



NEWS FROM SLOVAKIA 2017

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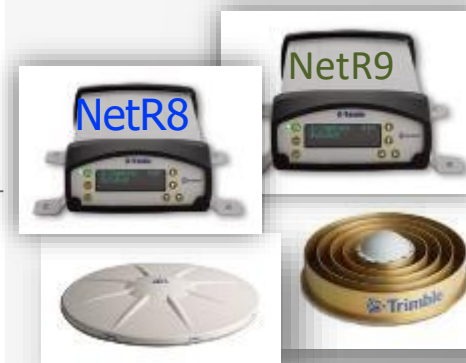
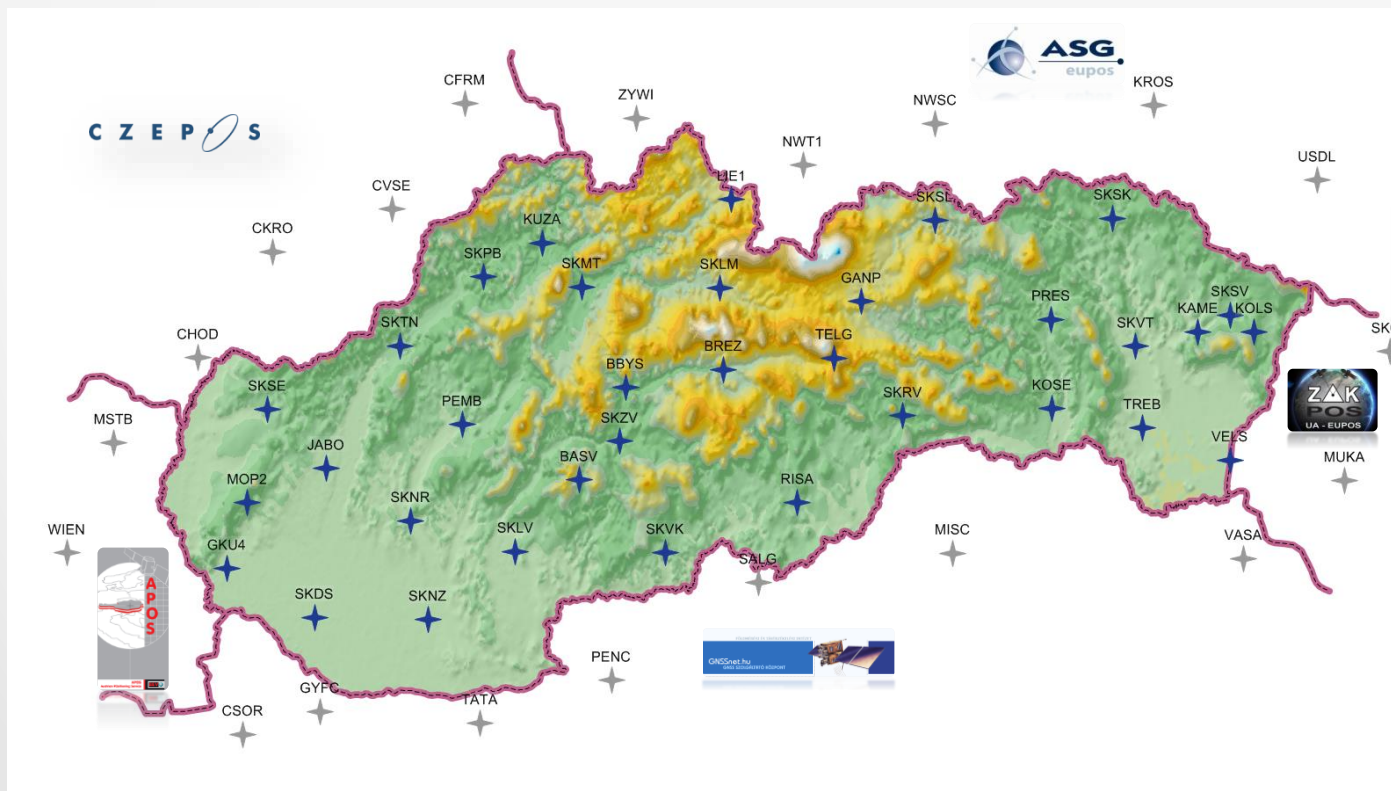


4th EUPOS[®] Council and Technical Meeting
November 21-22, 2017. Bratislava, Slovakia

SKPOS infrastructure

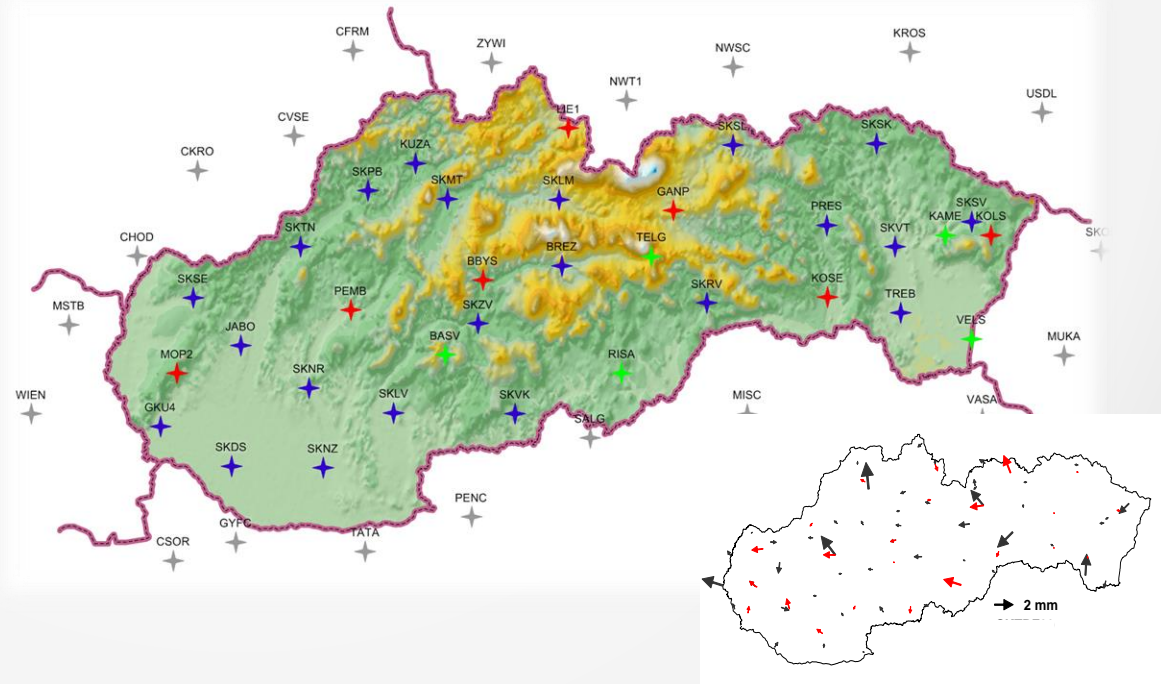
Status in October 2016

- **34 Slovakian permanent stations (16 individual calibrated)**
 - All stations with TRIMBLE receivers and antennas
 - All stations observe GPS+GLONASS signals
- **20 foreign permanent stations (APOS, gnsnet.hu, CZEPOS, ASG-EUPOS, ZAKPOS)**



SKPOS infrastructure for geodynamics research

- 14 of 34 slovakian SKPOS permanent stations have monumentation suitable for geodynamic research purposes
 - 9 stations reinforced-concrete pillar monumentation
 - 5 stations deep drilled braced mark monumentation (5m deep)



SKPOS infrastructure

Relocation of 2 stations

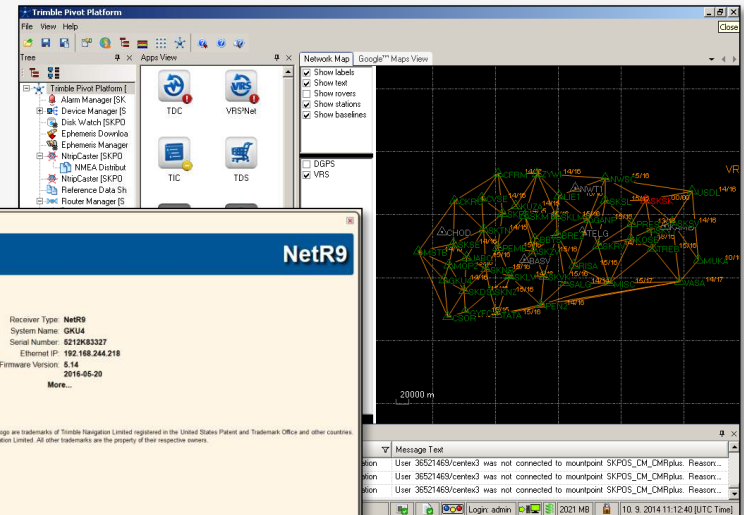
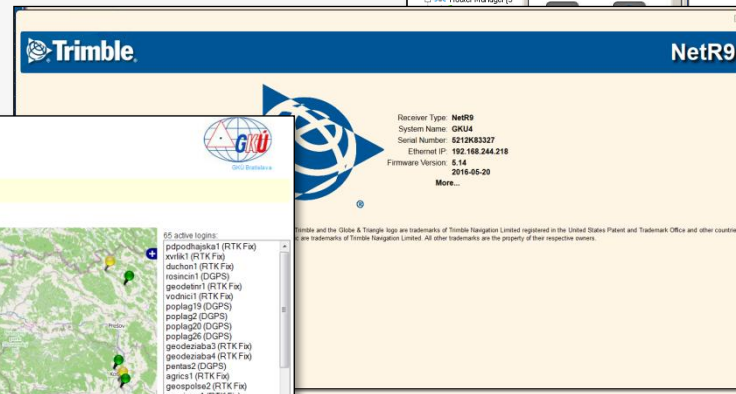
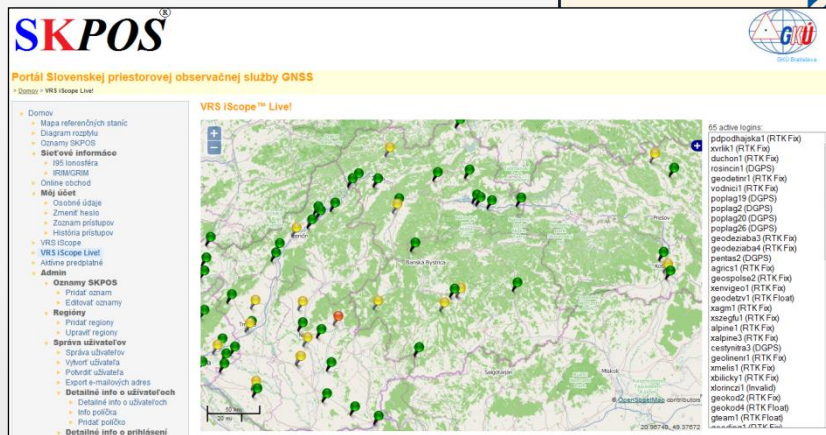
- Reinforced-concrete pillar monumentation



SKPOS

control software & receivers firmware versions

- Trimble® Pivot™ Platform GNSS Infrastructure Software
 - Main software: version 3.8.3
 - Back-up software: version 3.8.3
- Receivers firmware
 - Trimble NetR9 receivers: version 5.14
 - Trimble NetR8 receivers: version 4.87



SKPOS

services portfolio

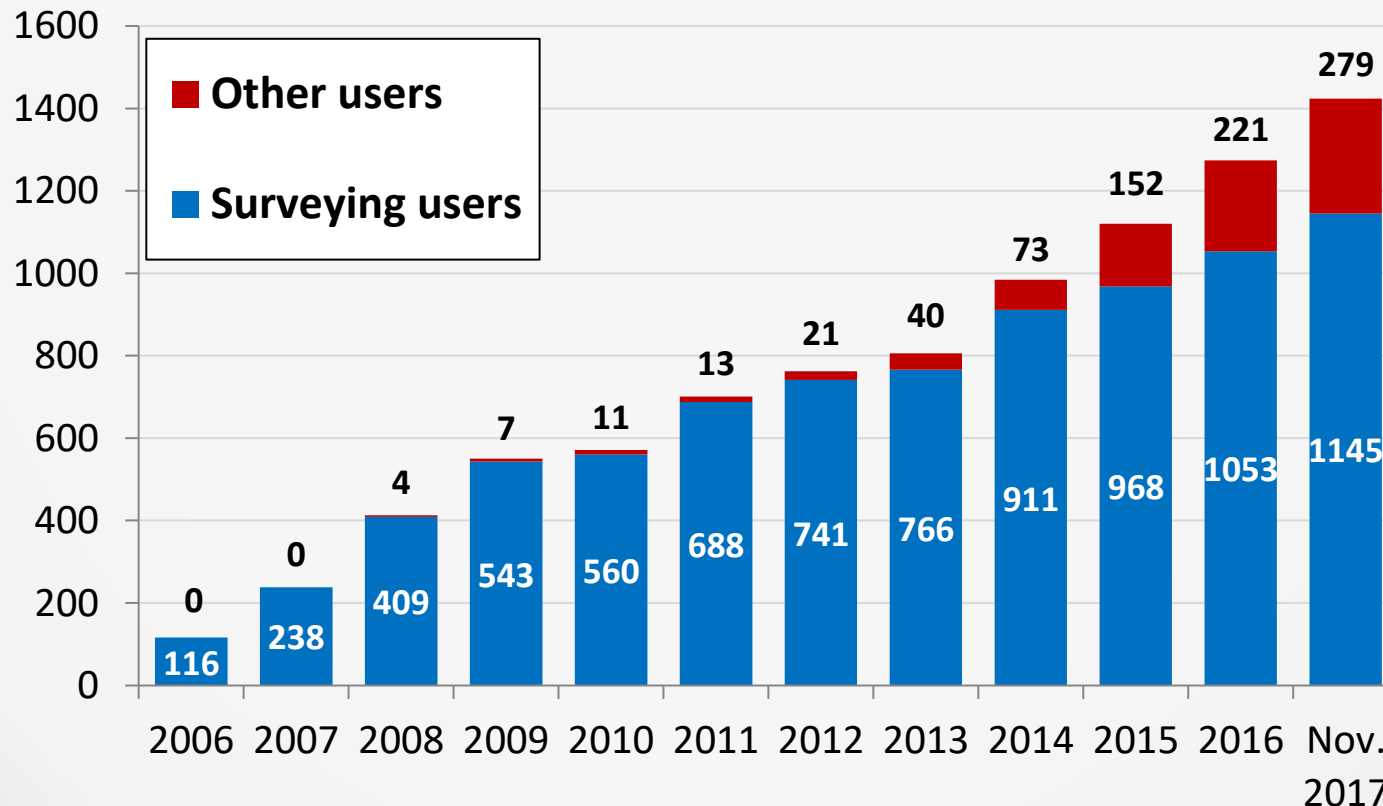
Only network solution (Network RTK in VRS concept) is provided.
No single RTK!

Package	Content	Duration	Format	Flat rate
SKPOS_mm	RINEX 1000 h	year	RINEX 2.x, 3.x	50 €
SKPOS_cm (year)	RTK unlimited + 50 h RINEX	year	RTCM 2.3, 3.1, 3.2, CMRx, CMR+	50 €
SKPOS_cm (month)	RTK unlimited	month	RTCM 2.3, 3.1, 3.2, CMRx, CMR+	19 €
SKPOS_dm	DGNSS unlimited	year	RTCM 2.1	20 €

SKPOS

number of users

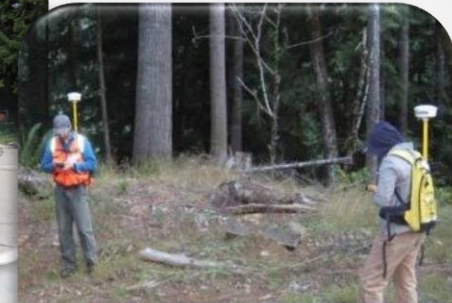
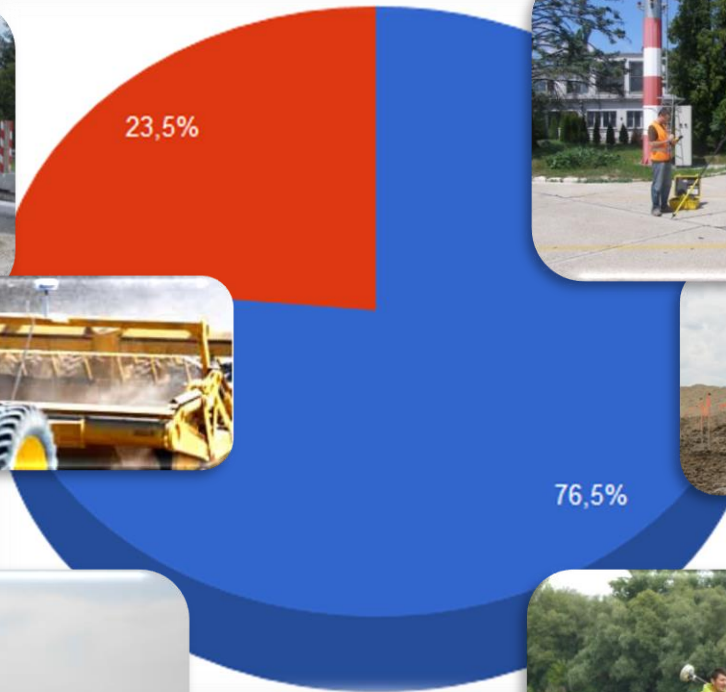
- over 1424 registrations (Nov. 2017)
- number is still increasing



SKPOS

type of users

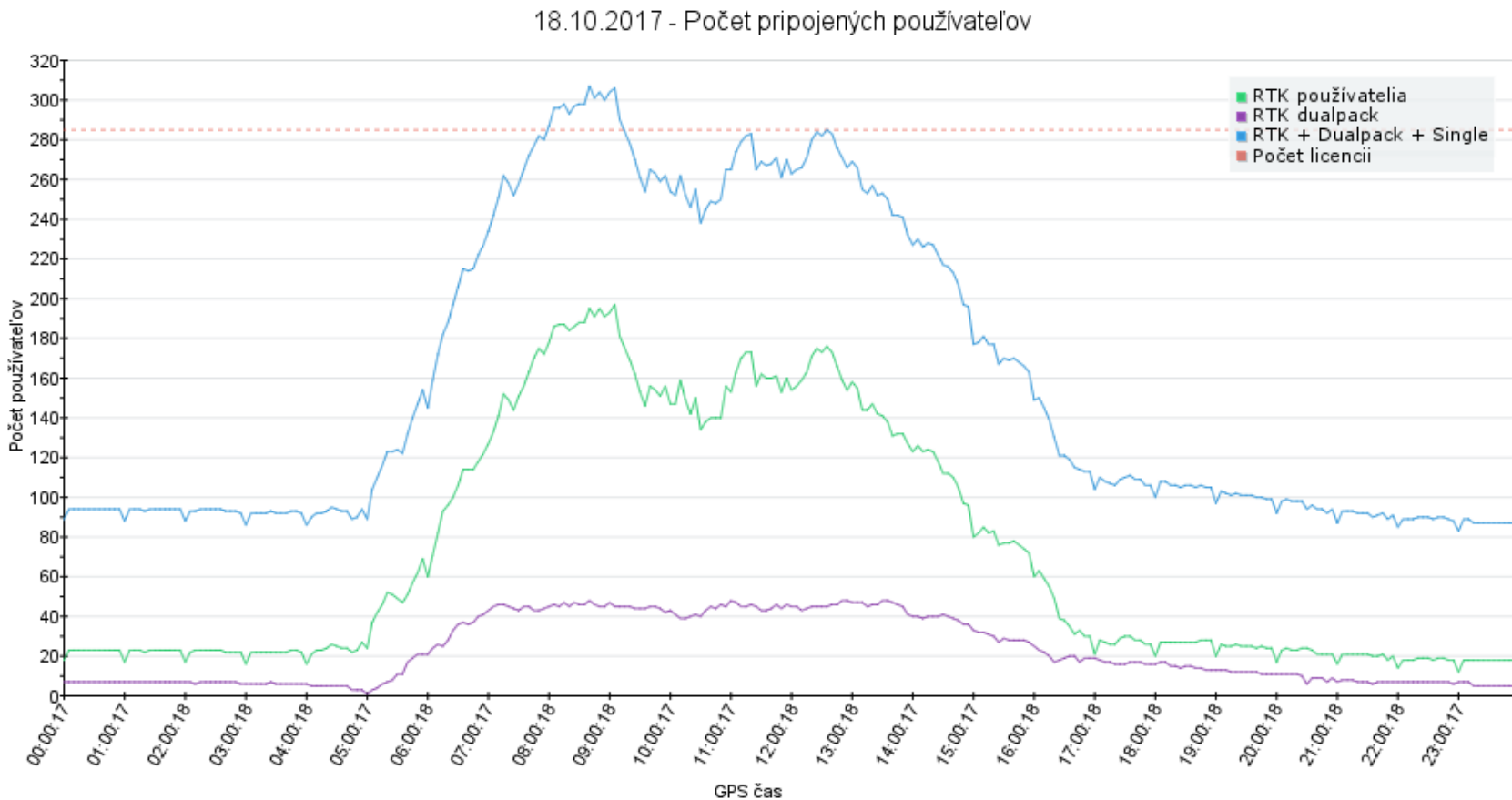
- Surveying fields (cadastre, surveying, mapping, GIS) – 76.5%
- Other fields (precise agriculture, machine guarding) – 23.5%









SKPOS

simultaneous logins

- Maximum: 307 simultaneous logins (2017-10-18)



SKPOS and Galileo

SKPOS	Component	GPS + GLONASS + Galileo + BeiDou
Hardware	Antennas	 34 (34)
	Receivers	 29 (34)
Software Trimble Pivot	RINEX CORS	
	RINEX VRS	
	RTCM 3.2 MSM	
	RTK/RTN	

RINEX 3

SKPOS stations

- Data from CORS includes observation of all GNSS

Available on
SKPOS online datashop

```
00 00.000000 0 34C02C05C08C10C14C15E02E08E11E12E24G01
G10G11G12G13G15G17G18G19G20G24G28G30
R02R03R04R12R13R14R21R22R23S20
```

25157309.305	25157309.988	132202570.032	7
98722694.958 8		47.400	
48.900			
24984231.727	24984232.363	131293020.126	7
98043488.692 8		47.700	
48.800			
26109299.703	26109298.727	137205306.507	7
102458509.021 6		42.400	
40.200			
27512595.336	27512594.473	144579685.346	7
107965360.204 7		44.200	
42.600			
26239227.742	26239240.559	137888103.377	8
102968446.953 7		48.000	
46.000			

RTCM 3.2 MSM

- 21/6/2016 – new mountpoint RTCM 3.2 MSM
- Only for **GPS** and **GLONASS**
- Control software does not support network solution for Galileo and BeiDou

Trimble® Pivot Platform GNSS Infrastructure Software

The screenshot displays the Trimble Pivot Platform software interface. The main window shows a network diagram with various stations connected by lines, representing a GNSS infrastructure. The diagram includes stations such as CFFM, ANWSC, AKROS, AUSDL, and many others. The interface also features a sidebar with a tree view of system components, a central toolbar with icons for RTD, TDC, VRSNet, TIC, TDS, TAC, Scope, and TED, and a status message log at the bottom. The status message log shows a series of events related to log item queue L and Framework, with timestamps ranging from 14.10.2016 12:42 to 14.10.2016 13:03.

Type	Event Time [UTC]	Source	Group	Message Text
	14.10.2016 12:42	Log Item queue L	Framework	Sending of 1 log items (type LogSpooler Trimble IS Logging.RTCMStatusLogItem)...
	14.10.2016 12:43	Log Item queue L	Framework	Sending of 1 log items (type LogSpooler Trimble IS AlarmAlarmInfoItem) was no...
	14.10.2016 12:47	Log Item queue L	Framework	Sending of 16 log items (type LogSpooler Trimble IS Logging.PrimaryKey) was not...
	14.10.2016 12:56	Log Item queue L	Framework	Sending of 3 log items (type LogSpooler Trimble IS Logging.RTCMsessionChange...
	14.10.2016 12:56	Log Item queue L	Framework	Sending of 7 log items (type LogSpooler Trimble IS Logging.PrimaryKey) was not c...
	14.10.2016 12:56	Log Item queue L	Framework	Sending of 1 log items (type LogSpooler Trimble IS Logging.TextLogItem) was not c...
	14.10.2016 13:03	Log Item queue L	Framework	Sending of 1 log items (type LogSpooler Trimble IS Logging.RTCMStatusLogItem)...
	14.10.2016 13:03	Log Item queue L	Framework	Sending of 1 log items (type LogSpooler Trimble IS AlarmAlarmInfoItem) was no...

System configuration: "Trimble_TPP_383_20160914"

System tray: Login: admin, 2525 MB, 14.10.2016 13:04:36 [UTC Time]

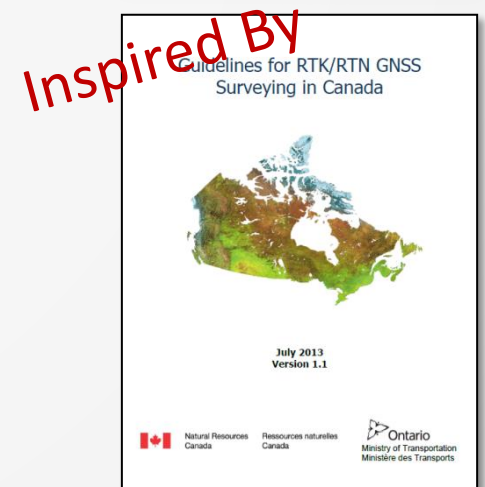
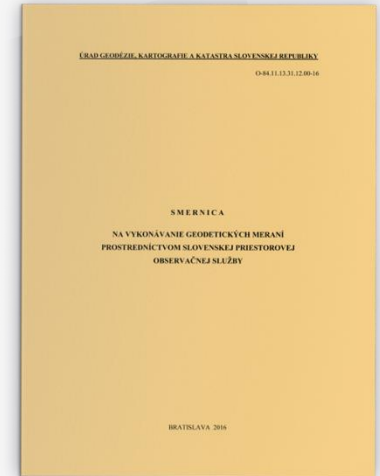
GNSS metrology

- Reference station antennas
 - 16 of 34 individual calibrated
 - each new antenna will be individual calibrated
- No user calibration baseline
 - DOPLNIT.....



Guideline: Usage of Slovak real-time determination system for surveying

- Table of contents
 - Introduction
 - About SKPOS
 - Planning and practical recommendations for RTK/RTN measurements
 - Planning and practical recommendations for post-processing
 - Summary and Conclusions
- Mandatory for all measurements adopted into a cadastral documentation
- Aim:
 - to define unified procedure of SKPOS usage for surveying in Slovakia
 - to improve the quality and the level of professionalism of surveying using SKPOS



GNSS permanent station protection

- DOPLNIT.....

EUPOS Technical standards fulfilment

- DOPLNIT....

Thank you for your attention

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