

NATIONAL REPORT OF LITHUANIA TO EUREF 2016

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National Land Service under the Ministry of Agriculture

Donostia - San Sebastian, Spain 2016



- CORS Network LitPOS
- LitPOS Reprocessing
- New height and gravity system
- Orthophotomapping



LitPOS(1):



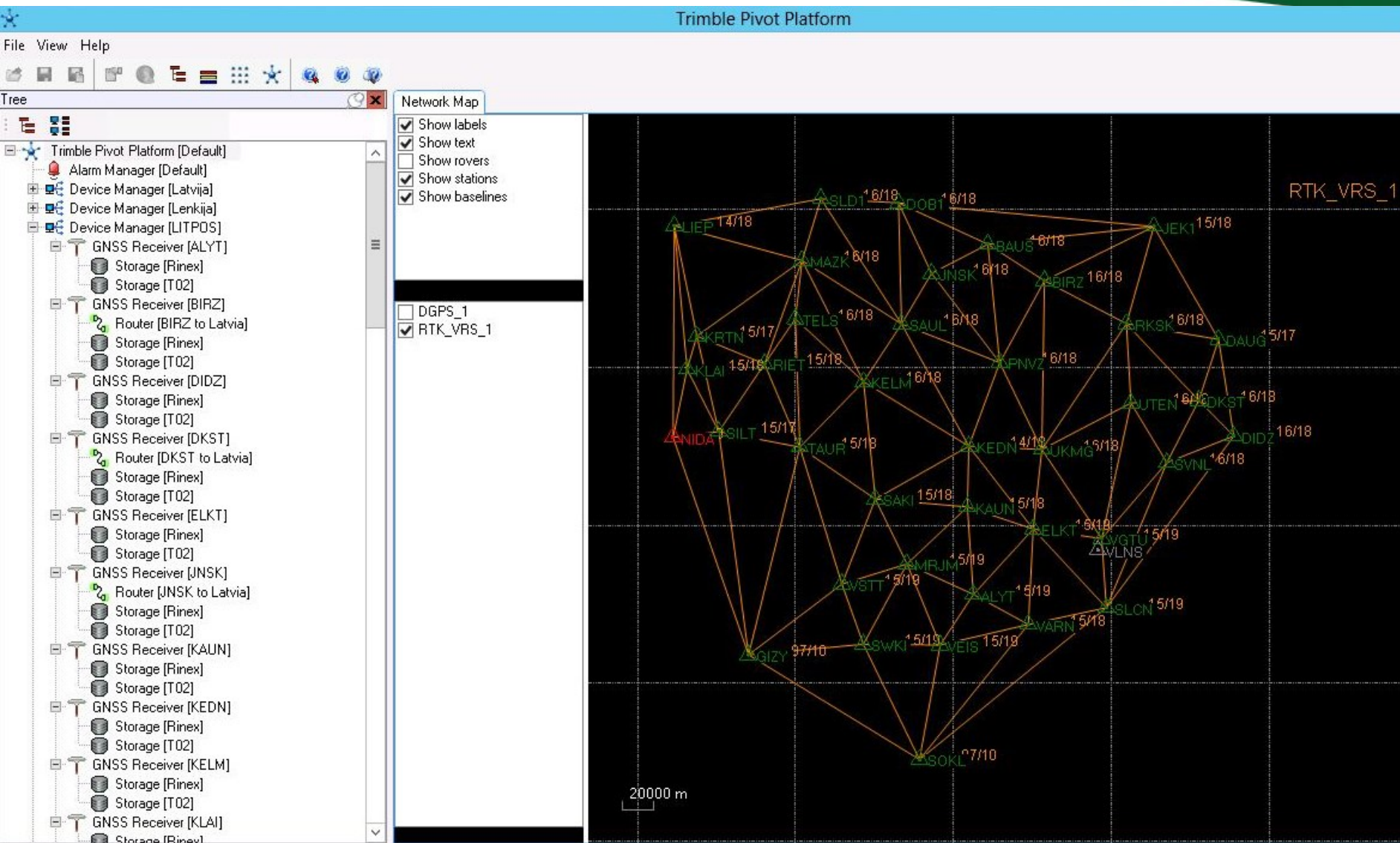
LitPOS (Lithuanian Positioning System), the network of permanent reference GNSS stations, became operational in July 2007. It provides data both for real-time and post-processing applications.

LitPOS stations cover the whole territory of Lithuania. Total number of LitPOS GNSS stations is **30**. LITPOS users can use **3** ASG-EUPOS Polish stations and **6** LATPOS Latvian stations

CORS Network - LitPOS

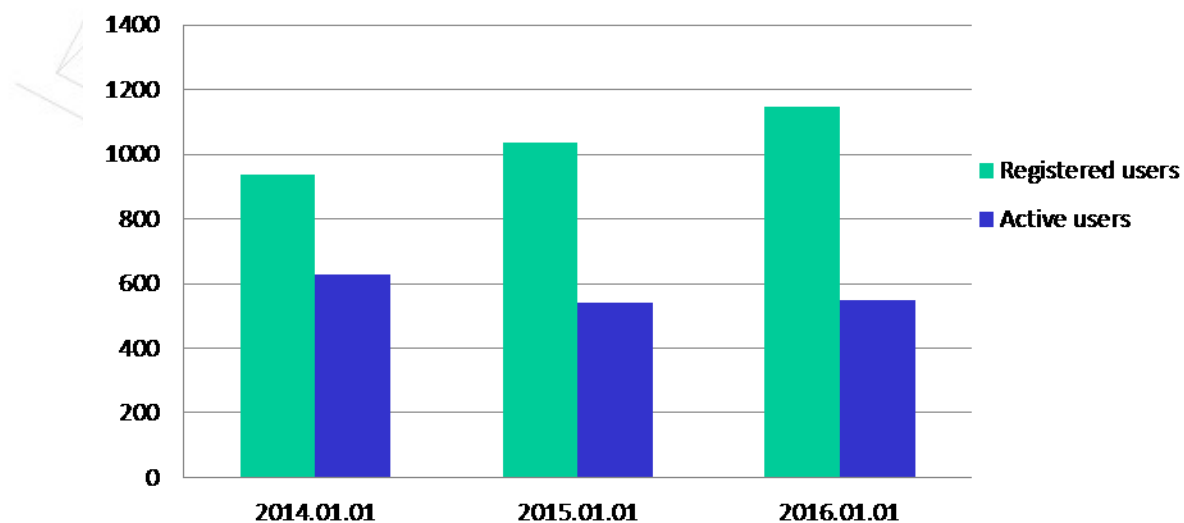


GPS+GLONASS

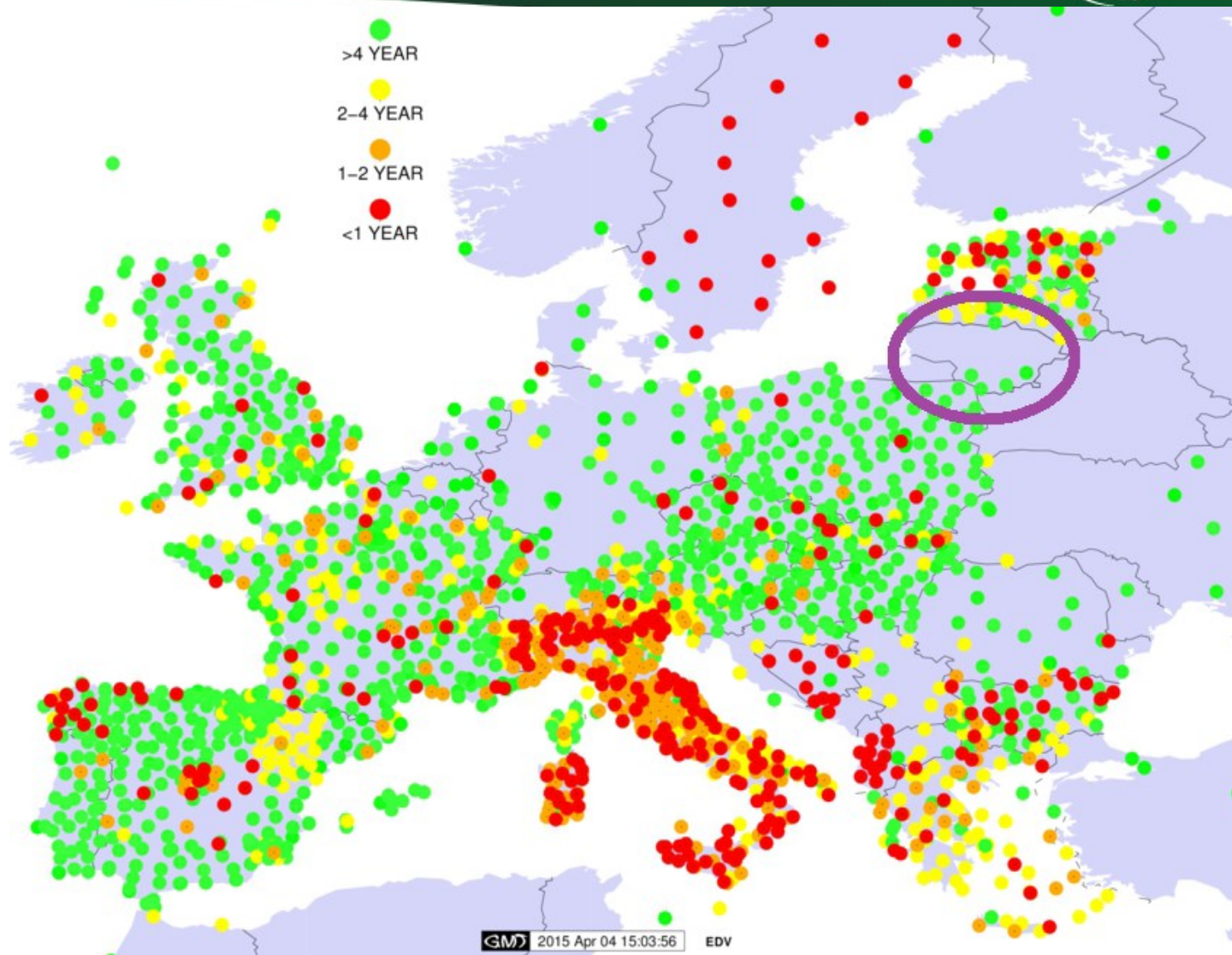


Users statistics (2016-05-01):

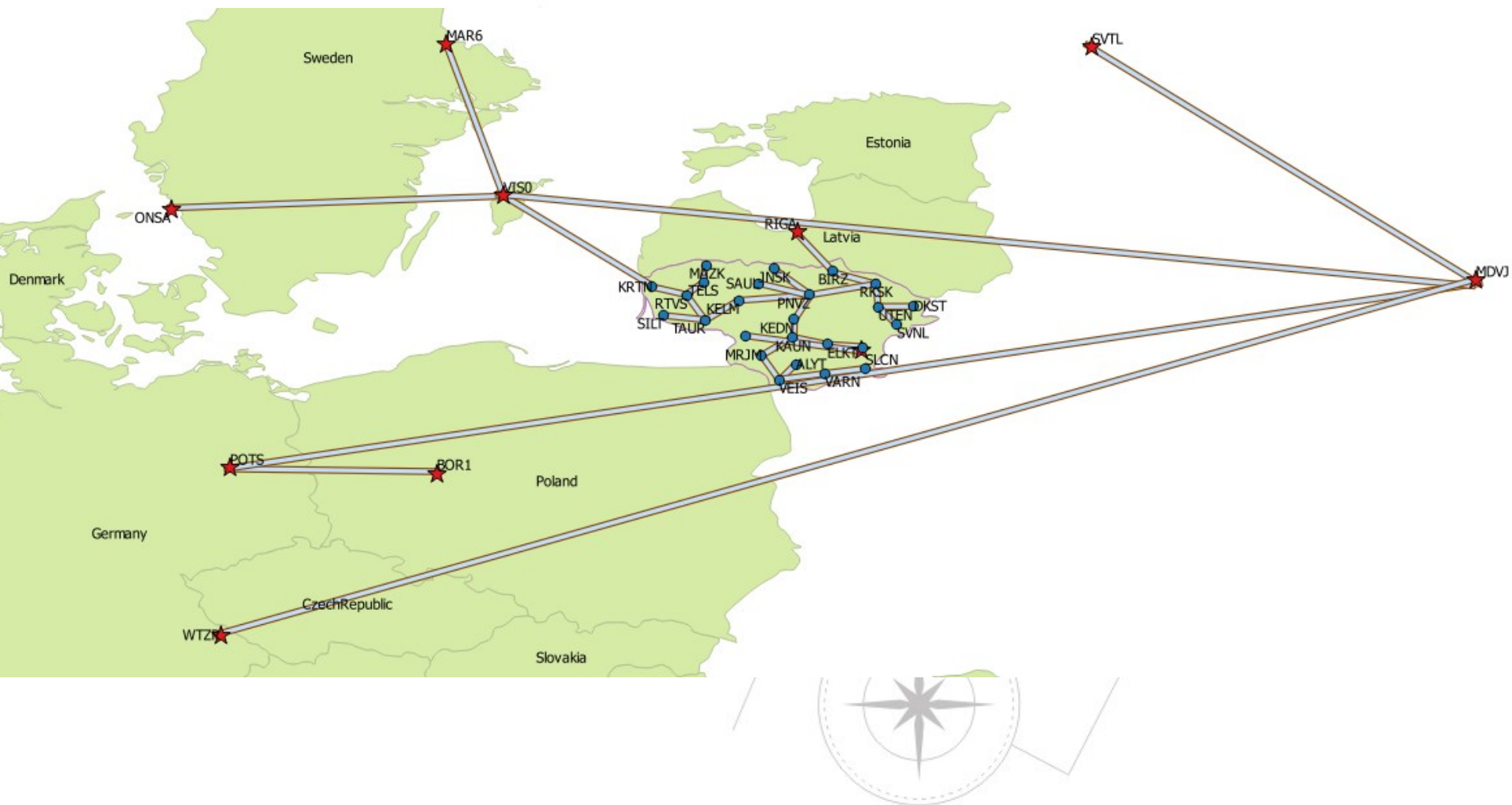
- **Number of LitPOS registered users: 1145(+108)**
- **Numbers of active users: 548 (+6)**



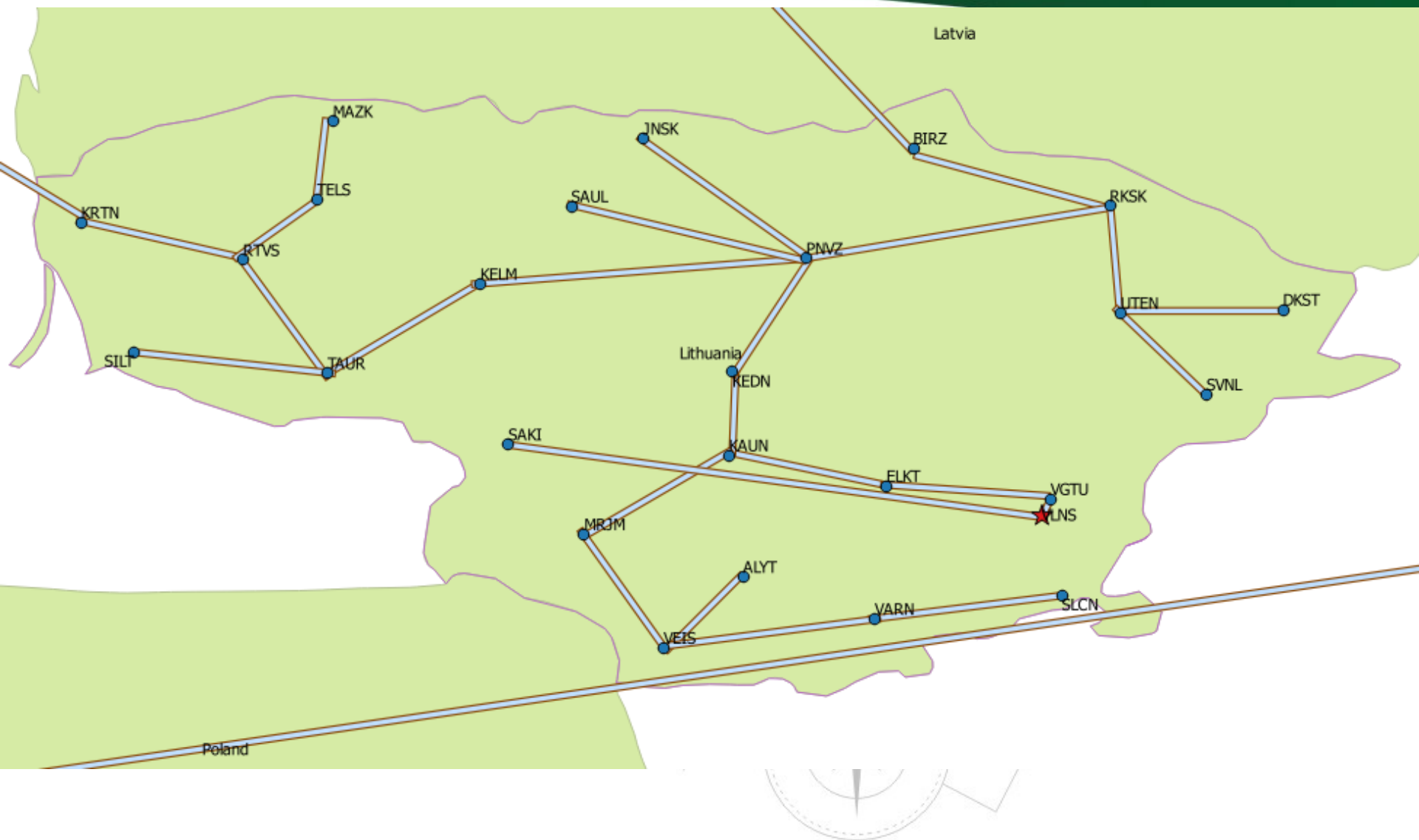
LitPOS_Repro(1):



LitPOS_Repro(2):



LitPOS_Repro(3):



Main characteristics:

- Software: **BSW5.2** update 2016 01 08
- Network: **25** LitPOS stations+**10** IGS/EPN fiducial stations
- GNSS: **GPS**
- Antennas PCV: absolute and **individual calibration**
- Precise orbits, etc.: **CODE**
- Tropospheric refraction: **VMF**
- Baselines processing strategy: **OBS-MAX**
- Ambiguities resolution strategy: **QIF**
- ITRF realisation: **IGb08** (EPN_A_IGb08_C1845.SNX)
- Cut-off angle: **3, 10, 25**
- Period: **2008-2014**; (2015-)
- Products: **Daily** and **weekly SNX**

New height and gravity system (1)



In **Lithuania** new

Heights system LAS07 and

Gravity system LSS07

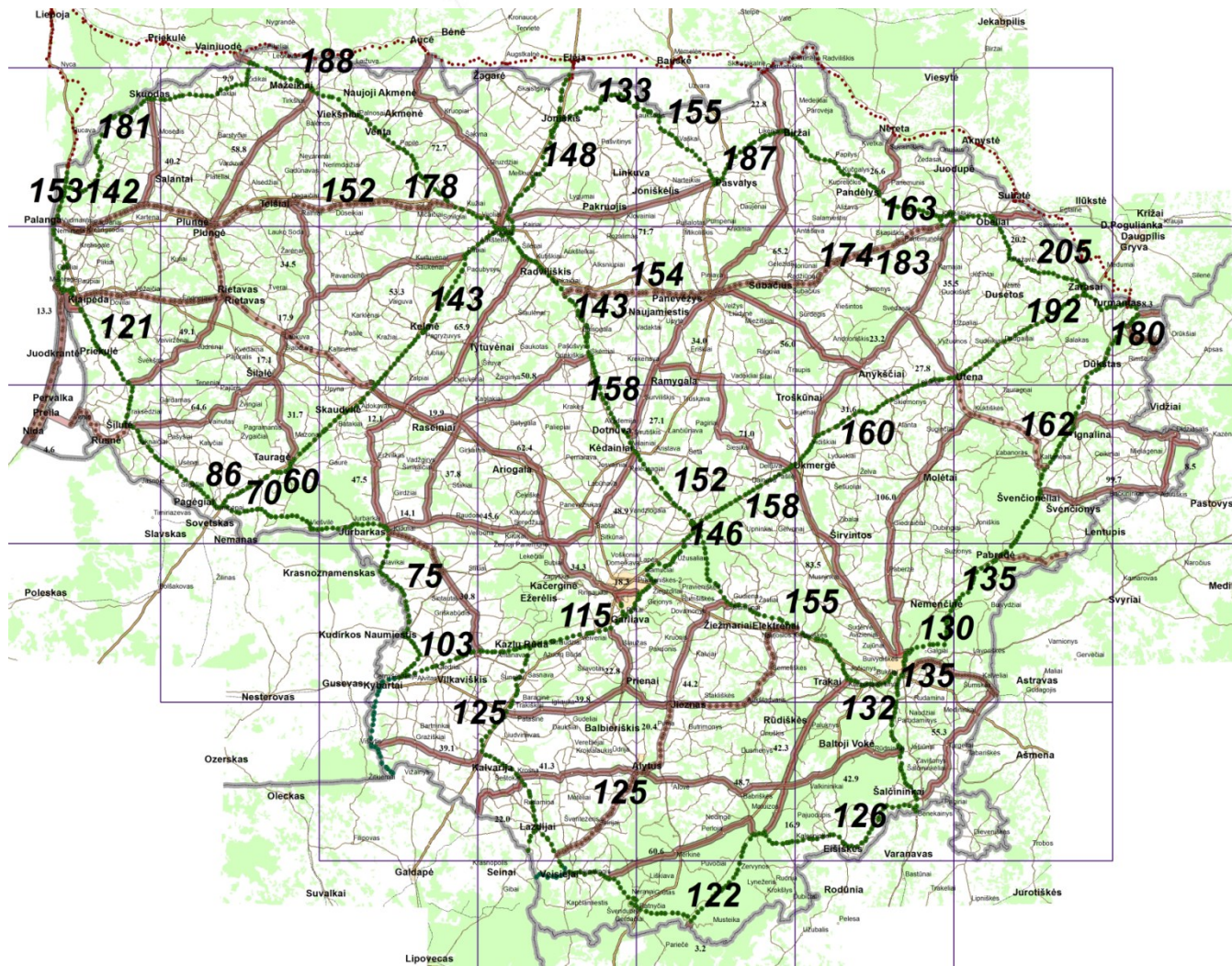
introduced from the **January 1st, 2016**. The new height system coincides with the **European Vertical Reference System 2007**, and new gravity system is based on **absolute gravity** measurements.



New height and gravity system (2)



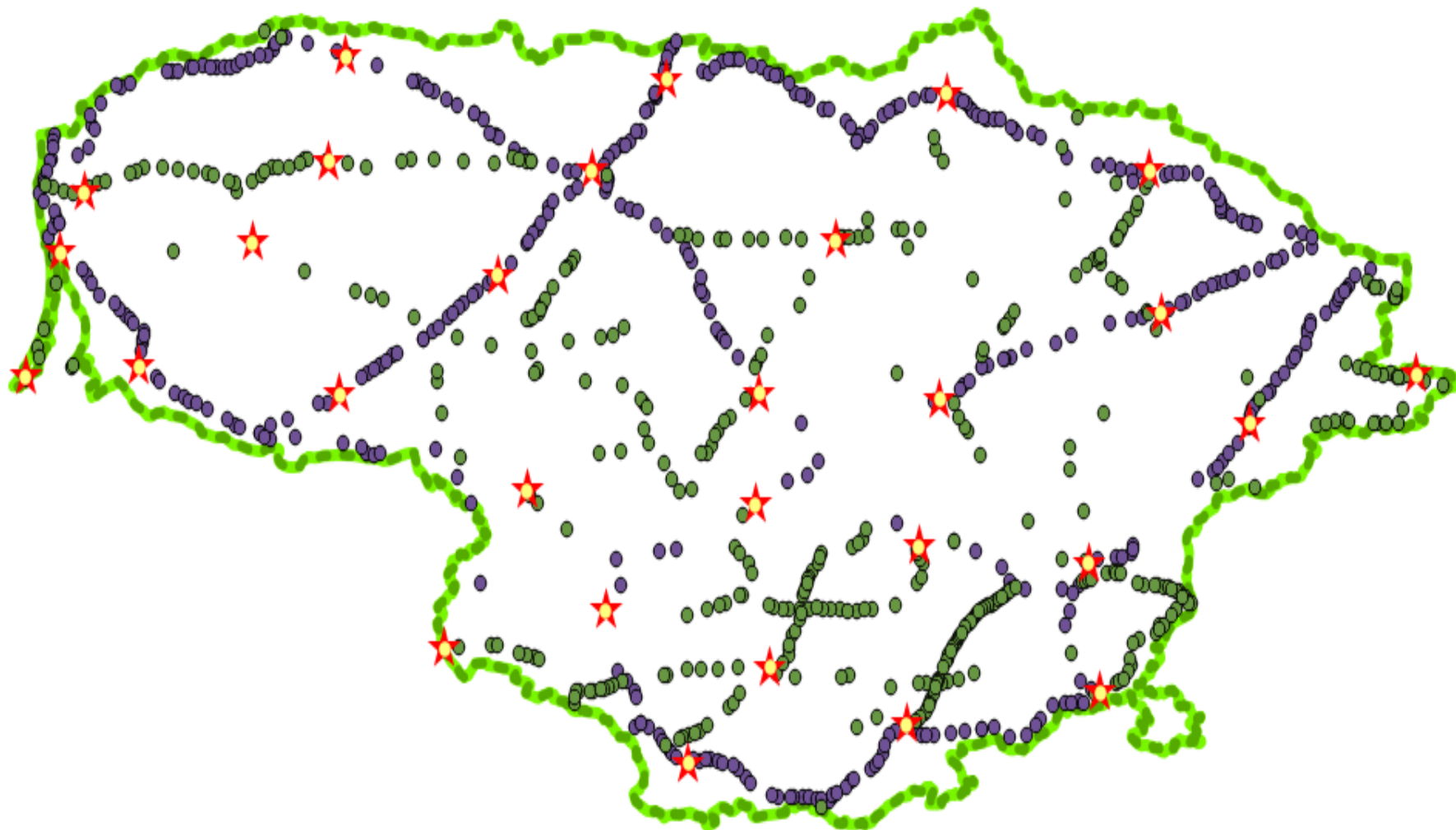
In 2015 the development of the State Geodetic Vertical Network of **Lithuania** was finished.



New height and gravity system (2)



GPS/Levelling points: 870 (431 + 419 + 30)



New height and gravity system (2)



```
--- G E O I P ---
grid file name: lit04g.fit
output file name: pip1.rez
mode = 1, nsp = 0, minimum edge dist  0.0 km
point file name: visi870.prn
- bilinear interpolation -
- subtraction of interpolated values from pointfile -
```

```
number of prediction points:      870
within area    53.9575   56.3953   21.0050   26.7844
```

grid file information:

```
gridlab:    53.0000  57.0000  20.0000  27.0000   0.0200   0.0400  201 176
selected subgrid:  53.9400  56.4000  21.0000  26.8000
points: 124 x 146 =  18104, zero values:      0, unknown (9999):      0
min max mean std.dev.:    20.91    29.00    24.48    1.68
```

```
points predicted:    870, skipped points:      0
minimum distance to grid edges for predictions:  13.7 km
statistics:
original data (pointfile) :    mean    std.dev.    min    max    unknown
grid interpolation results:    24.263    1.406    21.631    26.871    0
predicted values output   :    0.000    0.008    -0.026    0.032    0
```

```
number of prediction points:      30
within area    54.0939   56.3145   21.0050   26.6730
```

grid file information:

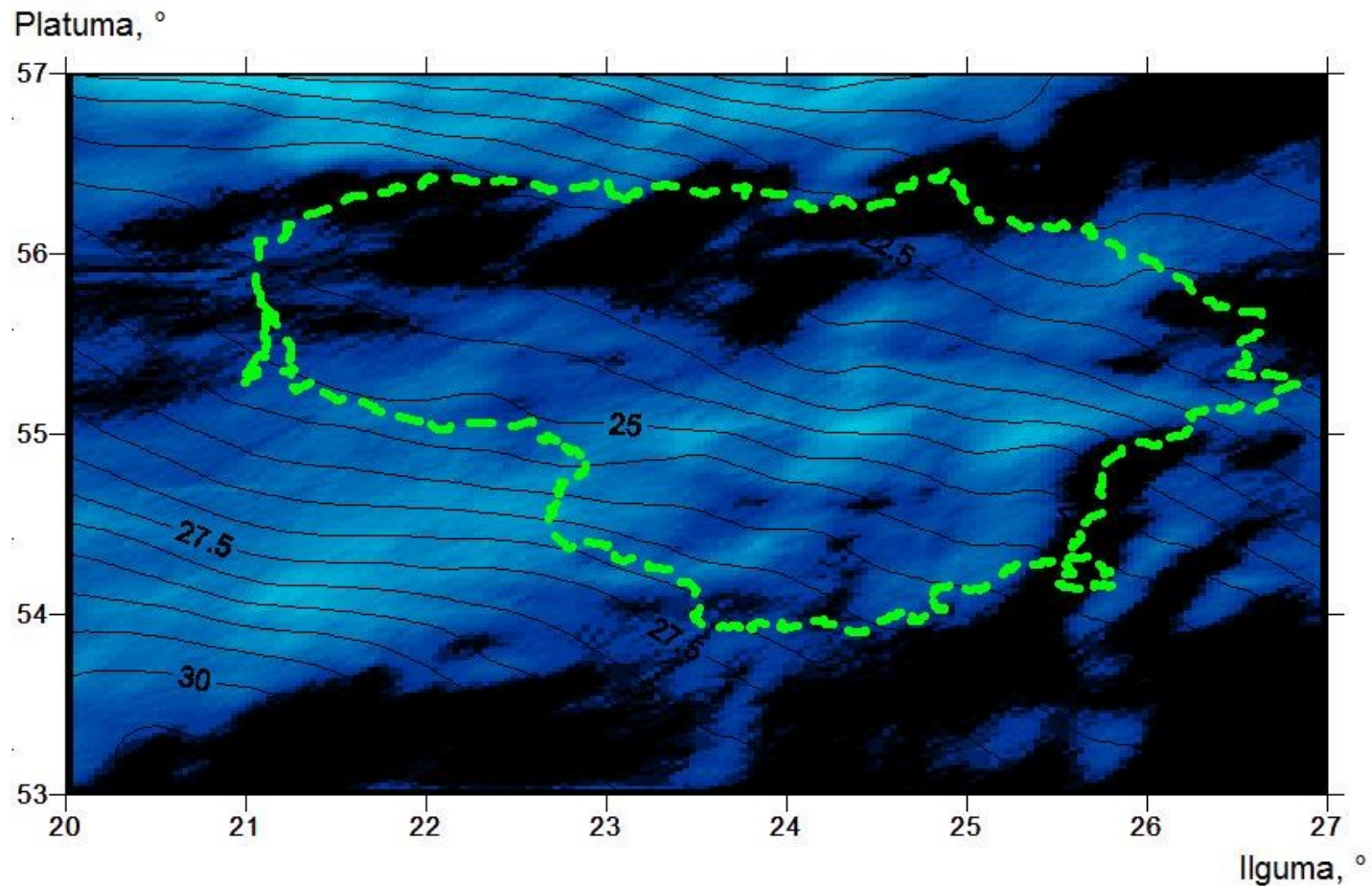
```
gridlab:    53.0000  57.0000  20.0000  27.0000   0.0200   0.0400  201 176
selected subgrid:  54.0800  56.3200  21.0000  26.6800
points: 113 x 143 =  16159, zero values:      0, unknown (9999):      0
min max mean std.dev.:    21.11    28.42    24.41    1.56
```

```
points predicted:    30, skipped points:      0
minimum distance to grid edges for predictions:  20.7 km
statistics:
original data (pointfile) :    mean    std.dev.    min    max    unknown
grid interpolation results:    24.392    1.358    21.729    26.840    0
predicted values output   :    0.000    0.007    -0.026    0.021    0
```

New height and gravity system (3)



In 2015 the updated geoid model for Lithuania was introduced.



ORTOPHOTO MAPS (1)



M 1:10 000 (1996–1999)

M 1:10 000 (2005–2006)

M 1:10 000 (2009–2010)

M 1:5 000, M 1:10 000 (2012–2013)



UPDATING OF ORTHOPHOTO MAPS IN 2015–2017 (2)



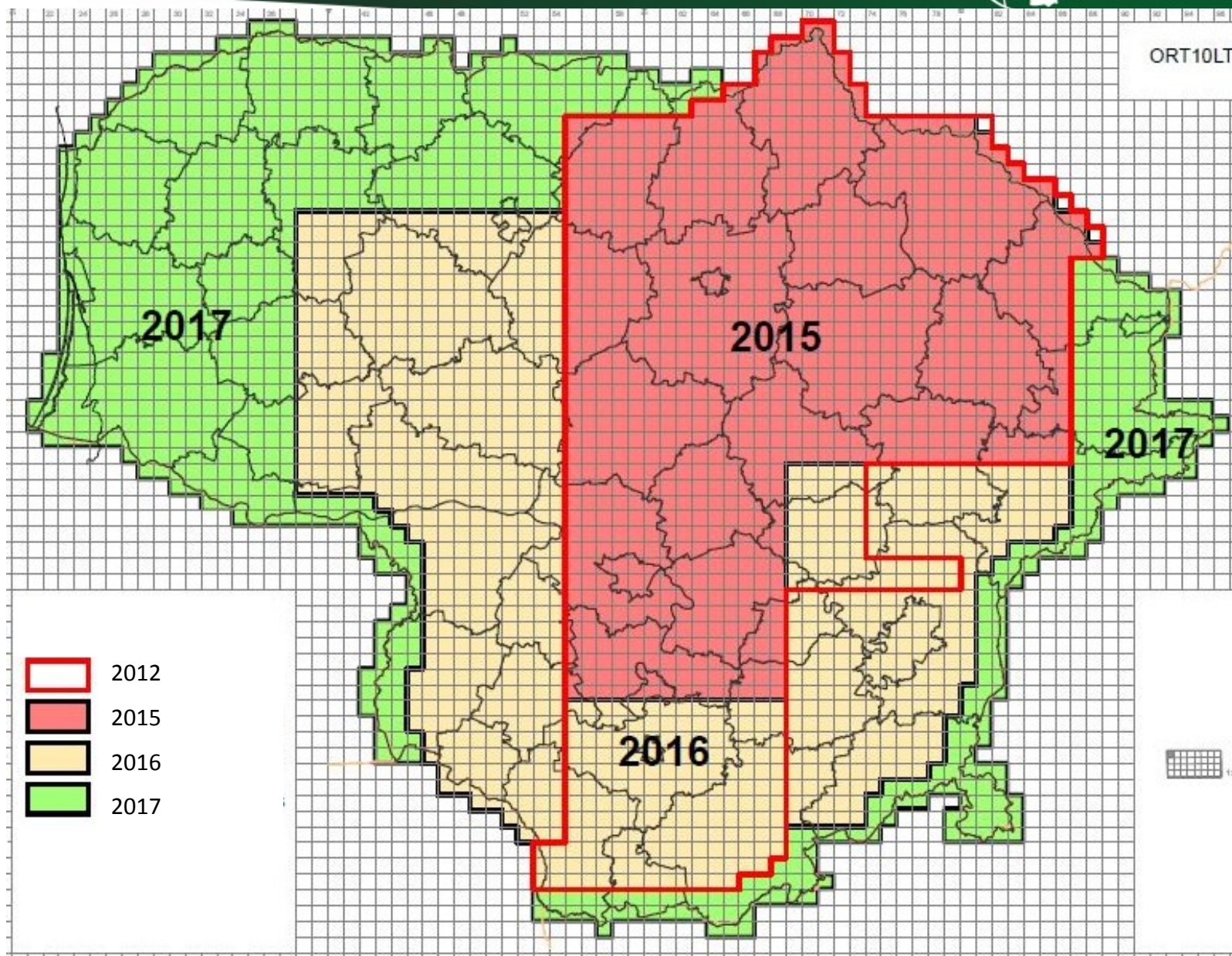
Starting from the 2015 updating of orthophoto maps in Lithuanian territory will be done **in period of 3 years**. **Each year 1/3 of Lithuanian territory** will be covered with orthophoto maps.

Spatial resolution (pixel size) less than **25 cm** on the ground.

Accuracy of orthophoto maps, described in RMSE, do not exceed **1,25 m**.



UPDATING OF ORTHOPHOTO MAPS IN 2015–2017 (3)



THANKS FOR YOUR ATTENTION !

www.gi.ap.vgtu.lt

www.nzt.lt

www.geoportal.lt

www.litpos.lt

www.zis.lt