



# GWFF

GEOSPATIAL WORLD FORUM

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# PHOTOMAP

## PHOTOMAP's Next Level LiDAR Data Acquisition

Wout Velthoven





## PHOTOMAP Group

- 2003 – PHOTOMAP more than 20 years experience
- 2023 – AERIMAP in Czechia
- 2023 – Office in The Netherlands
- 2024 – Office in Germany



### Earth Observation

AIRBUS DS, MAXAR (EUSI), PLANET LABS, Capella Space, SatVu authorized reseller

EARSC member



### Aerial Survey

6 airplanes,  
3 VEXCEL large format cameras,  
3 RIEGL LiDAR systems

EAASI member



### UAV (Drone)

6 UAV systems,  
5 aerial cameras,  
3 LiDAR scanners,  
thermal camera,  
hyperspectral scanner



### Mobile Mapping

RIEGL VMQ-1HA



### Land Surveying

TOPCON equipment



**RIEGL VMQ-1HA**  
since 2022

1.8 MHz  
range 475m



**RIEGL VUX-1 UAV**  
since 2015

PRR: 0.5 MHz



**VQ-480 II**  
since 2023

PRR: 2 MHz  
Max. 3.900ft



**VQ-780 II-S**  
since 2019 VQ-780 I  
upgraded in 2022 to II-S

PRR: 2 MHz  
Max. 9.900ft



**VQ-1560 II-S**  
since 2023

PRR: 2 times 2 MHz  
max. 12.800 ft  
stabilized mount  
SOMAG GSM4000

- Cessna 404 Titan
- Cessna 402B
- Cessna 340A
- Cessna TU206F
- Piper Seneca V
- Tecnam P2006T





**Sitina Tunnel in Bratislava**  
**RIEGL VMQ-1HA**



**BUBI Highway near Kosice**  
**RIEGL VUX-1 UAV**

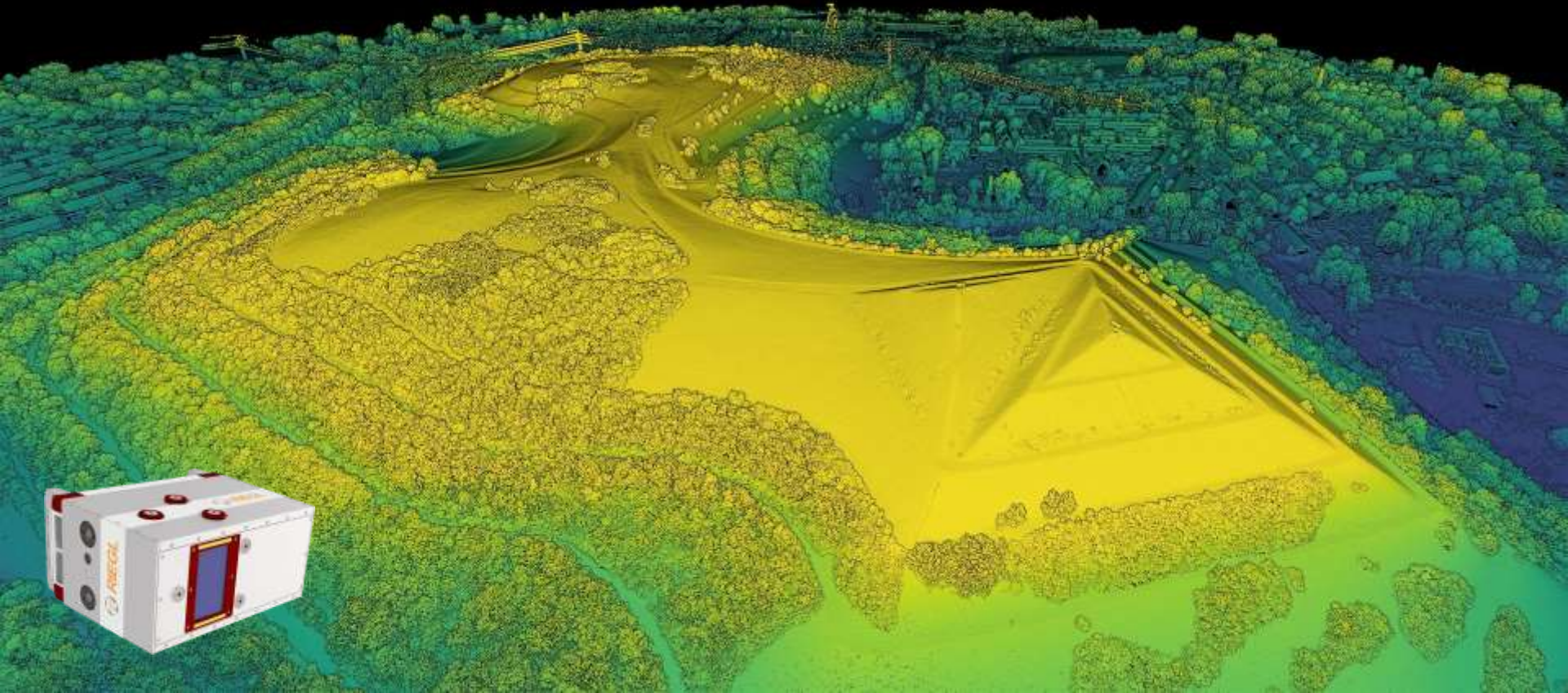


Porto City in Portugal 2023  
RIEGL VQ-480 II



# Gelsenkirchen City in Germany 2024

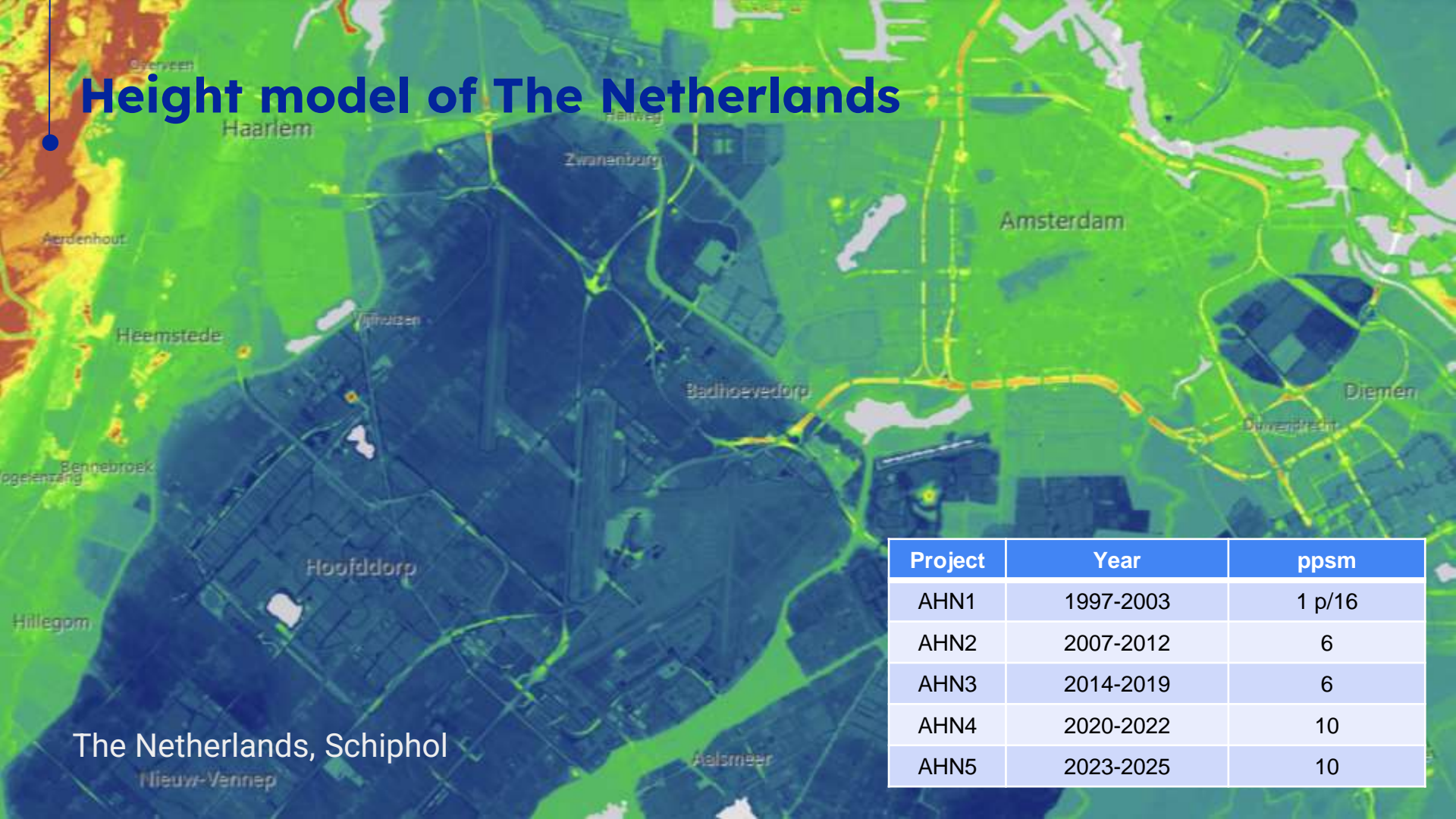
## RIEGL VQ-780 II-S



Hradec Králové in Czechia 2024  
RIEGL VQ-1560 II-S



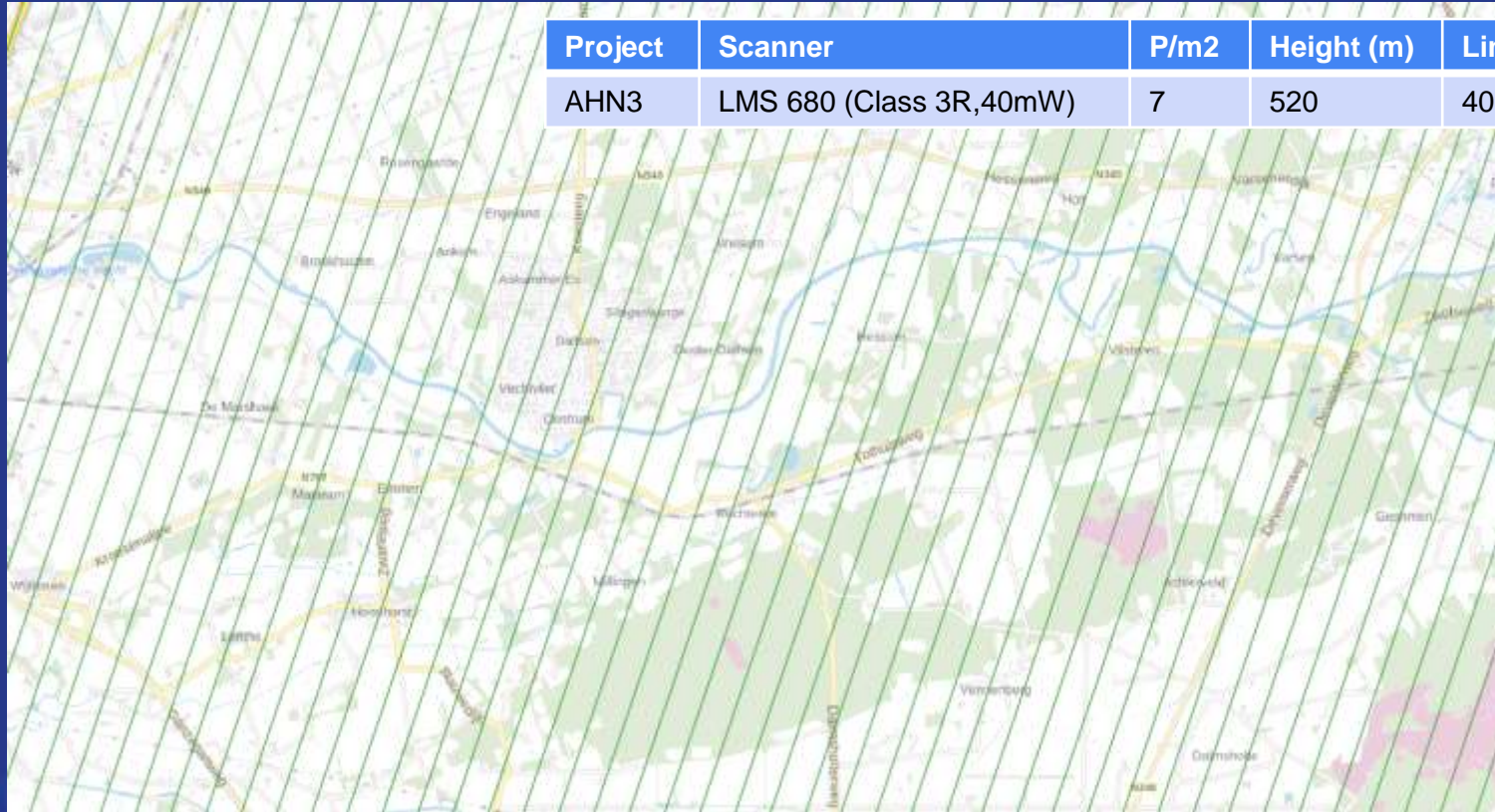
# Height model of The Netherlands



The Netherlands, Schiphol

Project	Year	ppsm
AHN1	1997-2003	1 p/16
AHN2	2007-2012	6
AHN3	2014-2019	6
AHN4	2020-2022	10
AHN5	2023-2025	10

# Netherlands AHN3 2014-2019



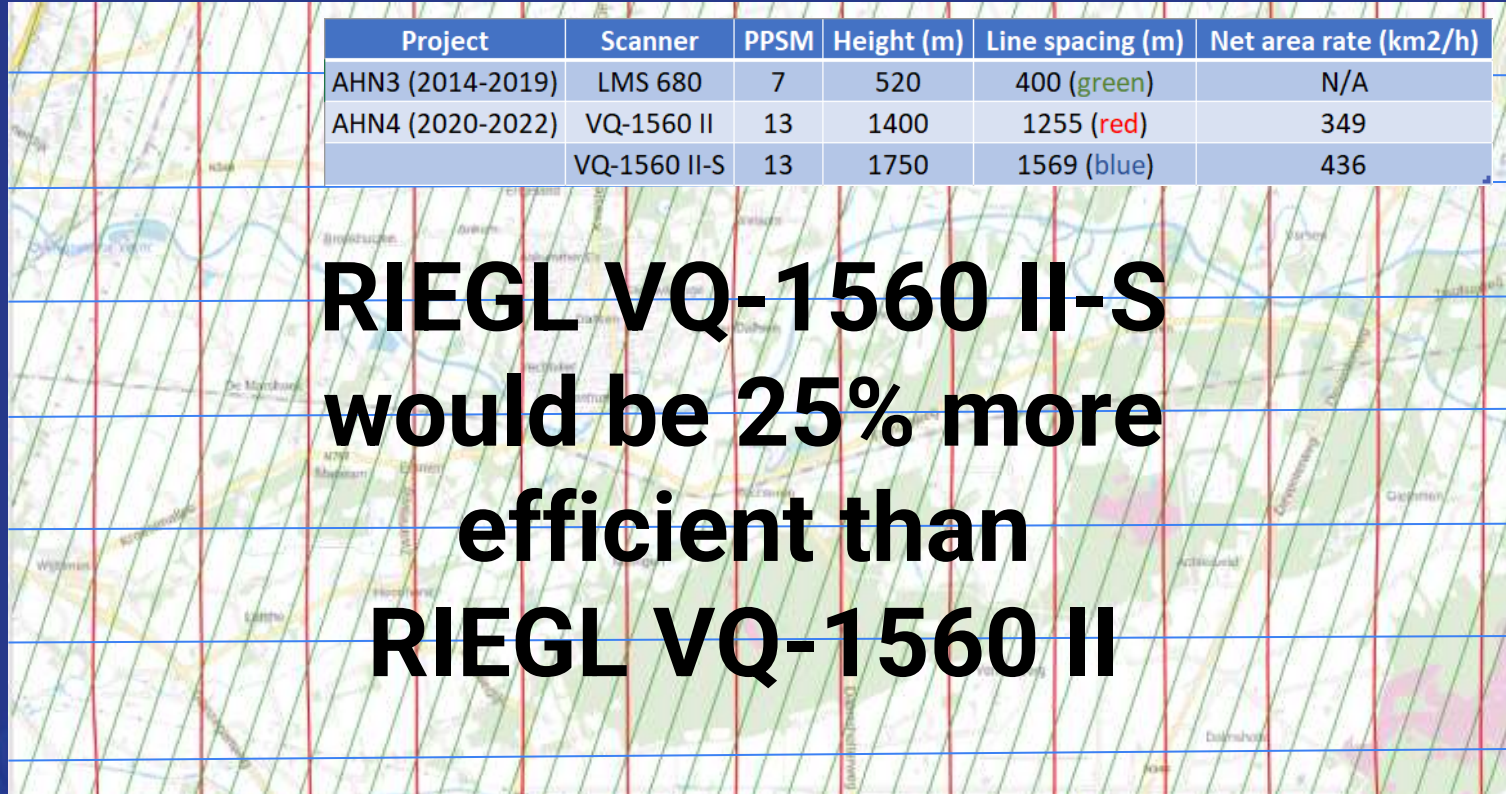
Project	Scanner	P/m2	Height (m)	Line spacing (m)
AHN3	LMS 680 (Class 3R,40mW)	7	520	400

# Netherlands AHN4 2020-2022



Project	Scanner	P/m2	Height (m)	Line spacing (m)
AHN3	LMS 680 (Class 3R,40mW)	7	520	400
AHN4	VQ 1560 II (Class 3b,450mW)	13	1400	1255

# Netherlands AHN projects taking efficiency in data acquisition to a new level



Project	Scanner	PPSM	Height (m)	Line spacing (m)	Net area rate (km2/h)
AHN3 (2014-2019)	LMS 680	7	520	400 (green)	N/A
AHN4 (2020-2022)	VQ-1560 II	13	1400	1255 (red)	349
	VQ-1560 II-S	13	1750	1569 (blue)	436

**RIEGL VQ-1560 II-S  
would be 25% more  
efficient than  
RIEGL VQ-1560 II**

# Combined Survey

<b>Aerial Imagery</b>	<b>VEXCEL UltraCAM Eagle M3</b>
Resolution	7.4 cm
Flying Height	1.850m (100mm lens)
Strip width	1.958 m
Speed	any

<b>RIEGL VQ-1560 II</b>
5.56 p/m <sup>2</sup>
1.850 m
2.073 m
135 kts

<b>RIEGL VQ-1560 II-S</b>
12.04 p/m <sup>2</sup>
1.850 m
2.073 m
135 kts

# Combined survey

## PROS

- Only ONE flight
- Efficiency
- Higher update rate
- Environmental aspect

## CONS

- Smaller survey window or lose some of the specification.
- Needed two sensor hatches in airplane or hybrid sensor Vexcel UltraCam Dragon with 2.4 MHz RIEGL LiDAR scanner inside.
- GSD and point density have to match. (This will limit the suitable sensors)



# Thank you.

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A movie of the Trencin Castle in Slovakia  
acquired with RIEGL VQ-1560 II-S

[www.photomap.sk](http://www.photomap.sk)

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