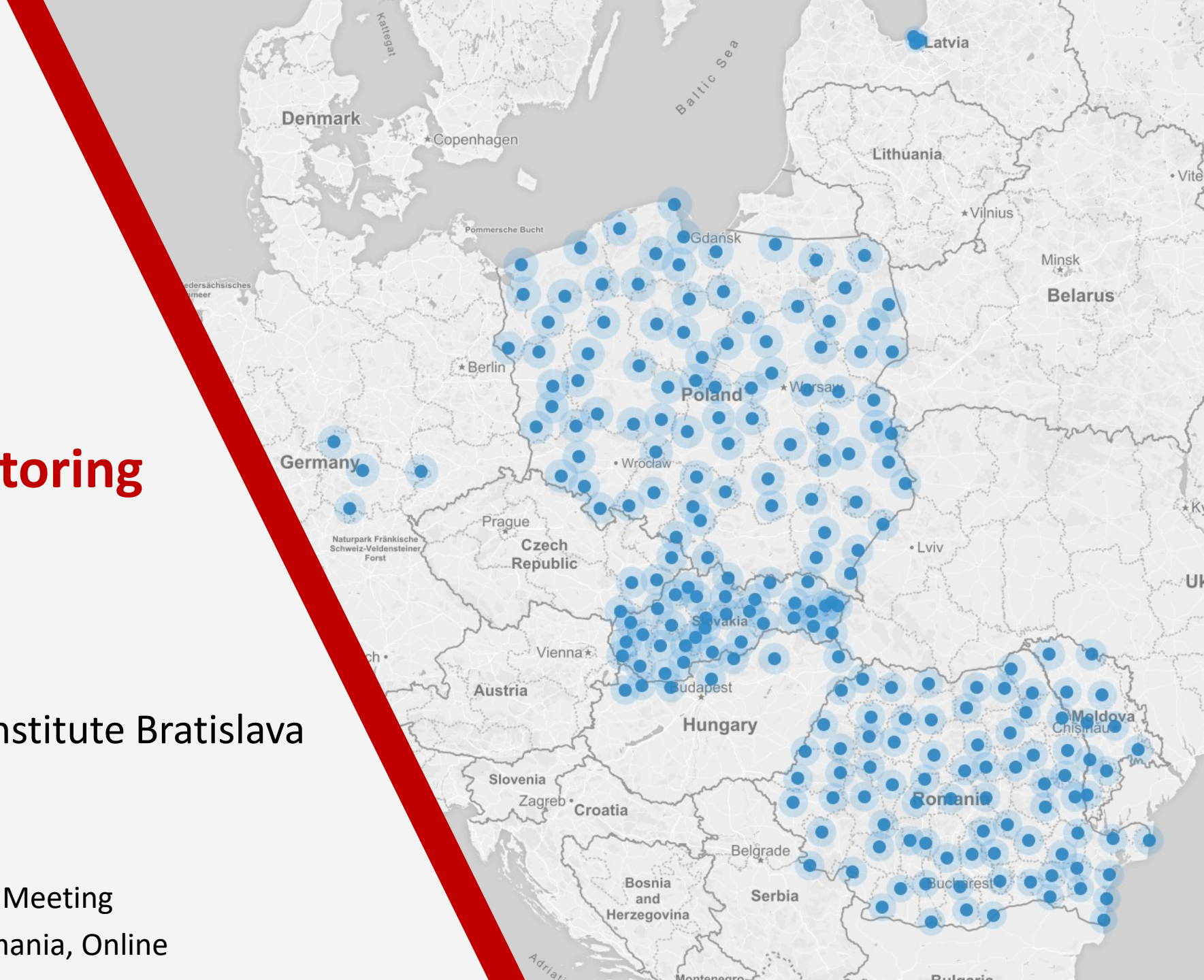
Service Quality Monitoring

Working group status

Ing. Karol Smolík

karol.smolik@skgeodesy.sk

Geodetic and Cartographic Institute Bratislava

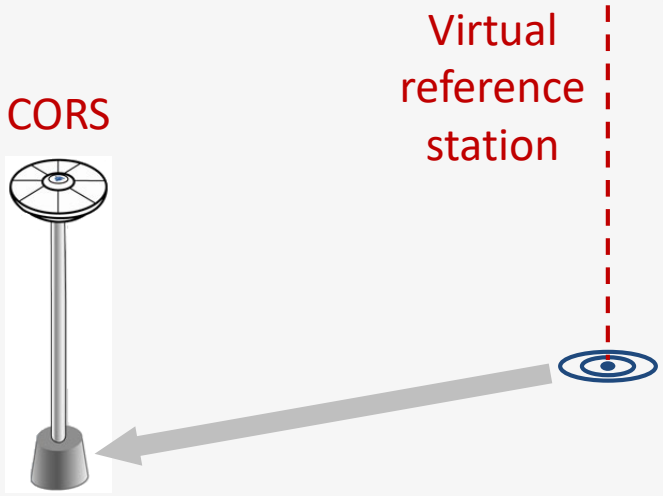


EUPOS European Position Determination System

7th EUPOS Council and Technical Meeting

November 9-10 2021, Bucharest, Romania, Online

How we can monitor Network RTK quality?



Monitoring by physical monitoring stations

- real values of deviations
- higher costs
- the inability to monitor the entire network

Monitoring by Virtual stations

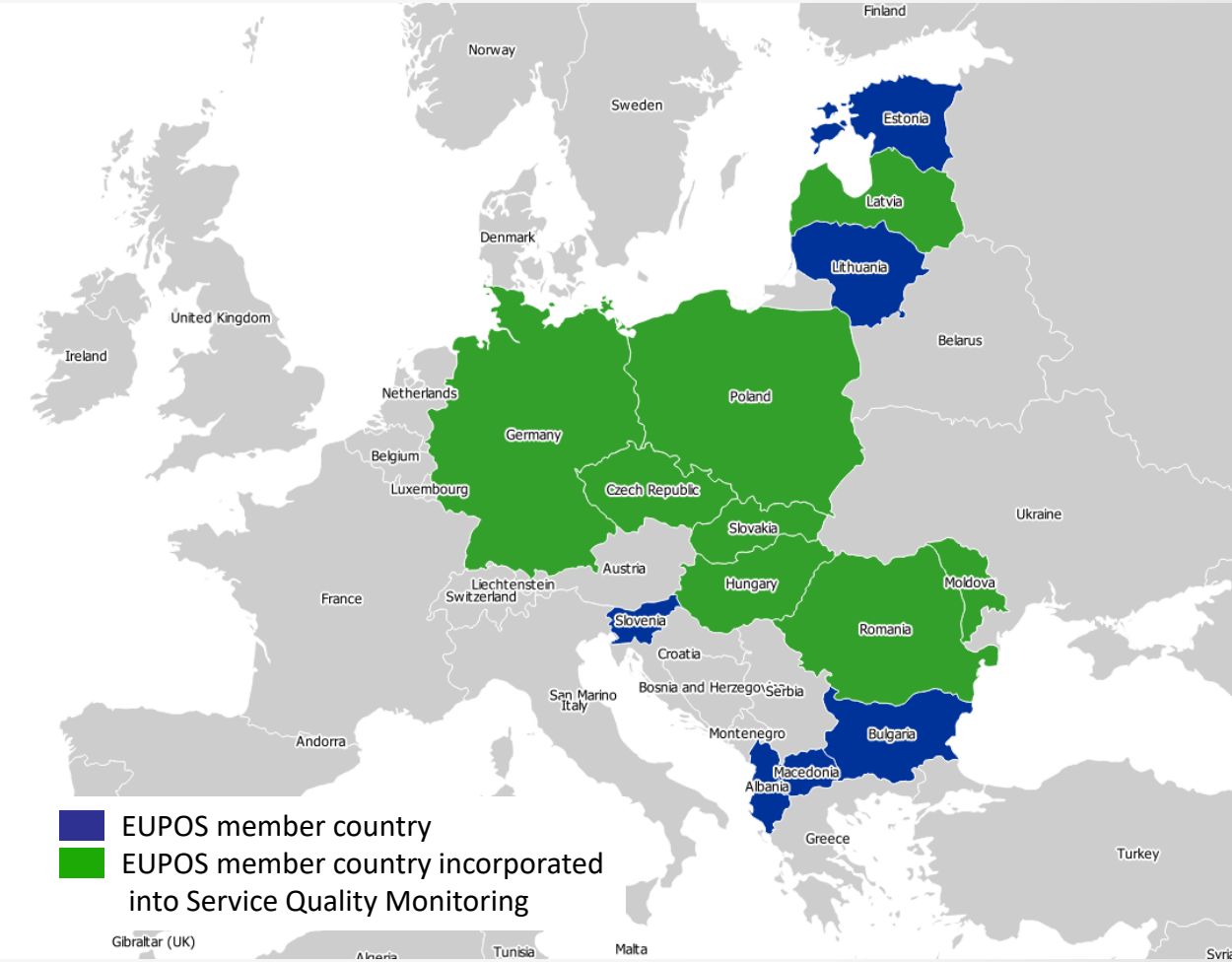
EUPOS Service Quality Monitoring

- no physical monitoring stations
- lower costs
- monitoring of the entire network
- virtual principle ≠ real deviation

EUPOS WG on Service Quality Monitoring

- Working group members
  - Karol Smolík (Slovakia) - chair
  - Branislav Droščák (Slovakia)

- WG cooperators
  - Szymon Wajda (Poland) – ASG-EUPOS
  - István Galambos (Hungary) – gnssnet.hu
  - Vlad Sorta, Miluta Flueras (Romania) – ROMPOS
  - Christian Trautvetter (Germany) – SAPOS
  - Rolands Pinta (Latvia) – EUPOS-RIGA
  - Pavel Ivancenco (Moldova) – MOLDPOS
  - Jan Řezníček (Czech Republic) – CZEPOS



EUPOS service quality monitoring Status (November 2021)

SKPOS	35 stations	
ASG eupos	87 stations	
GNSSnet.hu GNSS SZOLGÁLTATÓ KÖZPONT	7 stations	
ROMPOS Romanian Position Determination System	75 stations	
SAPOS	4 stations	
RIGA EUPOS	3 stations	-1 station
MOLDPOS	10 stations	
CZEPOS	4 stations	
	225 stations	

GNSS receiver manufacturers

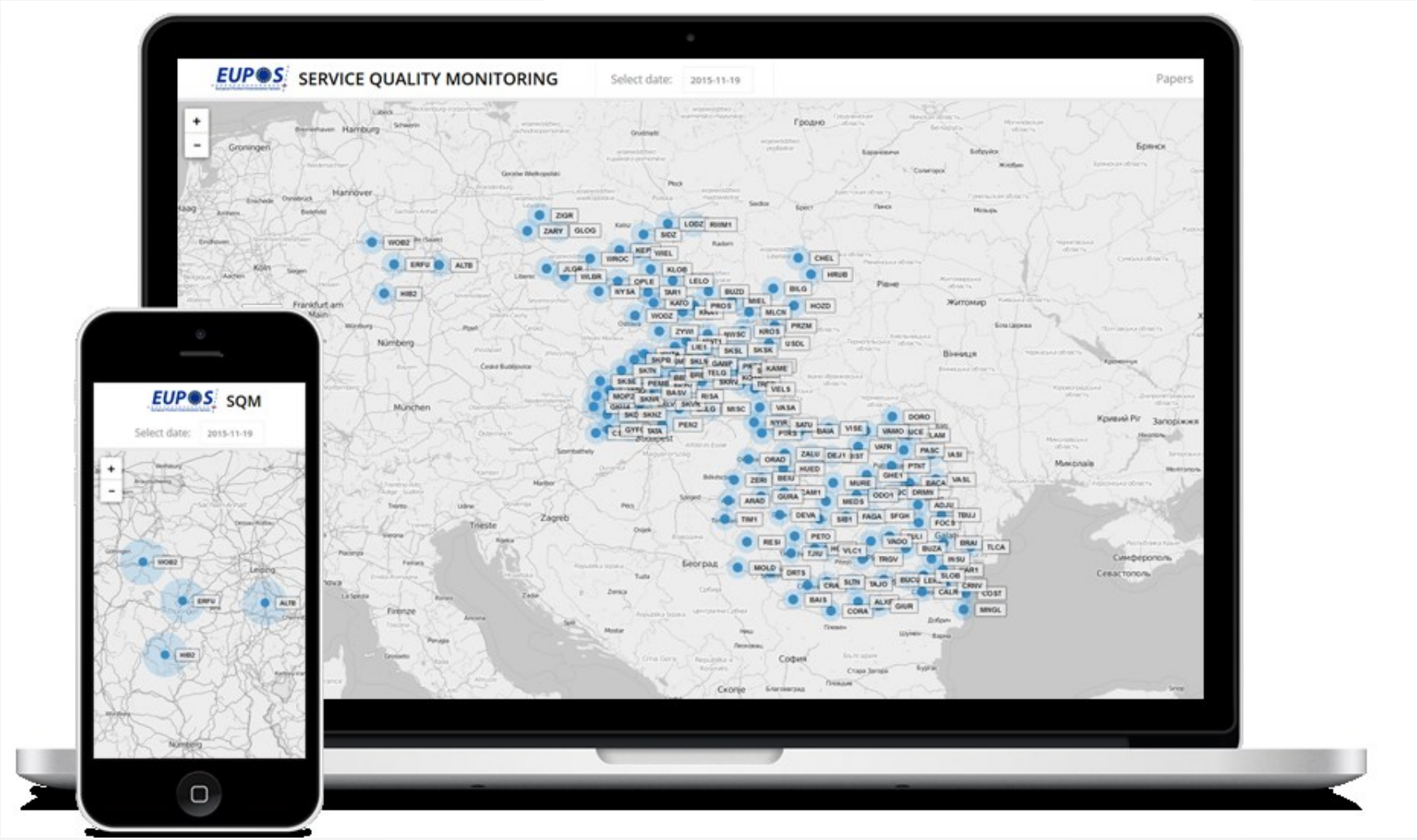
- Trimble
- Leica
- Topcon
- Javad
- Astech

Network softwares:

- Trimble Pivot Platform
- Geo++ GNSMART
- Leica Spider

EUPOS service quality monitoring
User interface

http://monitoringEUPOS.gku.sk



EUPOS networks deviations comparison Statistics

RTK network		SKPOS	ASG eupos	SAPOS	ROMPOS	MOLDPOS	CZEPOS	GNSSnet.hu	RIGA EUPOS	EUPOS
Control Software		Trimble Pivot Platform			Leica Spider			Geo++ GNSMART		Σ
Time period		8 years	7 years	6 years	7 years	4 years	3 year	7 years	6 years	
Number of monitored stations		35	87	4	75	10	4	7	3	**225**
Maximal	ne	49.9 cm	46.4 cm	50.9 cm	49.8 cm	37.9 cm	35.3 cm	48.7 cm	49.7 cm	
	u	49.8 cm	49.2 cm	48.6 cm	49.9 cm	42.1 cm	43.5 cm	69.9 cm	59.9 cm	
Average	ne	1.0 cm	0.9 cm	0.9 cm	1.1 cm	1.0 cm	0.7 cm	1.0 cm	1.1 cm	**1.0 cm**
	u	2.4 cm	1.2 cm	1.9 cm	2.4 cm	1.5 cm	3.0 cm	1.2 cm	2.1 cm	**2.0 cm**
No fix		13%	7%	8%	15%	28%	9%	12%	20%	**14%**

EUPOS networks deviations comparison
Statistics – 5 years

Year	RTK network		SKPOS	ASG eupos	SAPOS	ROMPOS	GNSSnet.hu	RIGA EUPOS
2021	Average	ne	1.0 cm	0.9 cm	0.9 cm	1.1 cm	1.0 cm	1.1 cm
		u	2.4 cm	1.2 cm	1.9 cm	2.4 cm	1.2 cm	2.1 cm
	No fix		13%	7%	8%	15%	12%	20%
2016	Average	ne	1.1 cm	1.0 cm	0.9 cm	1.3 cm	1.3 cm	1.0 cm
		u	2.4 cm	1.2 cm	1.3 cm	2.6 cm	1.4 cm	1.9 cm
	No fix		16%	8%	10%	18%	17%	25%

Summary

- EUPOS network RTK quality monitoring tool works right
- tool is available for public on http://monitoringEUPOS.gku.sk
- results from the monitoring confirm „cm“ quality of EUPOS countries network RTK
- we plan to continue our activity and do more analysis in future

Attention! Join us - join EUPOS SQM!

- What you will get?
  - feedback about quality of your service
  - comparison of your service with other countries

- E-mail contact:
  - karol.smolik@skgeodesy.sk

- What we need for joining:
  - login and password which allows us to get
    - access to the network RTK solution (VRS concept)
    - access to permanent stations via NTRIP Caster
  - corrections provided in RTCM 3.x format
  - CORS coordinates

Thank you for your attention

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