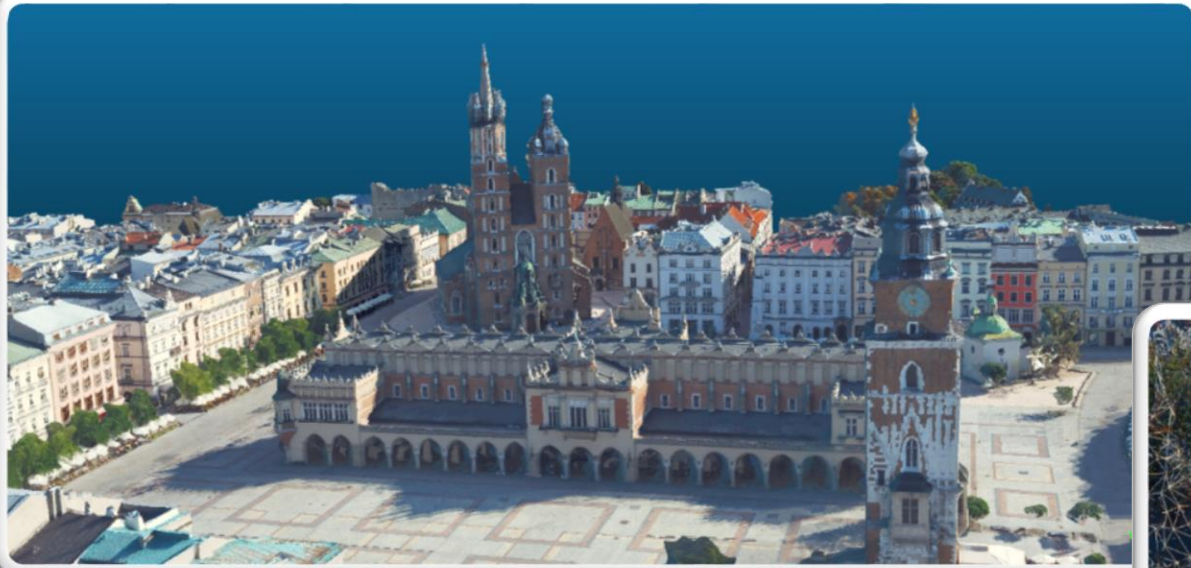
PHOTOGRAMMETRIC DATA – intensity images



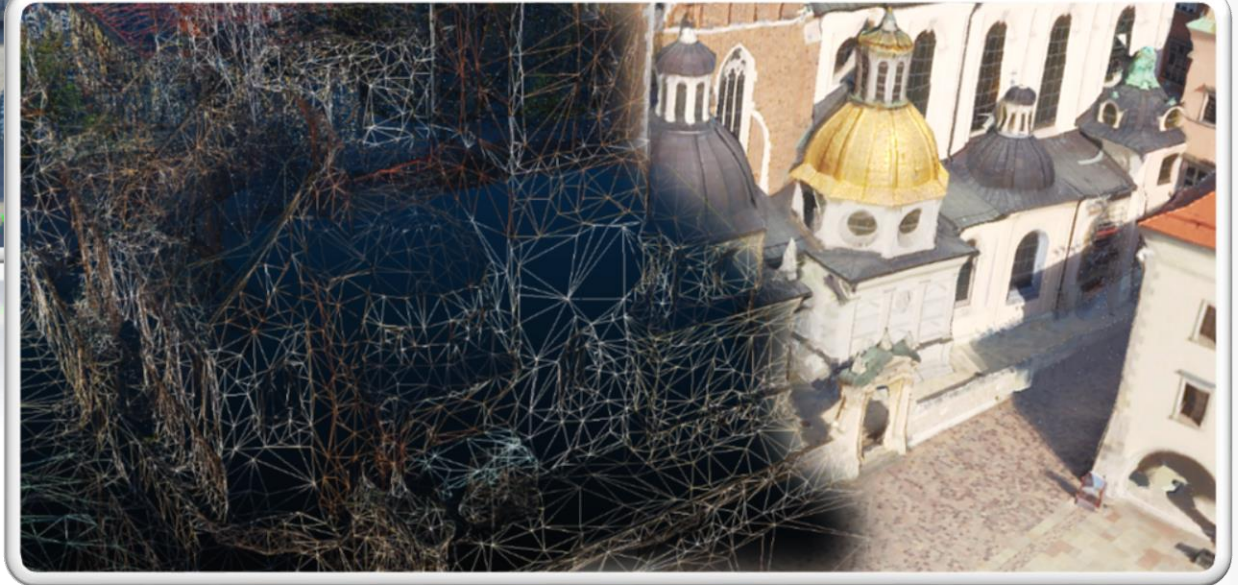
Intensity images - raster images with a pixel size 0.25 m or 0.50 m. They are a product using data from LIDAR with the intensity of the laser beam reflection. Geometrically, they constitute a product similar to the so-called true orthophotomap.



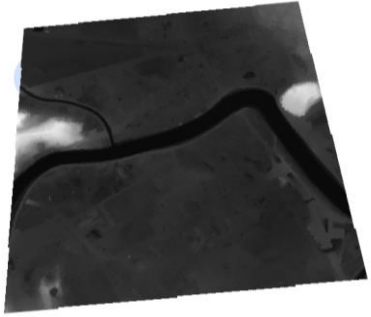
PHOTOGRAMMETRIC DATA – 3D MESH MODELS



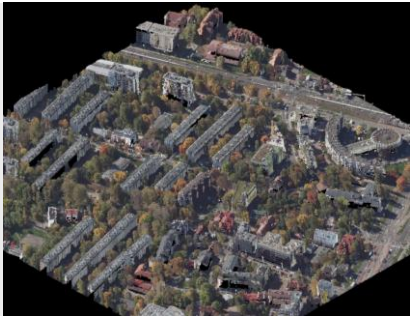
- ✓ 3D mesh models are three-dimensional visualizations of objects covered with image textures from oblique and vertical aerial imagery.
- ✓ The model is created by applying algorithms for automatically matching common points on all images - both oblique and vertical, using data from laser scanning.
- ✓ Increasing accuracy by using point clouds



3D MODELS OF BUILDINGS



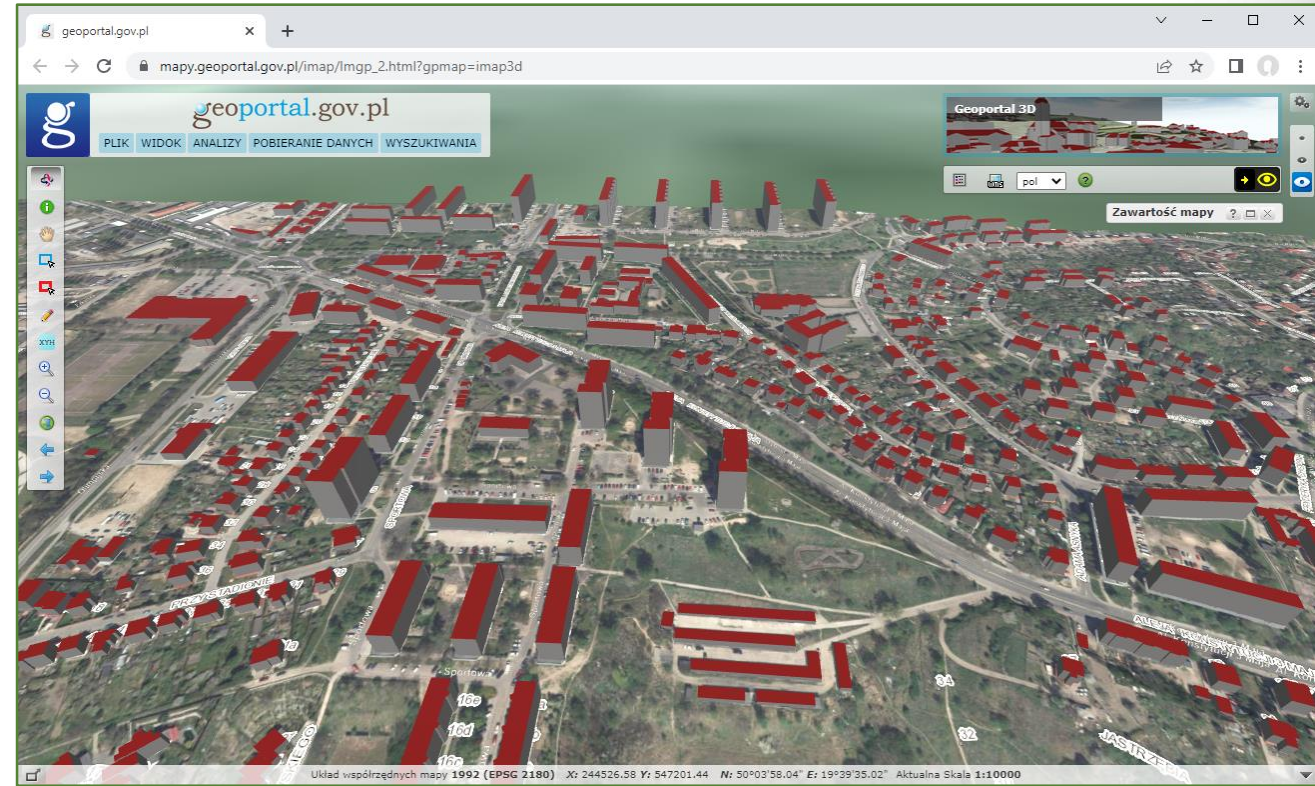
DEM 1m



ALS- building class



Database of Topographic Object- BUBD_A class



LOD1 almost **15 000 000** buildings

3D MODELS OF TREE

3D Models of trees were generated automatically based on current data available in the national geodetic and cartographic resource, including:

- Point cloud (developed using ALS technology - airborne laser scanning) from the high vegetation class and
- Digital Terrain Model (grid interval 1.0 m).



Photogrammetric data

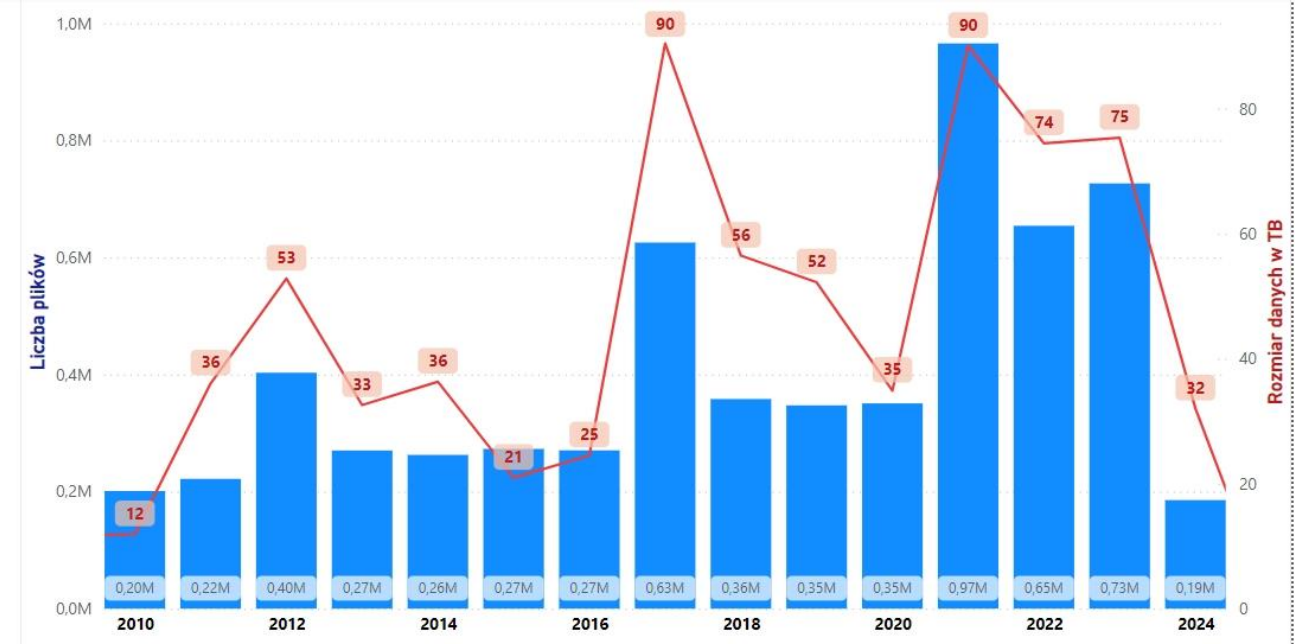


Data	TB	Number of data
oblique aerial imagery	20,57	252 699
vertical aerial imagery	525,42	4 232 817
vertical orthophotomaps	0,47	3 344
true orthophotomaps	5,04	17 397
classic orthophotomaps	65,59	1 144 953
images of intensity	1,1	30 094
digital terrain model	26,25	564 330
Digital Surface Model	14,7	181 649
3D mesh models	1,67	21 926
photopoints	0,1	107 509
point clouds ALS	139,39	593 638
SUM	800,3	7 150 356

asortyment	Sum of tb	Sum of ile
zdj. lotnicze ukosne	20,57	252 699
zdj. lotnicze pionowe	525,24	4 238 785
ortofotomapa ukosna	0,47	3 344
ortofotomapa prawdziwa	5,04	17 397
ortofotomapa klasyczna	65,59	1 144 953
obrazy intensywnosci	1,10	30 094
NMT	26,25	564 330
NMPT	14,70	181 649
modele siatkowe 3D	1,67	21 926
fotopunkty	0,10	107 509
chmura punktow	139,39	593 638
Total	801,12	7 156 324

char_przest	Sum of ile
0.05	2 011 209
0.25	1 402 905
1.00 m	504 027
0.07	476 577
4 p/m2	367 812
0.10	334 500
0.50	230 075

format	Sum of ile
TIFF	4 491 484
GeoTIFF	1 195 788
ARC/INFO ASCII GRID	410 782
LAS	366 060
ASCII XYZ GRID	231 060
LAZ	227 578
	107 509
ASCII TBD	48 112
OBJ	21 926
ESRI TIN	15 942

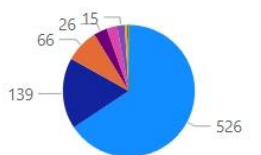


modul_arch	Sum of ile
	4 620 919
1:1000	104 979
1:10000	85 688
1:1250	197 994
1:2000	312 785
1:2500	439 146
1:500	41 918
1:5000	1 352 895

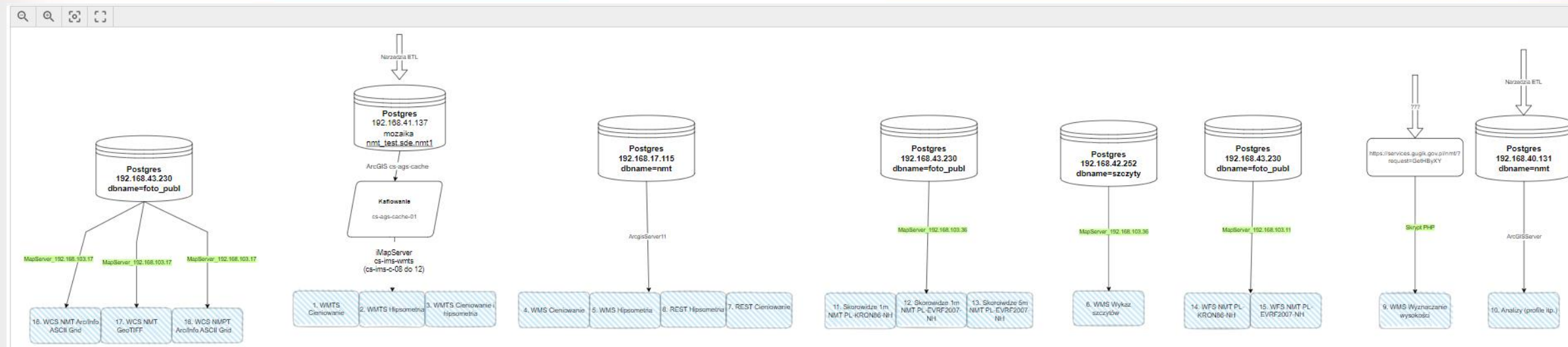
uklad_xy	uklad_h	Sum of ile
PL-1992	PL-KRON86-NH	3 029 681
PL-1992		2 076 158
PL-1992	PL-EVRF2007-NH	1 495 333
PL-2000:S6		187 074
PL-2000:S7		124 899
PL-2000:S8		61 194
		43 481
PL-2000:S6	PL-EVRF2007-NH	41 891
PL-2000:S5		29 808
PL-2000:S7	PL-EVRF2007-NH	24 059

projekt
1706
3130 Damart S7
3140 Piekary Śląskie
3150 Poznań
3200 Ołtarzew
3210 PKP Okęcie - Kielce
3220 wroSIP
3370 Droga S8
3380 Świebodzice

Objętość danych w TB

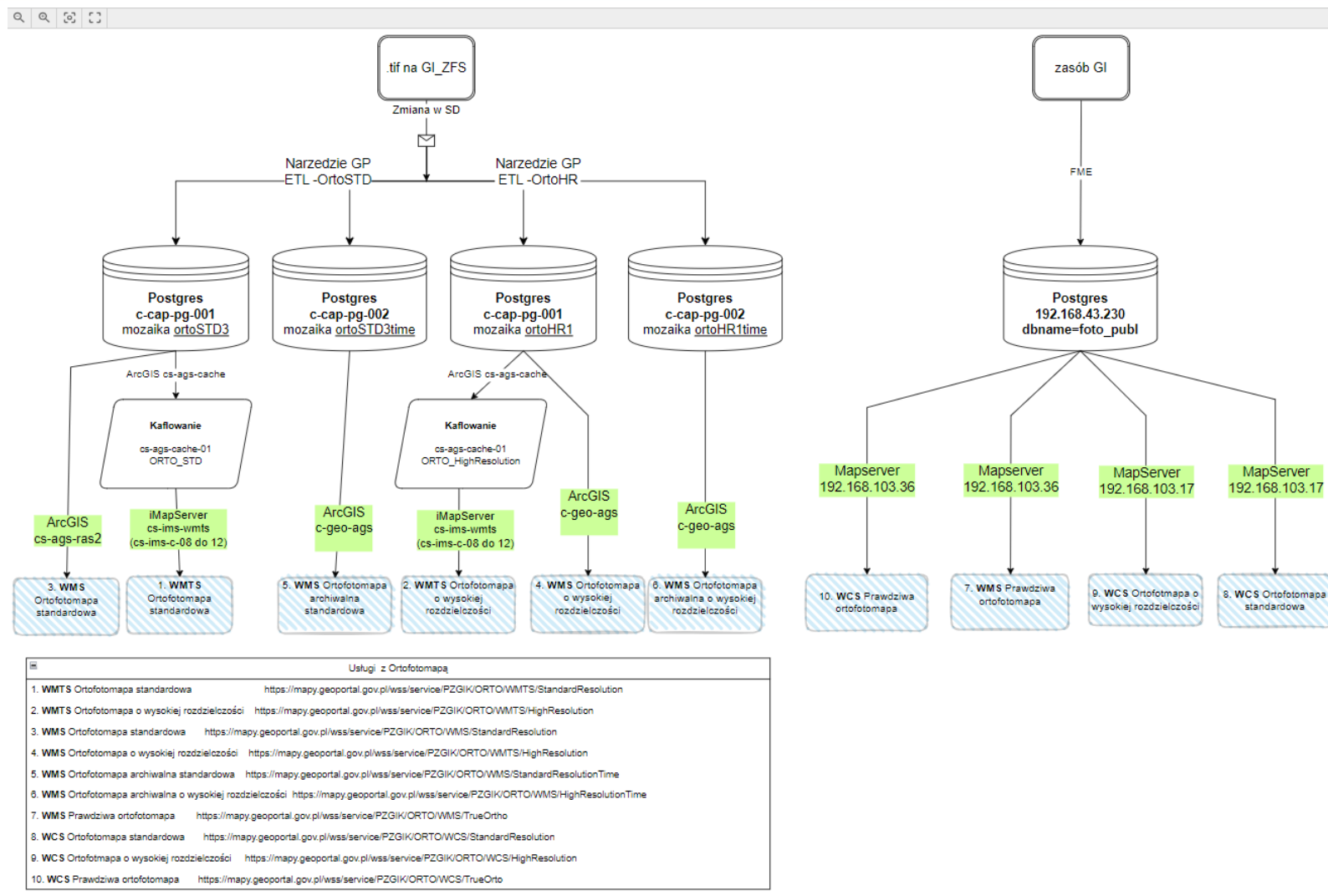


Photogrammetric data

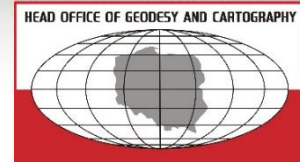


Usługi z NMT	
1. WMTS Cieniowanie	https://mapy.geoportal.gov.pl/wss/service/PZGIK/NMT/GRID1/WMTS/ShadedRelief
2. WMTS Hipsometria	https://mapy.geoportal.gov.pl/wss/service/PZGIK/NMT/GRID1/WMTS/Hypsometry
3. WMTS Cieniowanie i hipsometria	https://mapy.geoportal.gov.pl/wss/service/PZGIK/NMT/GRID1/WMTS/HypsometryAndShadedRelief
4. WMS Cieniowanie	https://mapy.geoportal.gov.pl/wss/service/PZGIK/NMT/GRID1/WMS/ShadedRelief
5. WMS Hipsometria	https://mapy.geoportal.gov.pl/wss/service/PZGIK/NMT/GRID1/WMS/Hypsometry
6. WMS Wykaz szczytów	https://mapy.geoportal.gov.pl/wss/service/img/guest/WMS/Szczyty
7. REST Cieniowanie	https://mapy.geoportal.gov.pl/gprest/services/ISOK_Cien/MapServer/
8. REST Hipsometria	https://mapy.geoportal.gov.pl/gprest/services/ISOK_Hipso/MapServer/
9. WMS Wyznaczanie wysokości	https://mapy.geoportal.gov.pl/wss/ext/NMT/wms
10. Analizy (profile itp.)	
11. Skorowidze 1m NMT PL-KRON86-NH	https://mapy.geoportal.gov.pl/wss/service/PZGIK/NMT/WMS/SkorowidzeUkladKRON86
12. Skorowidze 1m NMT PL-EVRF2007-NH	https://mapy.geoportal.gov.pl/wss/service/PZGIK/NMT/WMS/SkorowidzeUkladEVRF2007
13. Skorowidze 5m NMT PL-EVRF2007-NH	https://mapy.geoportal.gov.pl/wss/service/PZGIK/NMT/WMS/SheetsGrid5mEVRF2007
14. WFS NMT PL-KRON86-NH	https://mapy.geoportal.gov.pl/wss/service/PZGIK/NumerycznyModelTerenuKRON86/WFS/Skorowidze
15. WFS NMT PL-EVRF2007-NH	https://mapy.geoportal.gov.pl/wss/service/PZGIK/NumerycznyModelTerenuEVRF2007/WFS/Skorowidze
16. WCS NMT ArcInfo ASCII Grid	https://mapy.geoportal.gov.pl/wss/service/PZGIK/NMT/GRID1/WCS/DigitalTerrainModel
17. WCS NMT GeoTIFF	https://mapy.geoportal.gov.pl/wss/service/PZGIK/NMT/GRID1/WCS/DigitalTerrainModelFormatTIFF
18. WCS NMPT ArcInfo ASCII Grid	https://mapy.geoportal.gov.pl/wss/service/PZGIK/NMPT/GRID1/WCS/DigitalSurfaceModel

Photogrammetric data



PHOTOGRAMMETRIC DATA MANAGEMENT SYSTEM



pgAdmin 4

pgAdmin File Object Tools Help

Dashboard Properties SQL Statistics Dependencies Publikacja_SQL... Publikacja zdje... baza.sql* Untitled* Untitled*

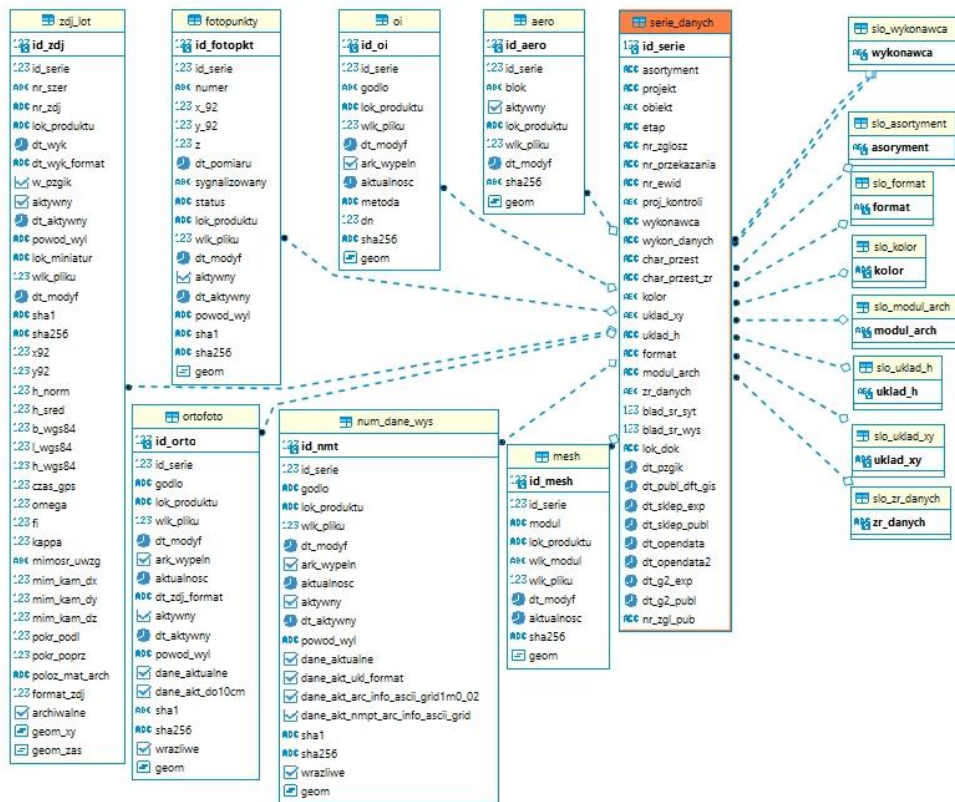
Query

```
6 select nr_przekazania, id_serie, asortyment, aero.aero, fotopunkty.fotopunkty, orto.orto, zdj_lot.zdj_lot, num_dane_wys.num_dane_wys, oi.oi, mesh.mesh from
7 foto.serie_danych
8 full outer join (select id_serie, count(id_serie) aero from foto.aero group by id_serie) as aero using (id_serie)
9 full outer join (select id_serie, count(id_serie) fotopunkty from foto.fotopunkty group by id_serie) as fotopunkty using (id_serie)
10 full outer join (select id_serie, count(id_serie) orto from foto.ortofoto group by id_serie) as orto using (id_serie)
11 full outer join (select id_serie, count(id_serie) oi from foto.oi group by id_serie) as oi using (id_serie)
12 full outer join (select id_serie, count(id_serie) num_dane_wys from foto.num_dane_wys num_dane_wys group by id_serie) as num_dane_wys using (id_serie)
13 full outer join (select id_serie, count(id_serie) zdj_lot from foto.zdj_lot group by id_serie) as zdj_lot using (id_serie)
14 full outer join (select id_serie, count(id_serie) mesh from foto.mesh mesh group by id_serie) as mesh using (id_serie)
15 where nr_przekazania = 'WPL/2024/6101'
```

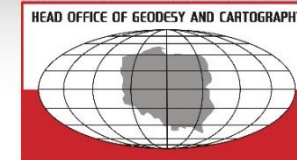
Data Output Messages Notifications

	nr_przekazania character varying (50)	id_serie integer	asortyment character varying (50)	aero bigint	fotopunkty bigint	orto bigint	zdj_lot bigint	num_dane_wys bigint	oi bigint	mesh bigint
1	WPL/2024/6101	79986	aerotriangulacja	1	[null]	[null]	[null]	[null]	[null]	[null]
2	WPL/2024/6101	79987	aerotriangulacja	1	[null]	[null]	[null]	[null]	[null]	[null]
3	WPL/2024/6101	79988	chmura punktow	[null]	[null]	[null]	[null]	204	[null]	[null]
4	WPL/2024/6101	79989	fotopunkty	[null]	49	[null]	[null]	[null]	[null]	[null]
5	WPL/2024/6101	79990	NMPT	[null]	[null]	[null]	[null]	13	[null]	[null]
6	WPL/2024/6101	79991	NMT	[null]	[null]	[null]	[null]	13	[null]	[null]
7	WPL/2024/6101	79992	obrazy intensywnosci	[null]	[null]	[null]	[null]	[null]	13	[null]
8	WPL/2024/6101	79993	ortofotomapa klasyczna	[null]	[null]	13	[null]	[null]	[null]	[null]
9	WPL/2024/6101	79994	zdj. lotnicze pionowe	[null]	[null]	[null]	673	[null]	[null]	[null]

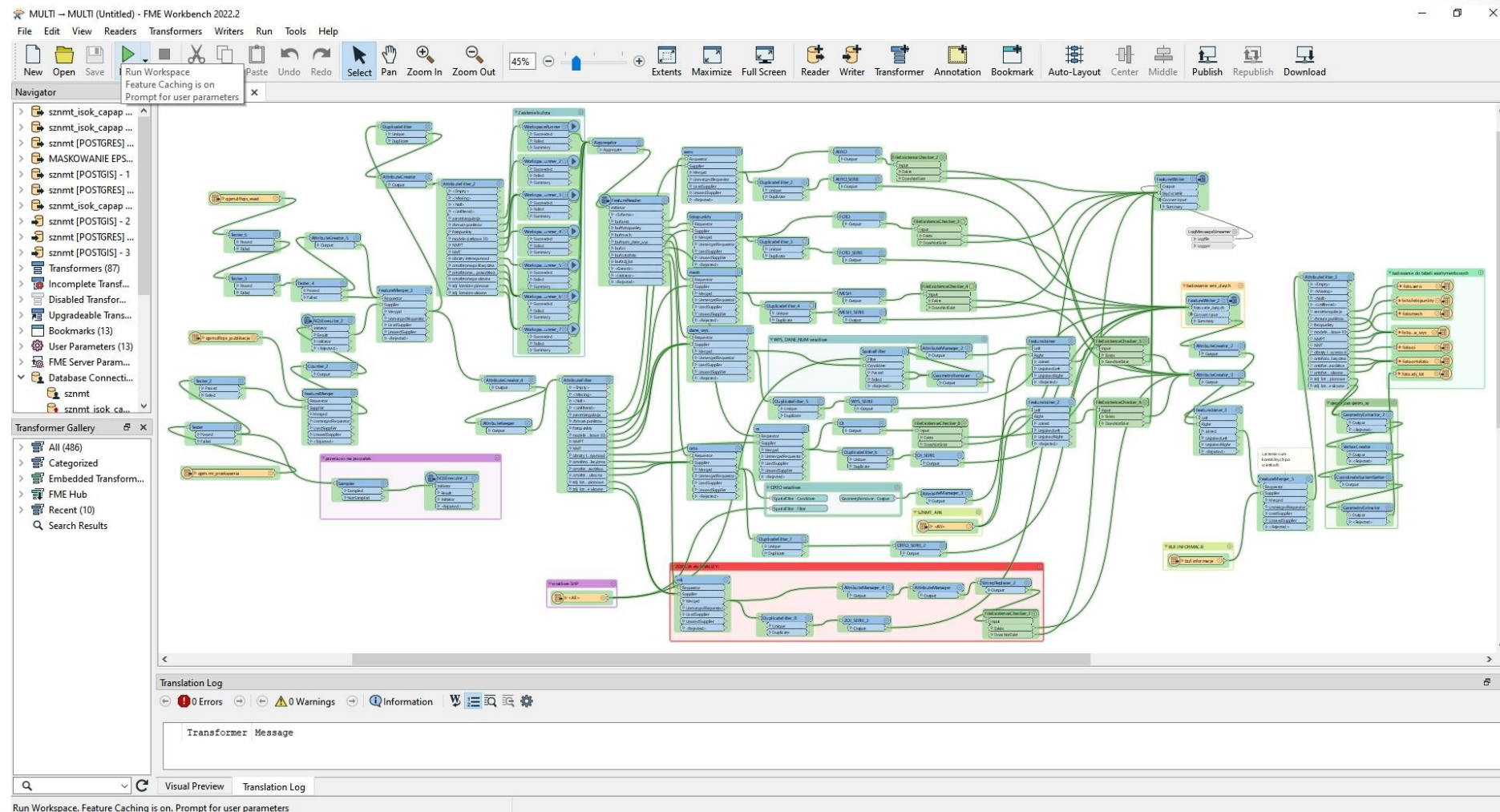
Total rows: 9 of 9 Query complete 00:00:29.076



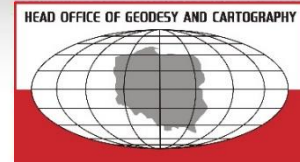
PHOTOGRAMMETRIC DATA MANAGEMENT SYSTEM



The system uses FME
Desktop and FME
Server software



PHOTOGRAMMETRIC DATA MANAGEMENT SYSTEM



- management of the coordination process of photogrammetric works
- management of GGK contracts and reports of geodetic and cartographic works
- management of the quality control process of photogrammetric data
- management of the photogrammetric data recording process
- operation and management of the process of feeding databases and publications
- reporting
- complaints



SYSTEM ZARZĄDZANIA DANYMI FOTOGRAOMETRYCZNYMI



SZNMV 3.44



PUBLICATION OF DATA - SERVICES

WMS/WMTS

WFS

WCS

ATOM

N-1	N-2	N-3	N-4
N-5	N-6	N-7	N-8

Indexes to download data

Service type	Service name and parameters
 WFS	Orthoimagery Indexes
 WFS	True ortho Indexes
 WFS	Aerial images Indexes - aer
 WFS	LIDAR Indexes (PL-KRON86)
 WFS	LIDAR Indexes (PL-EVRF20)
 WFS	DTM Indexes (PL-KRON86)

Topographic data

Service type	Service name	Service URL
 ATOM	BDOT10k - lubuskie	Copy URL
 ATOM	BDOT10k - warmińsko-mazurskie	Copy URL
 ATOM	BDOT10k - podkarpackie	Copy URL

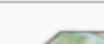
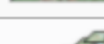


Orthophotomap

Service type	Service name
 WMTS	Orthophotomap
 WMS	Orthophotomap
 WMTS	High resolution
 WMS	High resolution
 WMS	Archival orthophotomap



Digital Terrain Model

Service type	Service name	Show in g
 WMTS	Hillshade	
 WMS	Hillshade	
 WMTS	Hipsometry	

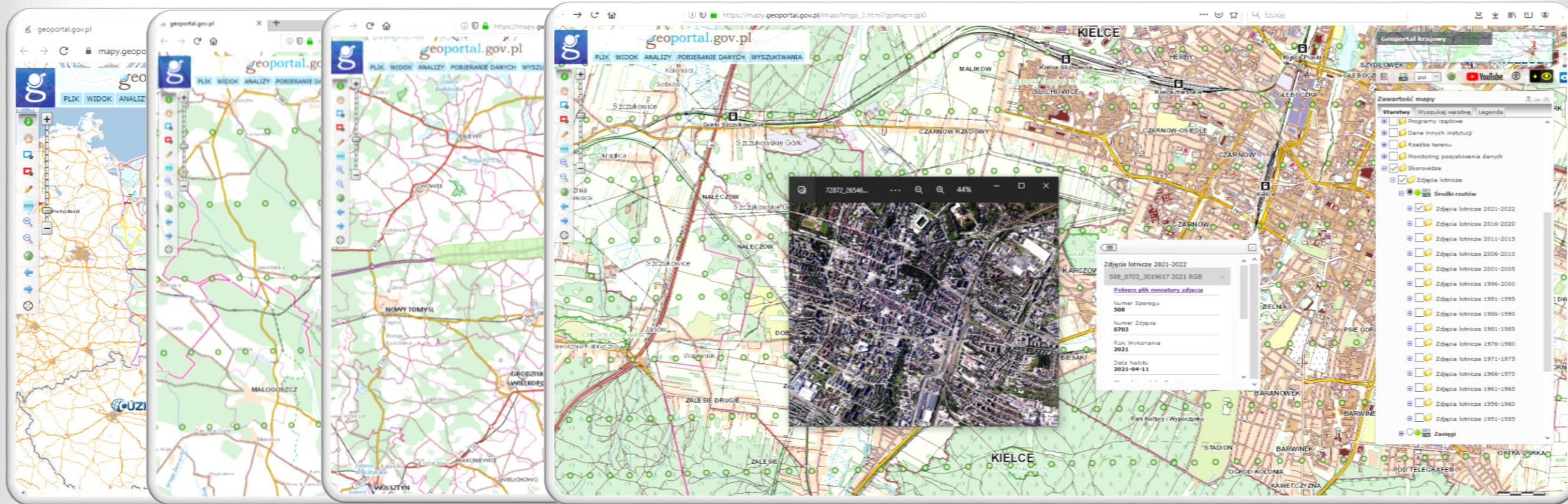


Orthoimagery

Service type	Service name and parameters	Data
 WCS	Orthoimagery	
 WCS	High Resolution Orthoimagery	
 WCS	True Ortho	

SERVICES - AERIAL IMAGES

Availability of aerial imagery Indexes – projection centers Indexes - ranges Thumbnails



SERVICES – DOWNLOAD - www.geoportal.gov.pl



geoportal.gov.pl

PLIK WIDOK ANALIZY POBIERANIE DANYCH WYSZUKIWANIA

Geoportal krajowy

Zawartość mapy

Warstwy Wyszukaj warstwę Legenda

Rozwiń info o wszystkich warstwach

☒ Dane do pobrania

☒ Ortofotomapa

☒ Ortofotomapa wg aktualności

☒ 2022 - arkusze

☒ 2022 - zasięg

☒ 2021 - arkusze

☒ 2021 - zasięg

☒ 2020 - arkusze

☒ 2020 - zasięg

☒ 2019 i starsze - arkusze

☒ 2019 i starsze - zasięg

☒ Ortofotomapa wg rozdzielczości

☒ Prawdziwa ortofotomapa

☒ Numeryczny Model Terenu

☒ Numeryczny Model Pokrycia Terenu

M-34-63-C-d-2-1 2021 RGB

Pobierz plik danych dla tej sekcji

Wartość: M-34-63-C-d-2-1 Pobierz plik

Aktualność: 2021-05-11

Wielkość piksela: 0.25

Układ współrzędnych: PL-1992

Cały arkusz wypełniony treścią

Opening 74947_1019266_M-34-63-C-d-2-1.tif

You have chosen to open:

☒ 74947_1019266_M-34-63-C-d-2-1.tif

which is: TIF file (40.8 MB)

from: <https://opendata.geoportal.gov.pl>

What should Firefox do with this file?

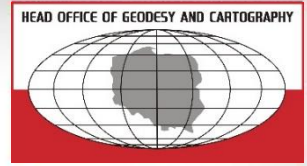
☐ Open with Applications\RasView.exe (default)

☒ Save File

OK Cancel

Skład współrzędnych mapy 1007 (FGK 2180) X: 745415.87 Y: 508980.89 N: 50804'33.35" E: 1907'31.98" Skala 1:100000

SERVICES - www.geoportal.gov.pl



The screenshot displays the geoportal.gov.pl interface. The main map shows Warsaw, with labels for districts like NOWE MIASTO, STARE MIASTO, and PRAGA. A red box labeled '1' highlights the 'DOWNLOAD DATA' and 'SEARCHES' buttons in the top left. A red box labeled '2' highlights the 'Pobierz dane z usługi WCS' and 'Pobierz dane z usługi WFS' buttons. A red box labeled '3' highlights the 'Rysuj obs...' button. A red box labeled '4' highlights the 'Pobierz plik' button. A red box labeled '5' highlights the 'HighResolution.tif - Przeglądarka fotografii systemu Windows' window, which shows a high-resolution aerial photograph of a building complex. The bottom of the map displays the map coordinate system: 1992 (EPSG 2180), X: 489302.66, Y: 635769.48, N: 52°15'10.72", E: 20°59'22.62", and Current scale 1:25000.

WMS service	inquiries	transfer TB	unique users
Standard orthophotomaps	26 379 448	4,6	379 852
High resolution orthophotomaps	15 580 882	961,5	260 592
True orthophotomaps	1 942 633	9,9	284 485
Images of intensity	3 152 878	790,8	348 635
SUM	47 055 841	1766,8	1 273 564

SERVICES - www.geoportal.gov.pl



An official website of the European Union How do you know? ▾

European Commission

INSPIRE Knowledge Base

Home Overview ▾ Policy context Legislation ▾ Evolution ▾ News and publications ▾ Tools ▾

Home > Evolution > Good Practice Library

Good Practice Library

Good Practice documents

Files

main

Go to file

- meetings
- resources
 - README.md
 - gp-data-download-wms.md
 - sample-implementations.md

Preview Code Blame 224 lines (135 loc) · 18.2 KB

Head Office of Geodesy and Cartography

Guidelines for making spatial data downloadable via WMS services

Version 0.02

The 26th of January 2022

Table of contents

Examples of implementation

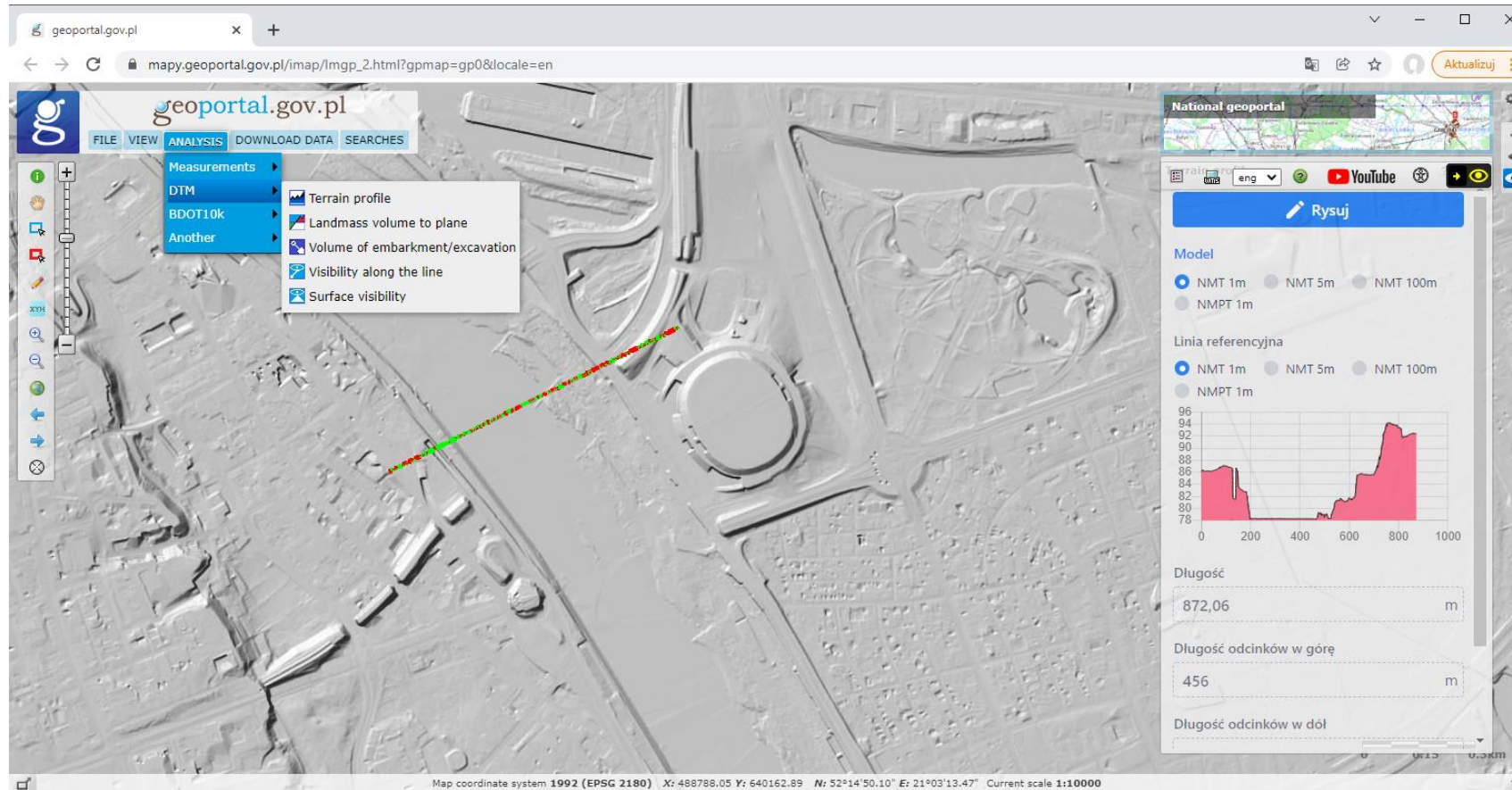
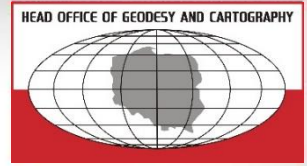
Poland

From the 31st of June 2020, the amendment of a Polish geodetic and cartographic law has entered into force. As a result, most of the datasets managed by geodetic and cartographic service have been opened. The newly opened datasets have been published for download via WMS services utilising MapServer software. Currently following WMS download services are available:

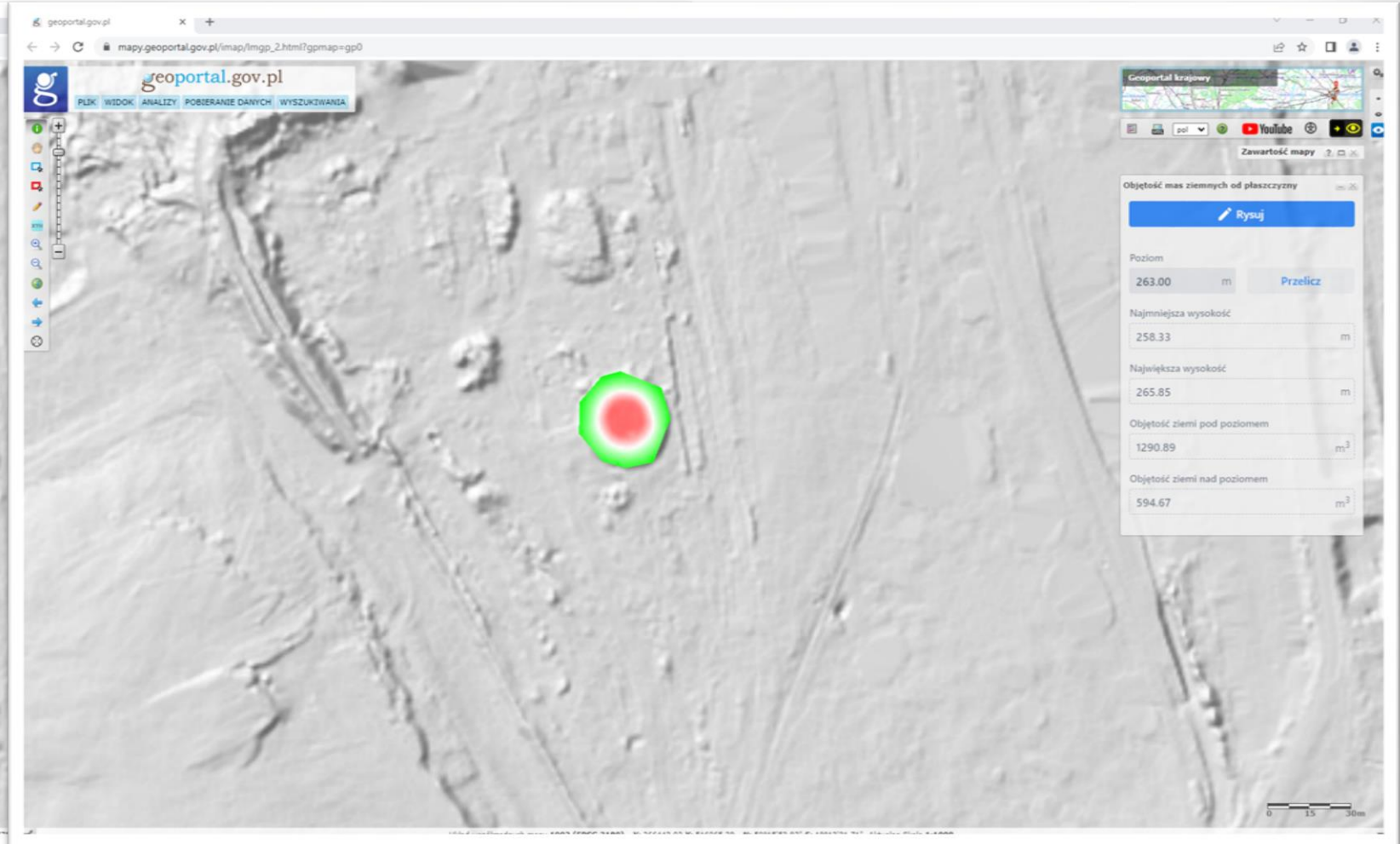
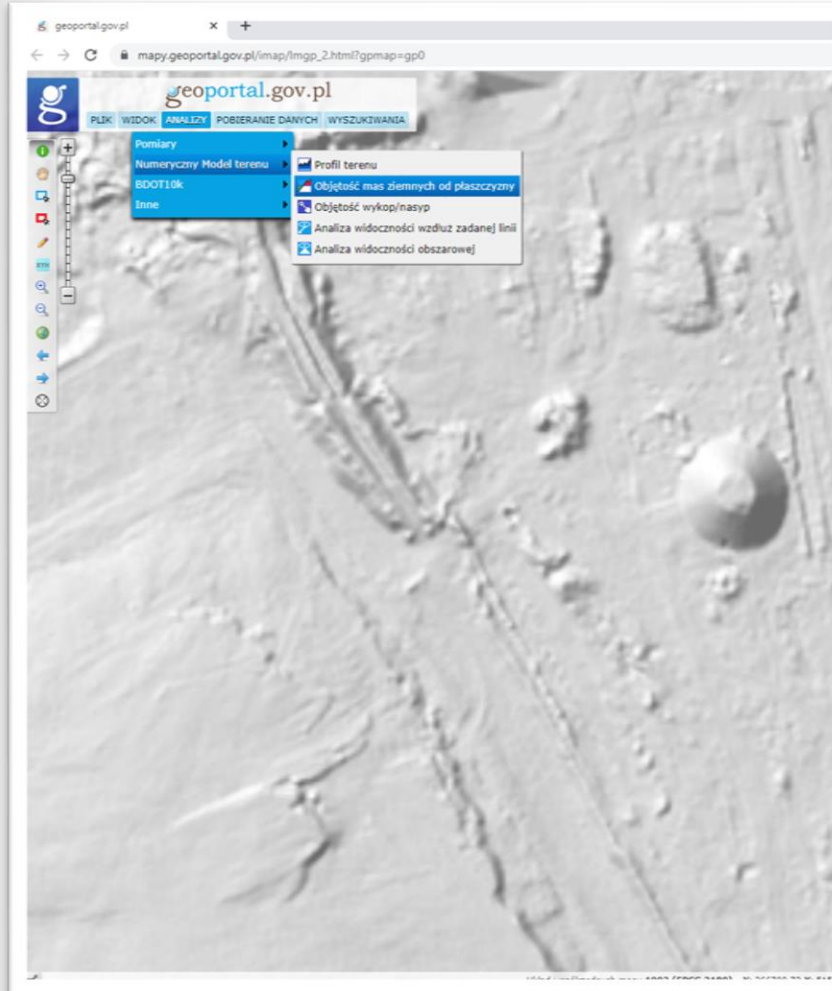
- orthoimagery
 - based on currency <https://mapy.geoportal.gov.pl/wss/service/PZGIK/ORTO/WMS/SkorowidzeWqAktualnosci>
 - based on pixel size <https://mapy.geoportal.gov.pl/wss/service/PZGIK/ORTO/WMS/SkorowidzeWgRozdzielczosci>
- intensity images <https://mapy.geoportal.gov.pl/wss/service/PZGIK/OI/WMS/SkorowidzeObrazowIntensywnosci>
- digital elevation model (DEM)
 - PL-KRON86-NH elevation system <https://mapy.geoportal.gov.pl/wss/service/PZGIK/NMT/WMS/SkorowidzeWukladzieKRON86>
 - PL- EVRF2007-NH elevation system <https://mapy.geoportal.gov.pl/wss/service/PZGIK/NMT/WMS/SkorowidzeWukladzieEVRF2007>
- digital terrain model (DTM)
 - PL-KRON86-NH elevation system <https://mapy.geoportal.gov.pl/wss/service/PZGIK/NMPT/WMS/SkorowidzeWukladzieKRON86>
 - PL- EVRF2007-NH elevation system <https://mapy.geoportal.gov.pl/wss/service/PZGIK/NMPT/WMS/SkorowidzeWukladzieEVRF2007>
- LIDAR data
 - PL-KRON86-NH elevation system <https://mapy.geoportal.gov.pl/wss/service/PZGIK/DanePomNMT/WMS/SkorowidzeWukladzieKRON86>
 - PL- EVRF2007-NH elevation system <https://mapy.geoportal.gov.pl/wss/service/PZGIK/DanePomNMT/WMS/SkorowidzeWukladzieEVRF2007>

Our example of sharing data via WMS services was considered good practice

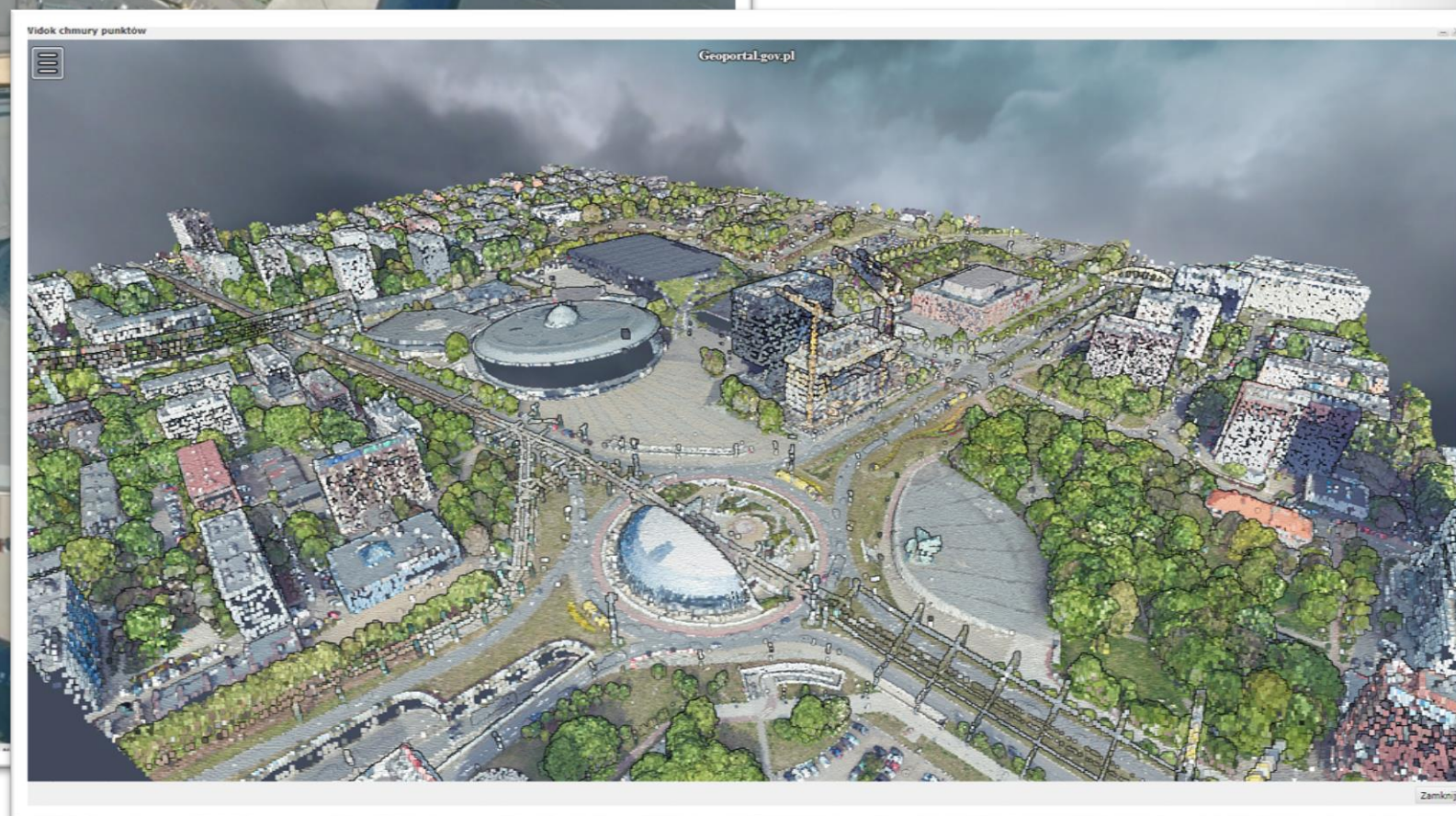
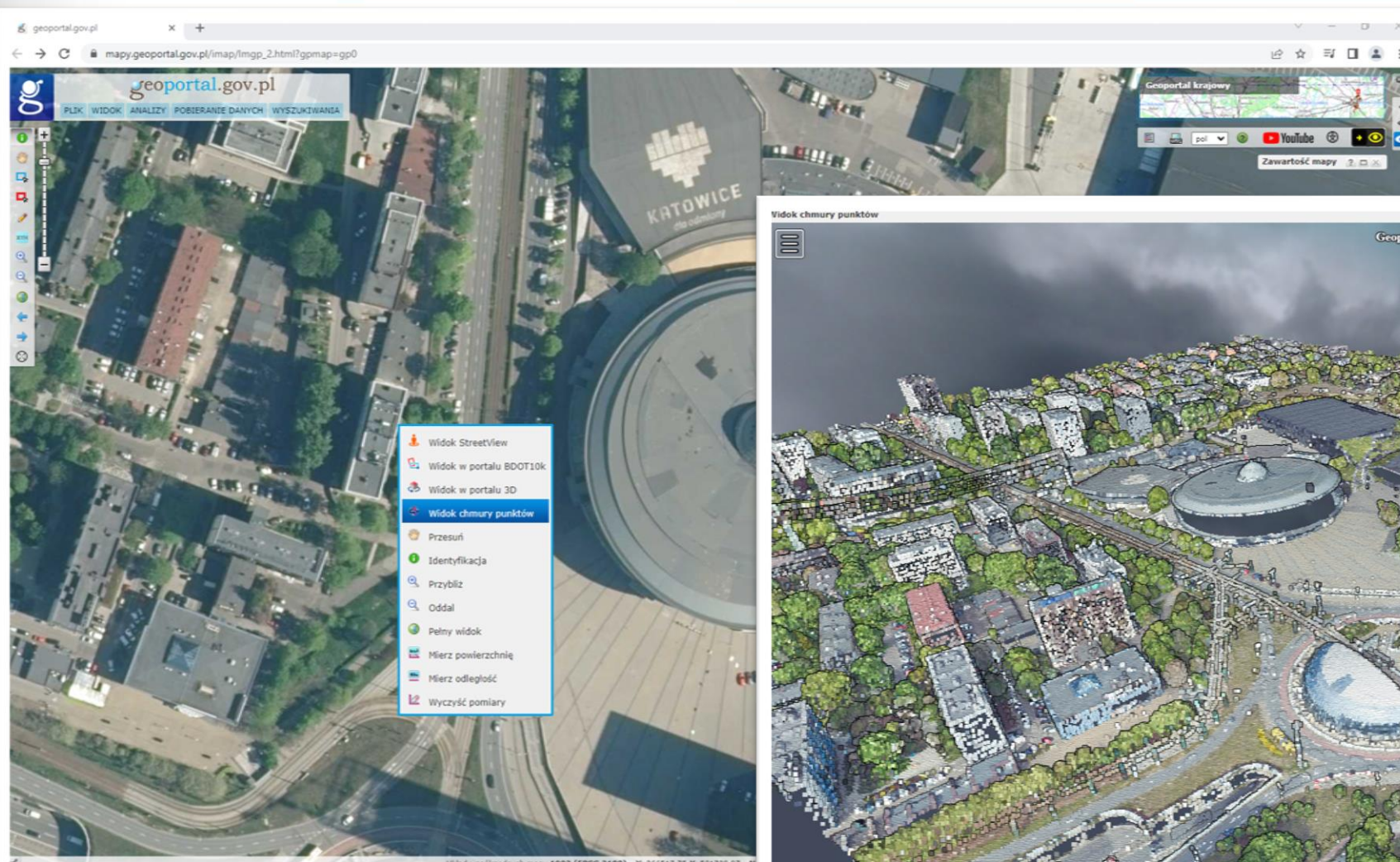
ANALYSIS - www.geoportal.gov.pl



ANALYSIS - www.geoportal.gov.pl



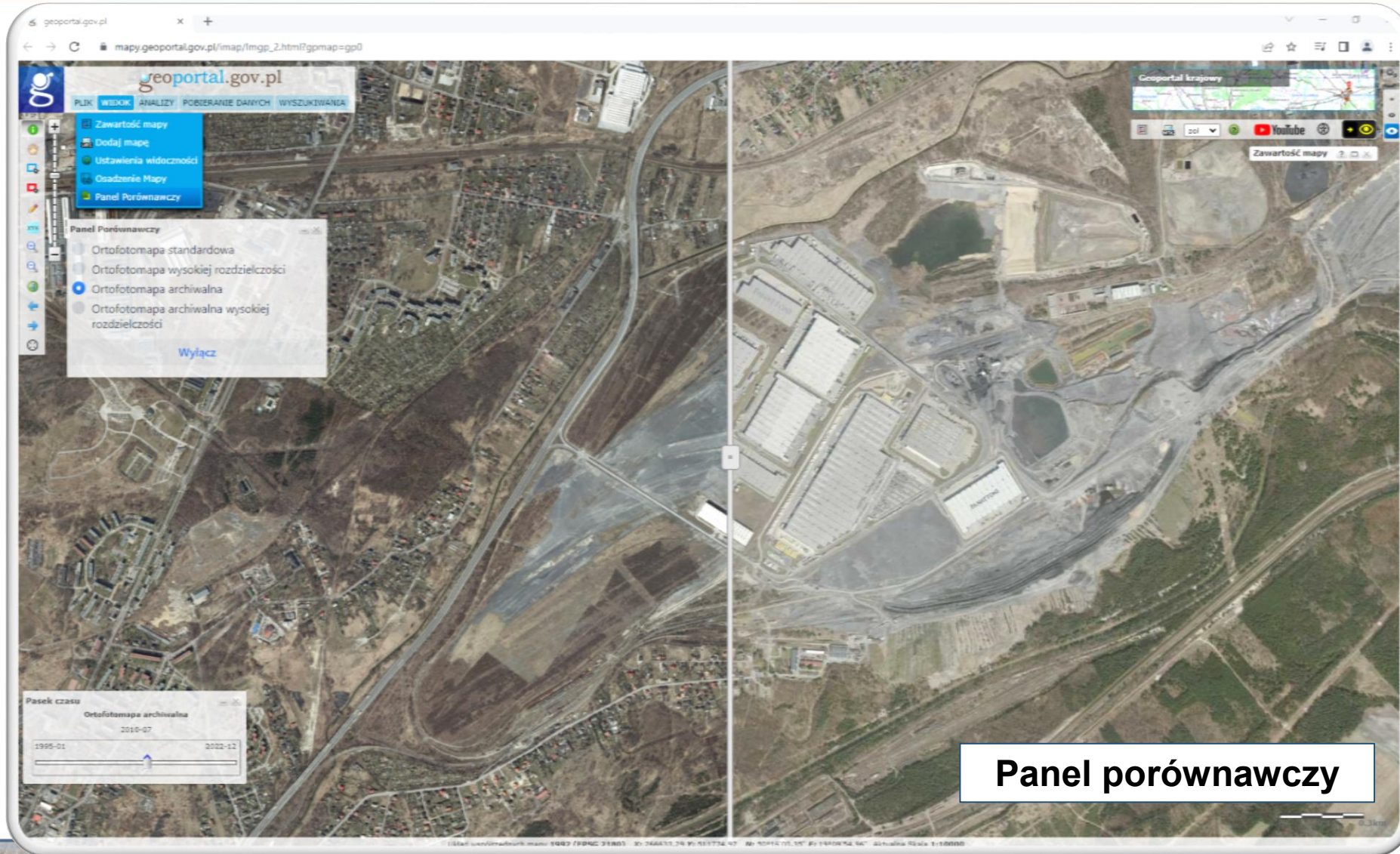
SERVICES - www.geoportal.gov.pl



ANALYSIS - www.geoportal.gov.pl

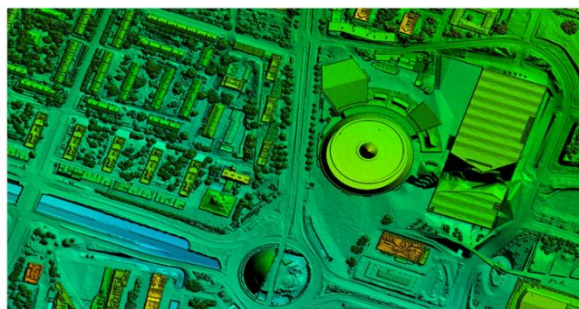
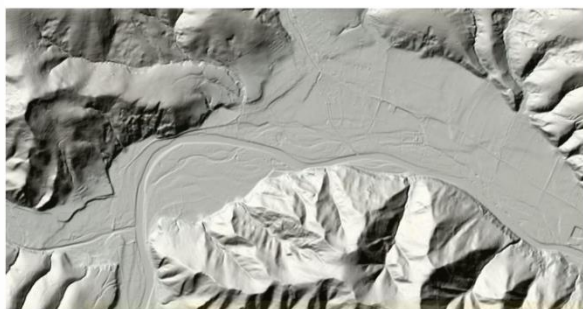
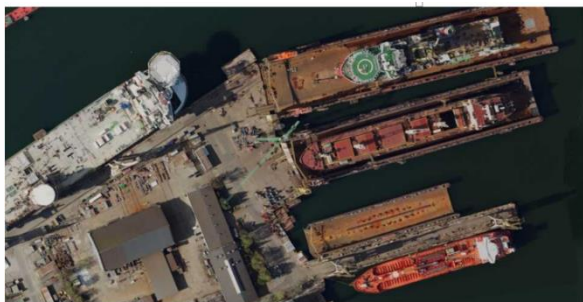


ANALYSIS - www.geoportal.gov.pl



Panel porównawczy

Thank you



Renata Brzozowska

head of the photogrammetry department
Department of Geodesy and Cartography
Head Office of Geodesy and Cartography

renata.brzozowska@gugik.gov.pl

gugik@gugik.gov.pl; www.gugik.gov.pl; www.geoportal.gov.pl