

Slovak GNSS Permanent Service based on Slovak Spatial Observation System

SPGS
(SKPOS)

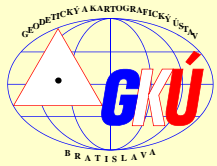
Presented by

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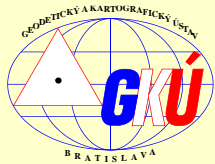
Objectives of the Establishment of SPGS(**SK**POS)





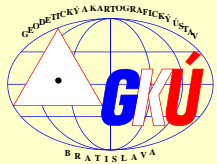
Objectives of the Establishment of SPGS(**SKPOS**) (*cont.*)

- At 1 November 2003 - amended the law on geodesy and cartography – GCCA has the obligation to establish and operate SPGS



Intention of the Establishment of SPGS(**SK**POS)

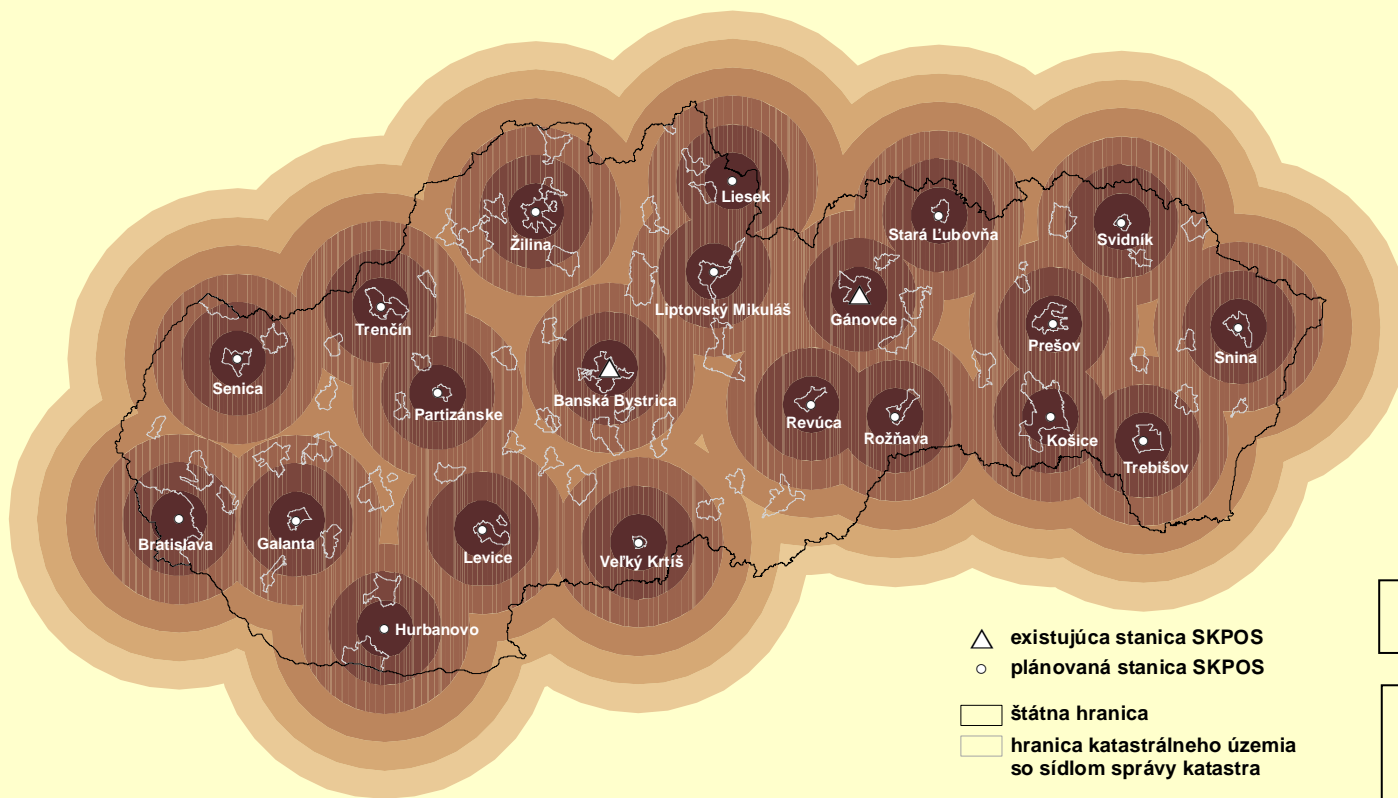
- Ground-based infrastructure for real-time and post-real time positioning with geodetic accuracy,
- Utilization:
 - *1st: intrabranche applications:*
cadastre, mapping, surveying, photogrammetry,
aquisition of reference data for GIS
 - *2nd: multifunctional applications*
transportation,
precise agriculture,
public safety,
environmental monitoring,....



Realisation time schedule in 2005

- **1st quarter of 2005**
publication of the tender, selection of the supplier, contract subscription,
- **2nd quarter of 2005**
delivery of the HW and SW equipment
- **3rd and 4th quarter of 2005:**
Post-processing network
- **1 January 2006:**
test phase for postprocessing, awareness activities
- **1 January 2006 – 31 December 2006**
networking of the reference stations, real-time service
- **1 January 2007**
Complete functionality of SPGS

Distribution of the reference stations **SKPOS**



0 10 20 30 40 50 60 70 80 90 100 km

©2004 Úrad geodézie, kartografie a katastra Slovenskej republiky; Spojitá vektorová mapa 1:50 000
©2004 Geodetický a kartografický ústav Bratislava; GPS zameranie stanic SKPOS
©2004 Miloslav Ofúkany; kartografický návrh z 27. augusta

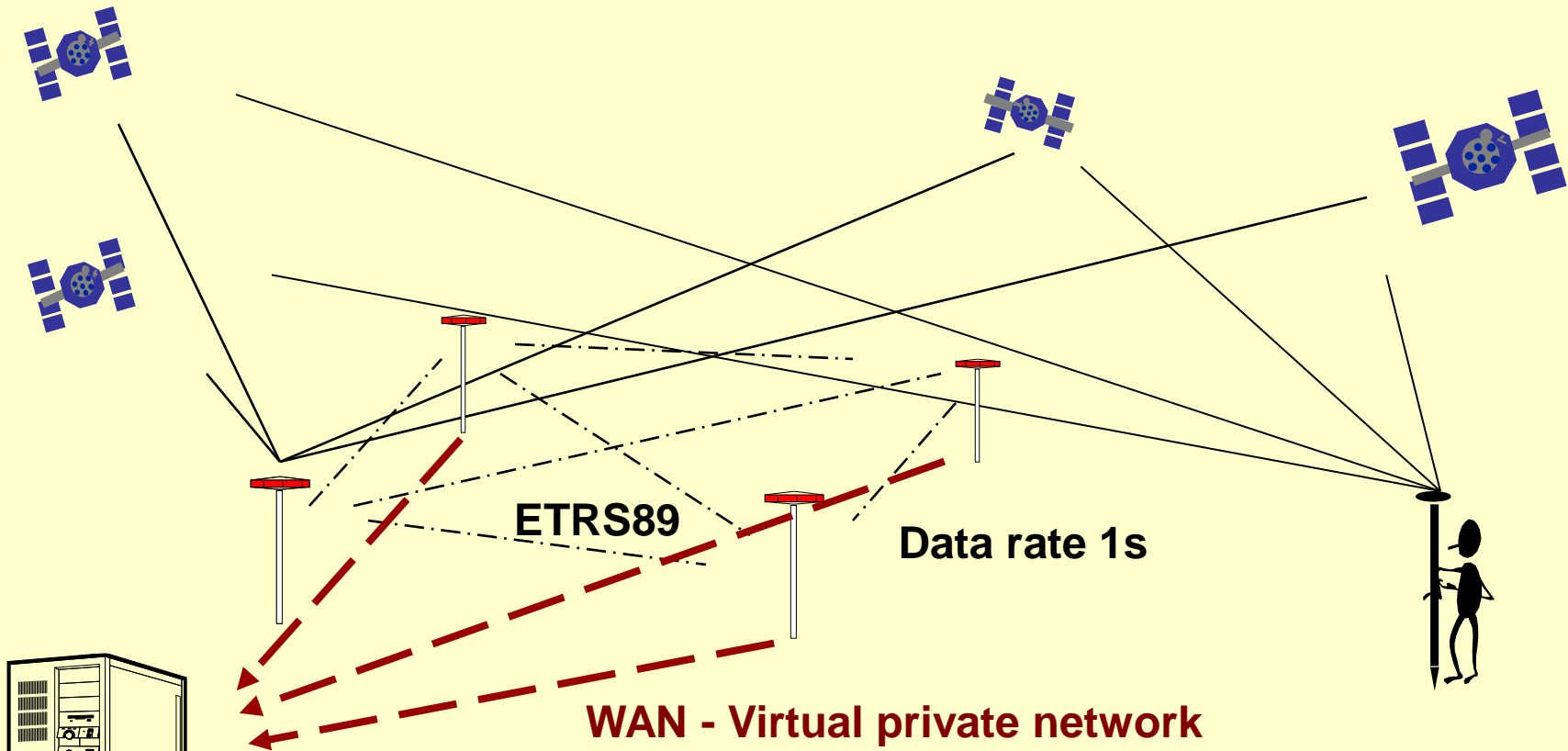
- △ existujúca stanica SKPOS
 - plánovaná stanica SKPOS
 - štátna hranica
 - hranica katastrálneho územia so sídlom správy katastra
- vzdialenosť medzi stanicami (km)
- do 10
 - 11 - 20
 - 21 - 30
 - 31 - 40
 - 41 - 50
 - 51 - 60

Number of RS:21

Distance between RS ≤ 70 km

Reference system: ETRS89

Reference station network - **SKPOS**

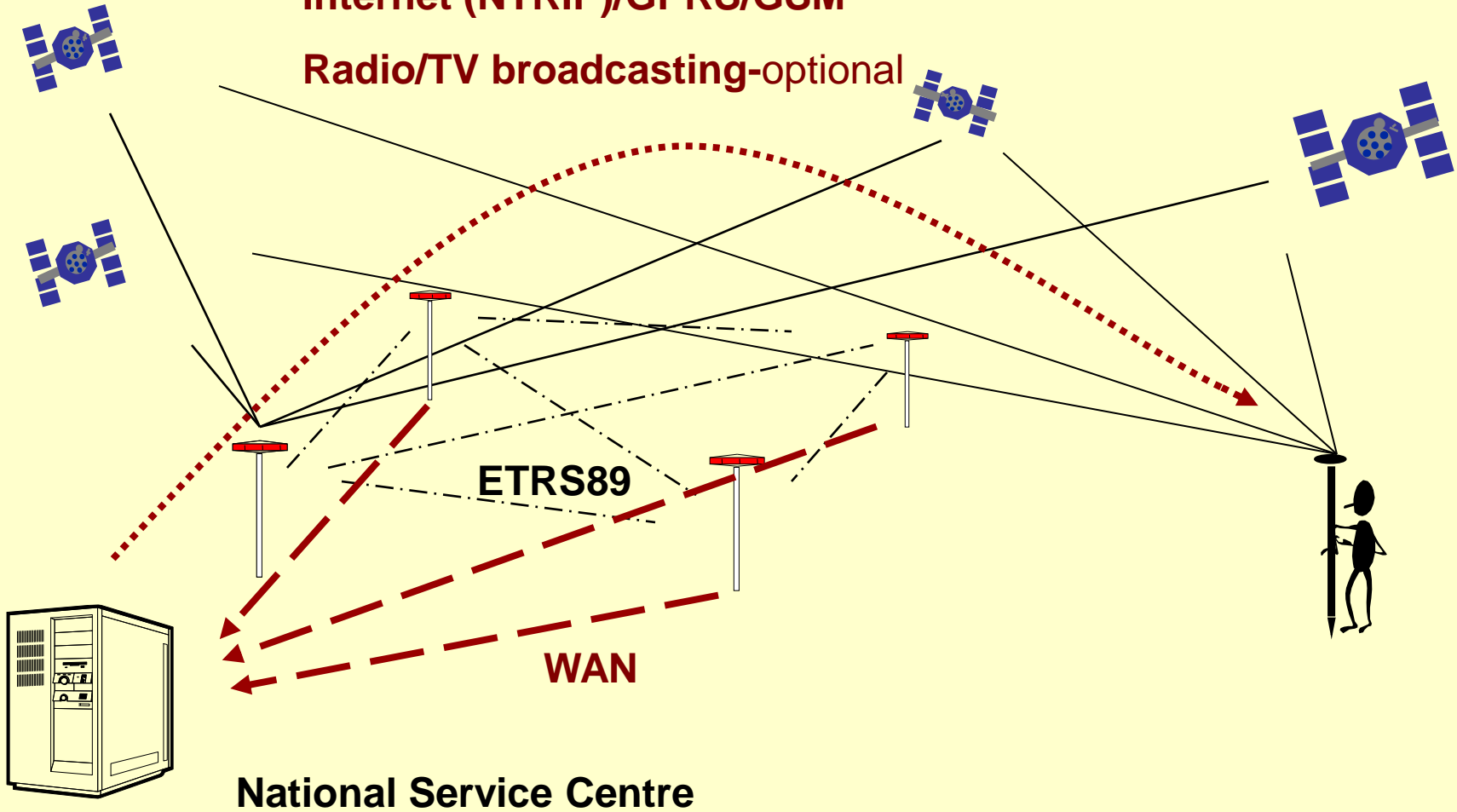


National Service Centre: control centre, processing centre, data centre, analysis centre

Dissemination of the data

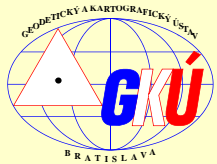
Internet (NTRIP)/GPRS/GSM

Radio/TV broadcasting-optional



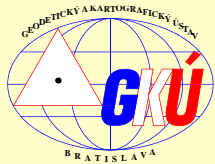
Planned services

<i>service</i>	<i>accuracy</i>	<i>data format</i>	<i>data rate</i>
SKPOS mm <i>Post-processing</i>	mm	RINEX	1 s ≤ 1 s
SKPOS cm <i>Real time</i>	2 – 10 cm	RTCM	1 s
SKPOS dm <i>Real time</i>	0,5 – 1 m	RTCM	1 s



Cross-border Cooperation

- Exchange of raw GNSS data from the stations close to the borders
- Use of the same standards for the dissemination of the data – good basis for establishing a unified multifunctional ground based DGNSS infrastructure
- Use of the same reference system ETRS89
- UN/USA OOSA Action team on GNSS and GNSS experts of UN/USA regional workshops recommend the establishment of **Regional GNSS coordination group**

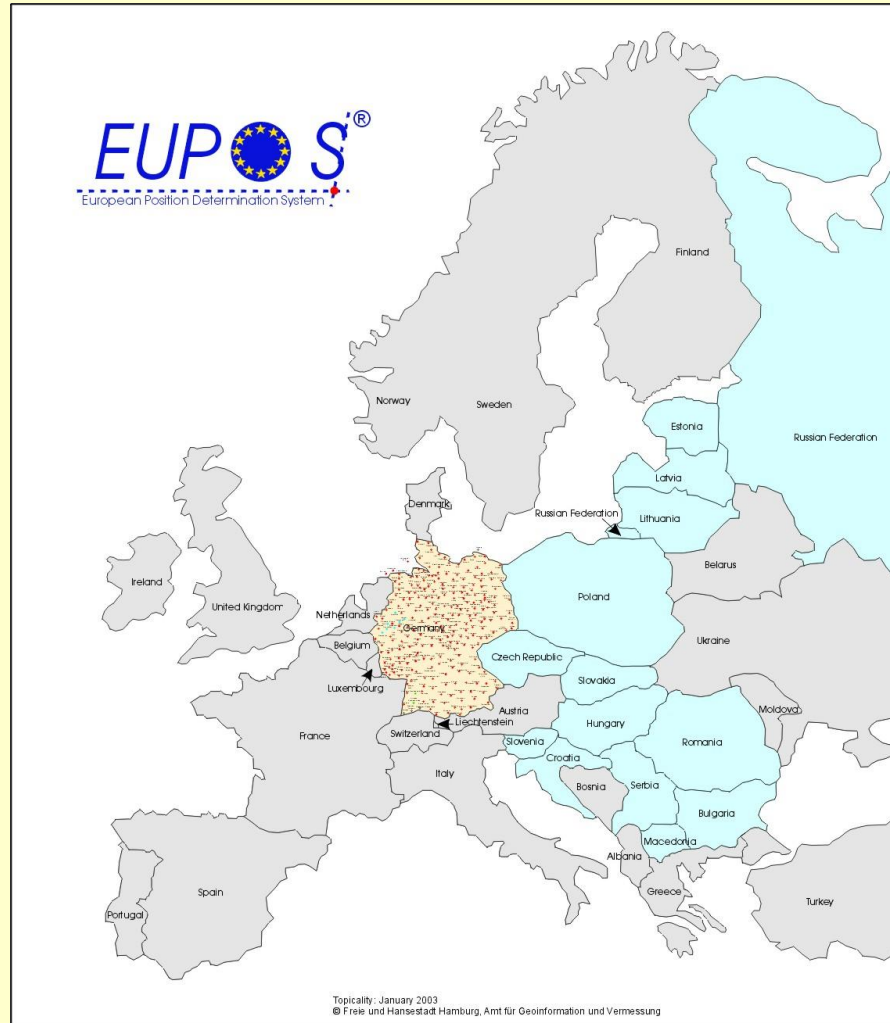


UN/USA 2002 Briefing on GNSS Coordination Groups Establishing

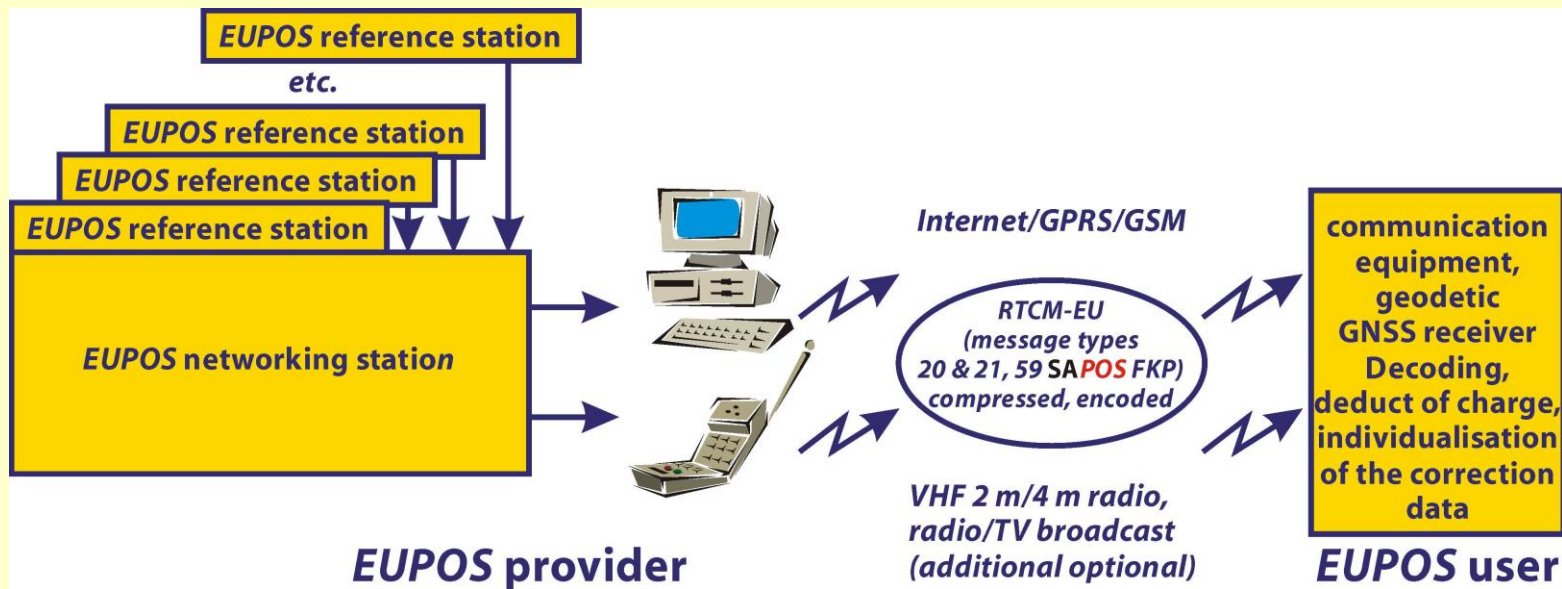
Particular recommendations related to national/regional coordinating groups:

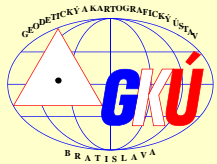
- to establish the national and, if appropriate, regional planning and coordinating GNSS Groups
- UN will elaborate the organizational model and recommendation for particular activities
- fully functional national groups and their activities could be coordinated by regional group
- financing will be covered by UN, EC, World Bank, GNSS providers, manufactures and member states
- groups should provide qualified education on GNSS applications

SKPOS and EUPOS



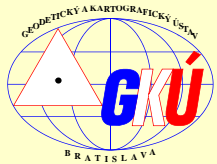
EUPOS Standards





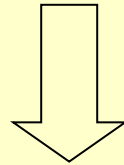
Economic assurance of the SPGS(**SKPOS**) establishment

- During the year 2003 was developed and by the European Commission adopted the sectoral PHARE project „Land Administration and Cadastral Infrastructure“,
 - Project purpose: Improving Land Administration based on spatial and cadastral data, including GNSS, public access to the Land administration and cadastral data. Part of the project is also the SPGS(**SKPOS**) establishment.

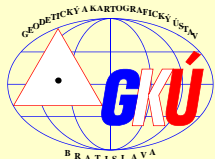


Expected Expenses for SPGS(**SKPOS**) service

- Maintenance of the reference stations
- Upgrade of the application software and hardware
- NSC staff costs
- Travelling expenses for the NSC staff
- Awareness activities



SPGS(SKPOS) operation is not expected to be self-financed



Custom Charges for the Service

- Test phase from 1 January 2006 – 31 December 2007 – free of charge for selected users,
- Complete functionality - proposed charges for the real time service are about 0,1 €/minute
- Charges for post-processing service (RINEX) – according to the current price list:

data format	unit	data rate	price
RINEX	1 hour	1 sec.	3.75 €
RINEX	1 hour	15 sec.	2.50 €
RINEX	1 hour	30 sec.	1.25 €