



## ASG-EUPOS reference system

### Last year activities and future plans

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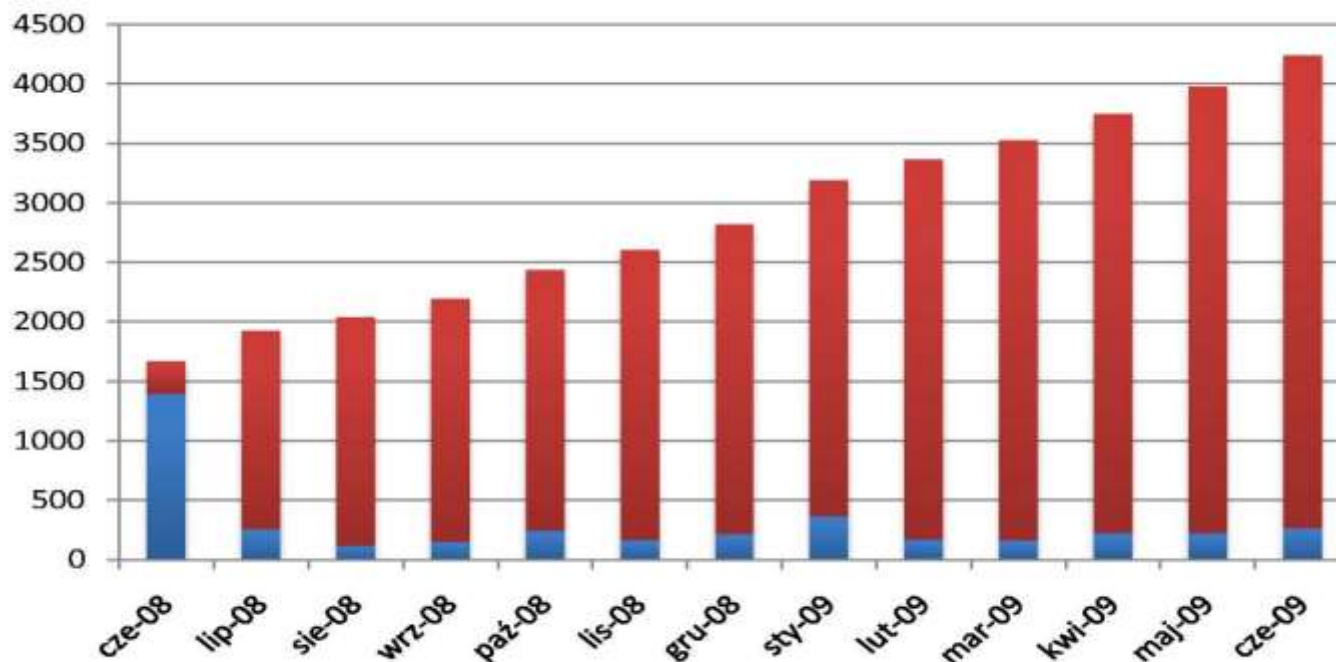
- ✓ **ASG-EUPOS system**
- ✓ **Future steps**
- ✓ **Statistics**
- ✓ **Conclusions**



# ASG-EUPOS is 10 years old



- ✓ ASG-EUPOS system was opened for users in 2008 as a first nation-wide reference station network in Poland.
- ✓ At the beginning services was provided from only from NAVSTAR GPS and a stations included to EPN network was equipped with GPS and GLONASS hardware
- ✓ Number of users almost tripled during first year





# ASG-EUPOS system



- ✓ During next years 5 additional ground augmentation systems have been established in Poland :
  - MSPP (Malopolskie Voievodship) – regional,
  - NadowskiNet (Nadowski) – regional, commercial,
  - SmartNet (Leica Geosystems) – commercial,
  - TPINet Pro (Topcon) – commercial,
  - VRSNet (Trimble) – commercial.
- ✓ All the systems are distributing GPS and GLONASS corrections over whole or significant part of the country and some of them released satellite data from Galileo and Beidou system.
- ✓ No specific legal regulations there are in Poland concerning usage of reference station networks, the only condition is to store the reference station complex data in state repository of geodetic and cartographic documentation.
- ✓ Since the project of ASG-EUPOS was developed the Galileo system has been considered as a primary source of satellite signals.



## Current status of network:

**101 ref. stations**  
established in Poland by  
GUGiK, universities and  
research centres

**26 ref. stations working**  
in neighbouring  
countries

**2 independent**  
management and  
processing centers  
located in Warsaw  
and Katowice







## GUGiK Stations:

**53 Trimble NetR9**

**36 Leica GR10**

**12 Trimble NetR5**

## Calculation software:

**Trimble Pivot Platform  
ver. 3.10.4**

Reference stations included to ASG-EUPOS by receivers models

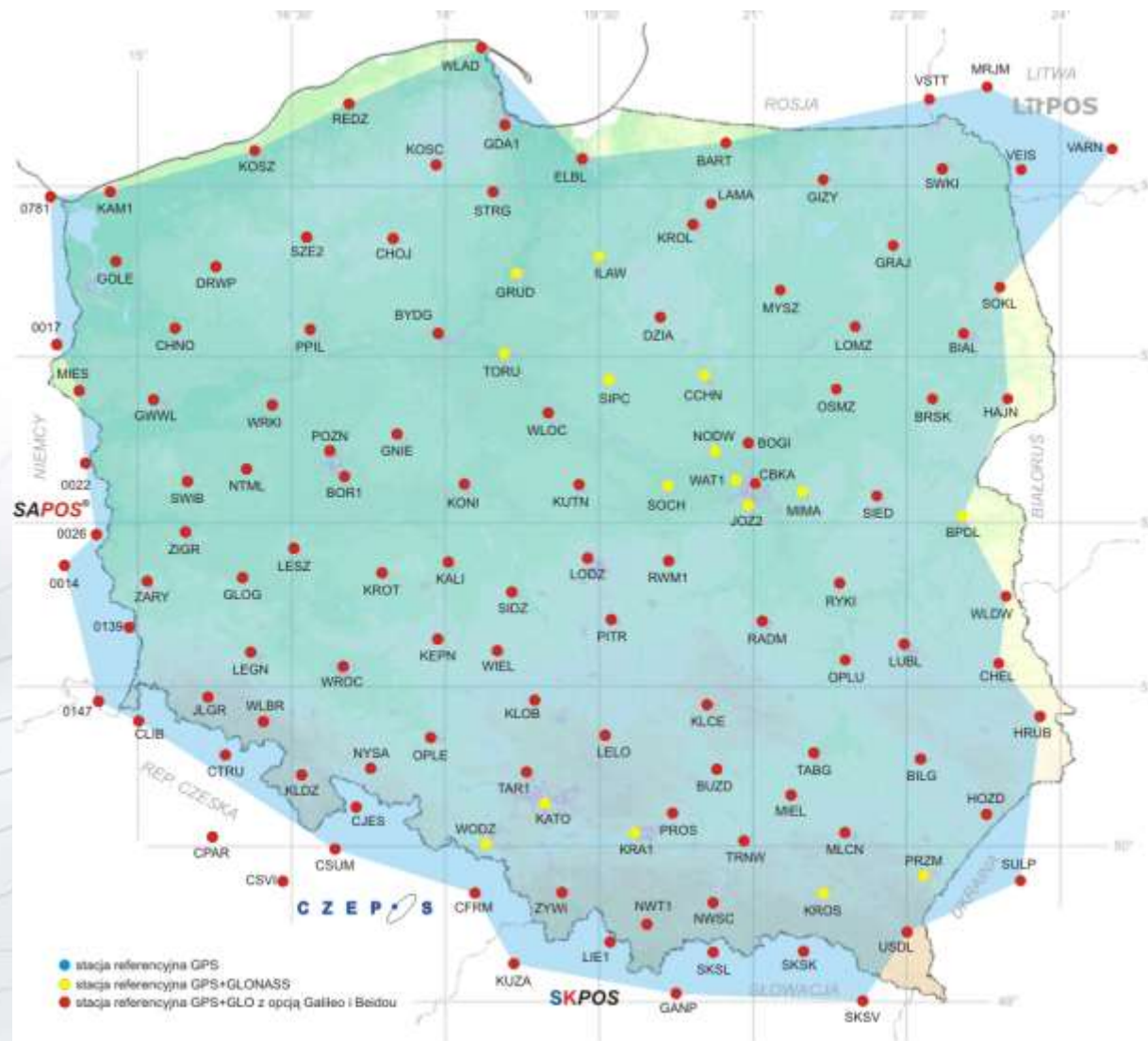


# Last year activities



**Whole area of Poland is covered with GPS+GLONASS Network RTK correction data.**

**Most of the receivers and antennas are prepared to track Galileo and Beidou signals.**





# ASG-EUPOS system



- ✓ Since the beginning of operation of ASG-EUPOS it is attending in EUREF activities:
  - 8 ASG-EUPOS stations are included to EPN network
  - National densification of ETRS89 is part of EPN Densification Working Group.
- ✓ ASG-EUPOS is member of EUPOS and follows it's standards in scope of provided services, data formats and cross-border data exchange regulations.
- ✓ Reference frame monitoring is provided by post-processing module working on Bernese GNSS Software v. 5.2 (temporary suspended).
- ✓ Network RTK service is processed within EUPOS quality monitoring service <http://monitoringEUPOS.gku.sk>





# ASG-EUPOS system



## Internet system for selling subscriptions of ASG-EUPOS services:

- User can create login in Trimble Pivot Platform and place an order for required subscription.
- Credit card and internet fast payment are possible.
- With regular bank transfer when money are transferred to account subscription is automatically assigned.



# Last years activities



**13 receivers and antennas were exchanged in 2016 year.**

**12 receivers and antennas were bought in 2017 year, but they are not installed.**

**Trimble Pivot software were updated to the latest version.**

**Tenders for project of densification were canceled due to lack of attenders.**



# Last years activities



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# Future steps



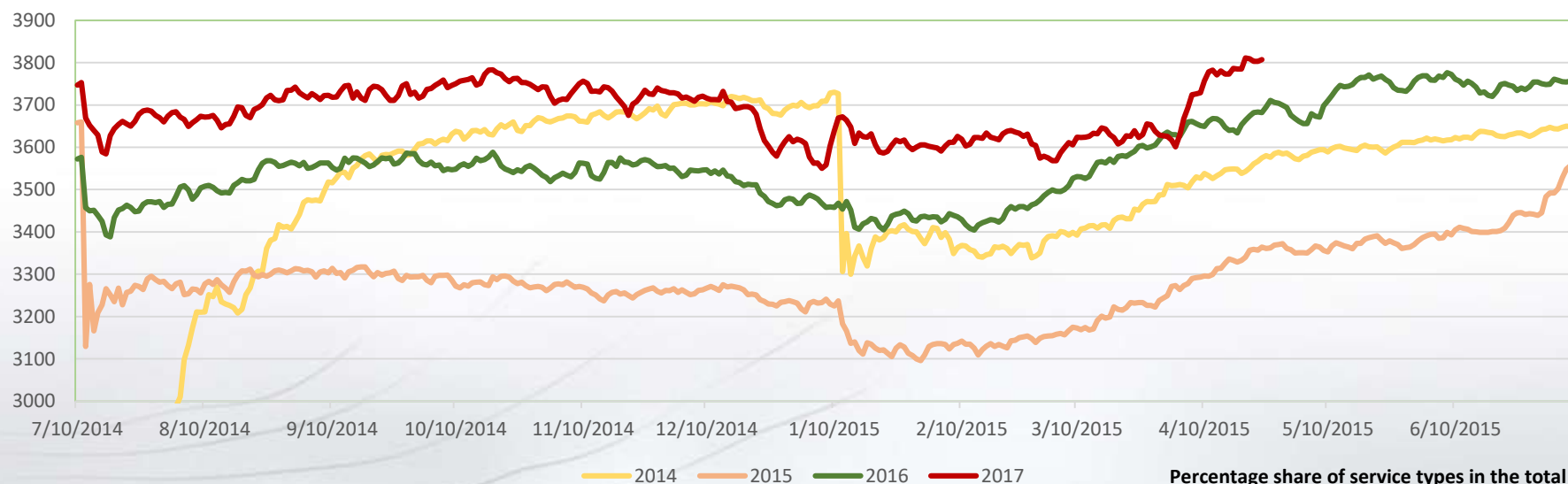
- ✓ **12 receivers are waiting for antenna calibration, and after that it will be exchanged with Trimble NetR5 receivers.**
- ✓ **Due to Trimble Pivot Platform limitations 36 Leica GR10 receivers will be upgraded to Leica GR30 with GPS, GLONASS, Galileo and Beidou support.**
- ✓ **22 Trimble NetR9 receivers will be upgraded to track also Beidou signals.**
- ✓ **Trimble Pivot Platform will be upgraded to calculate and provide network RTK correction data from GPS, GLONASS, Galileo and Beidou.**
- ✓ **4 new servers will be installed for Trimble Pivot data base reinstalation**
- ✓ **Densification tender will be released again.**
- ✓ **There are still free vacancies for 2 IT managers and 1 office worker.**



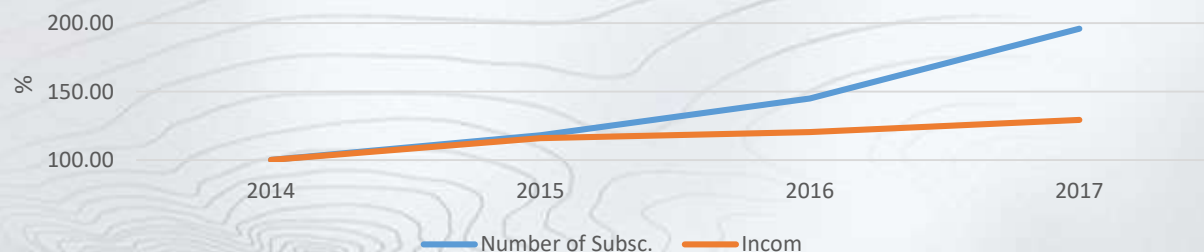


**Number of users and sold subscriptions is constantly growing.**

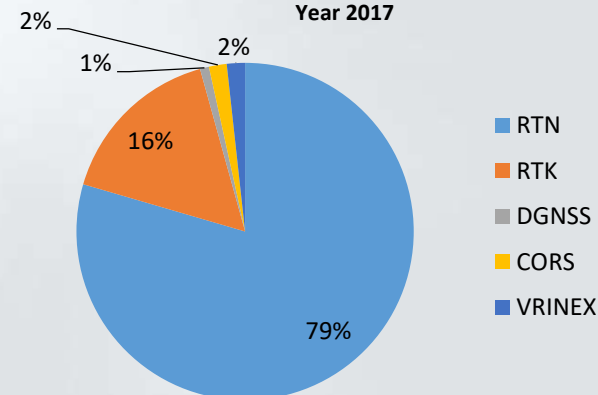
Total number of allocated subscriptions



Number of sold subscriptions vs. Income



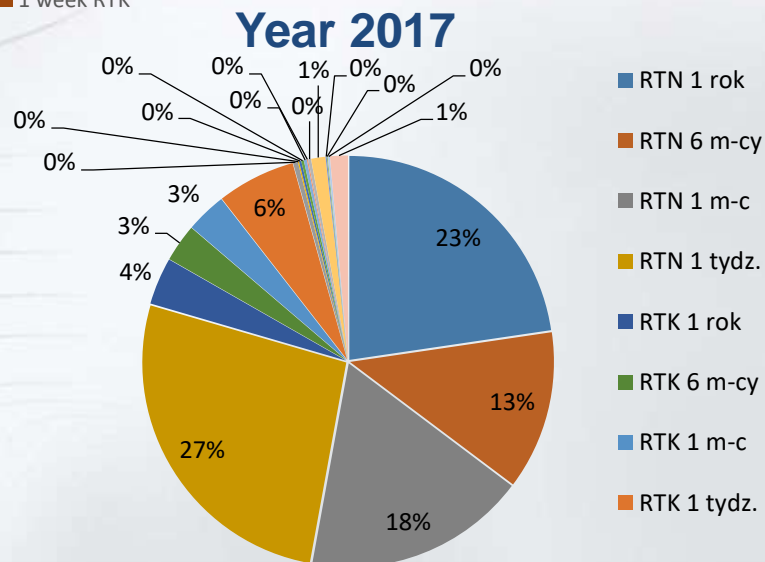
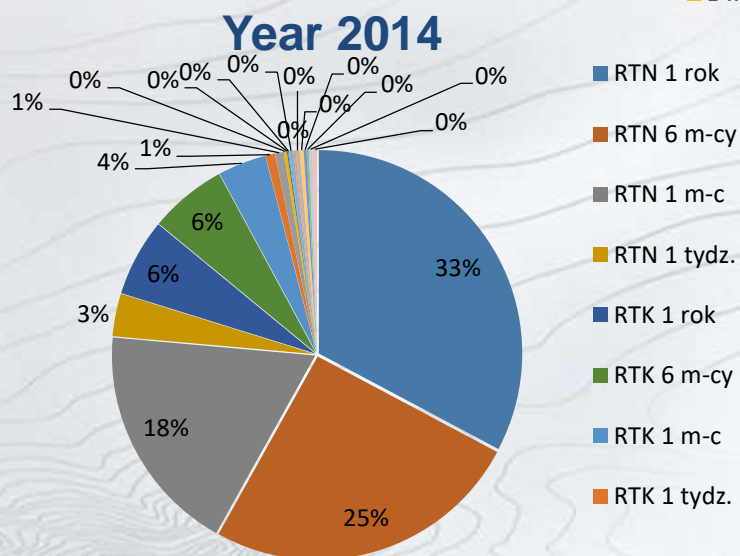
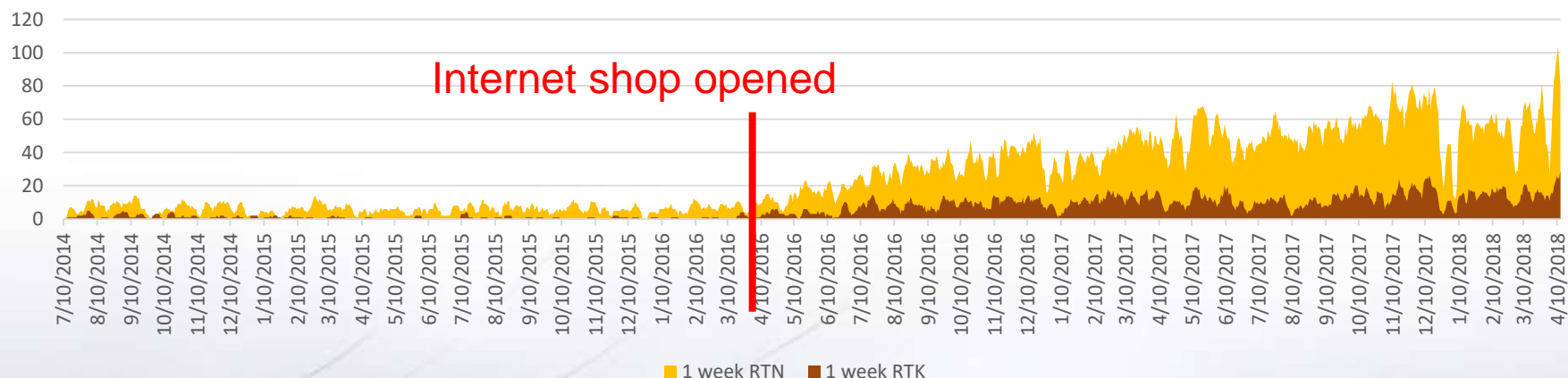
Percentage share of service types in the total number of allocated subscriptions  
Year 2017





## After opening of internet shop users switched from long term to short term subscriptions

Number of active short term subscriptions



# Conclusions



- ✓ **The ASG-EUPOS stations maintain and prove the state reference system in Poland and fulfil requirements of users for precise three-dimensional GNSS positioning.**
- ✓ **The ASG-EUPOS system is year by year**
- ✓ **In a few last years a big modernization of ASG-EUPOS system has been carried out to change the GPS equipment into GNSS multisignal applicable.**
- ✓ **Untill 2020 Galileo open services are going to be used in ASG-EUPOS as a primary source of satellite signals.**



*Thank for your attention ...*

[www.eupos.org](http://www.eupos.org)

[www.asgeupos.pl](http://www.asgeupos.pl)

[www.gugik.gov.pl](http://www.gugik.gov.pl)

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