National Report of Finland

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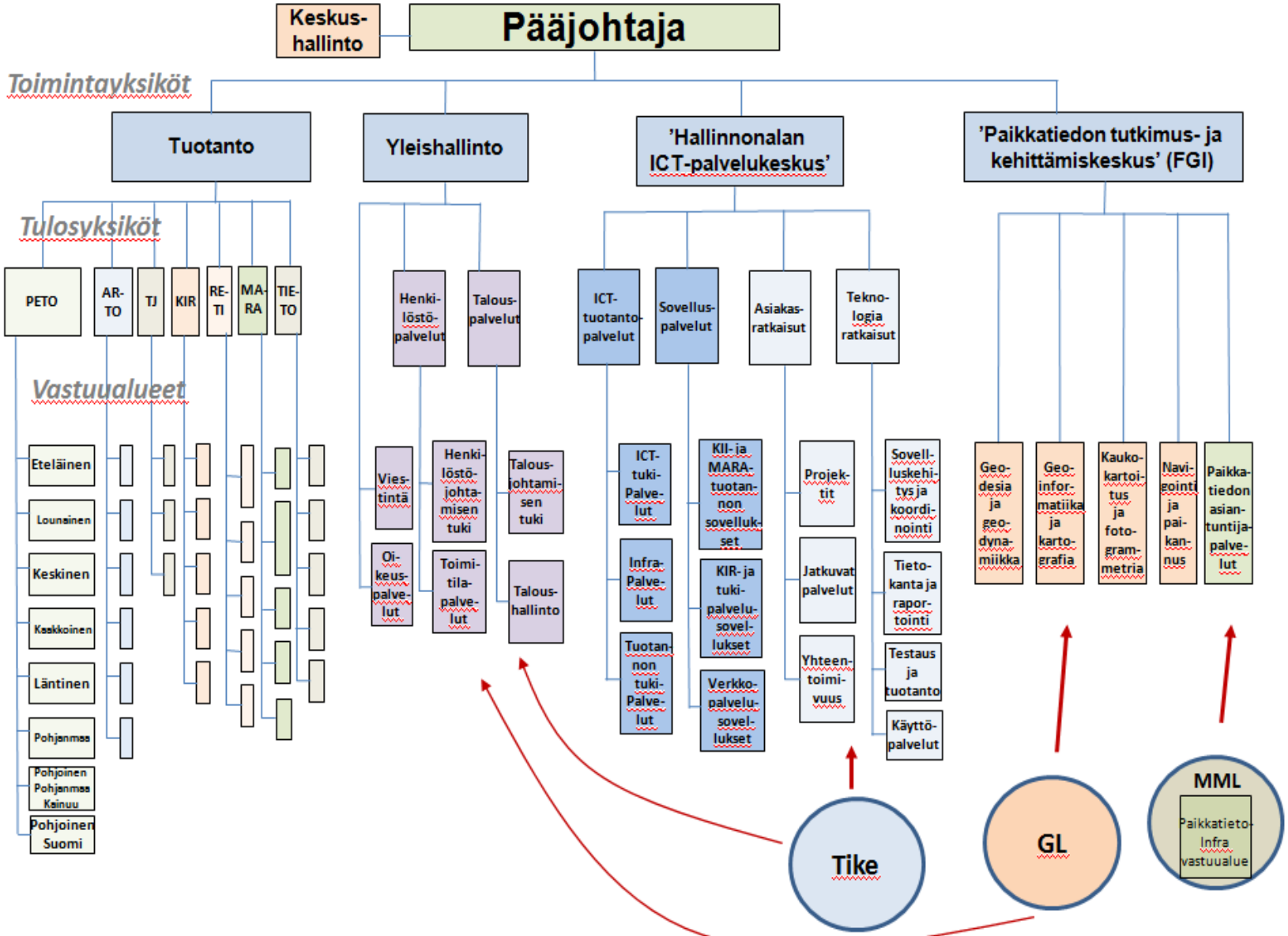
NKG General Assembly 2014, Göteborg, Sweden, September 1-4, 2014

FGI future

- Decision of Ministry of Agriculture and Forestry that the FGI will be merged into NLS in the beginning of 2015
  - Law changes
  - Planning going on; unifying practices and tasks
  - FGI will be moved “as is”; current tasks and structure will remain

- New name: Finnish Geospatial research Institute, abbreviation FGI remains

Maanmittauslaitos 1.1.2015



Finnish Geospatial research Institute

Geodesy and geodynamics

Geoinformatics and cartography

Remote sensing and photogrammetry

Navigation and positioning

SDI services

Renewal of Metsähovi Research Station

- **Ministry of Agriculture and Forestry allocated special funds for renewal of Metsähovi instrumentation during five years (2012-2016)**
- SCG; new instrument installed early 2014 (dual-sphere)
- AG; upgraded to FG5-X in 2013
- SLR (new telescope)
  - Renewal in progress: new kHz-capable SLR telescope (installation in 2015), new SLR observatory building (building project to be completed in January 2015), new dome for the SLR observatory (delivery late 2014) and for master control SW for the kHz SLR system (early 2015)
  - SLR operational in 2016.
- VLBI (VLBI-2010 compatible new telescope)
  - Current plan 2015-2017

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Renewal of Metsähovi Research Station

- DORIS (owned by CNES, IGN) renewed in 2012
  - Permanent REGINA GNSS station METG, part of global IGS network in March 2014
- TerraSAR-X retroreflector installed late 2013
- A new meteorological WMO standard meteorological station will be installed in co-operation with the FMI in 2014. This will serve all instrumentation in Metsähovi.
- Extension of pillar network for GNSS antenna calibration studies (as part of European Metrology Research Programme, EMRP JRP SIB60)
- Local tie studies for VLBI continued

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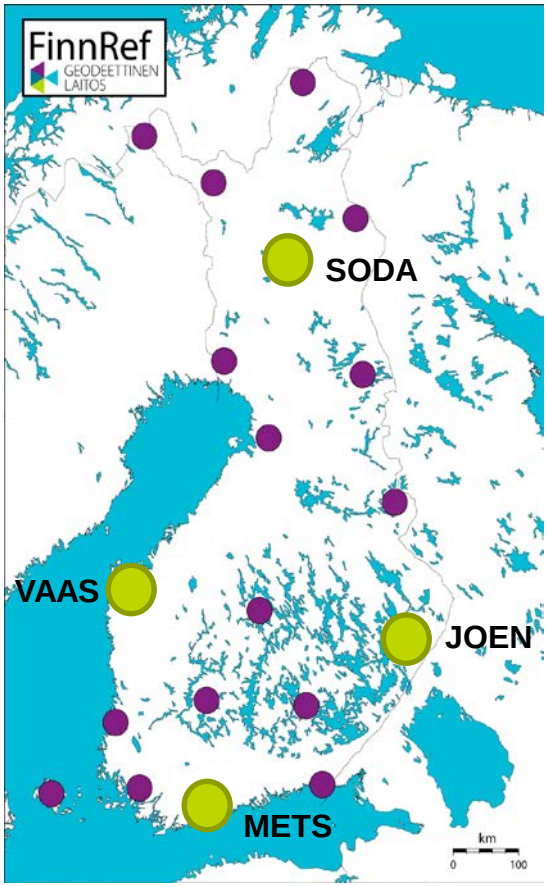
FinnRef permanent GNSS network

- Renewal of network completed in 2013
  - Better coverage
  - Modernized to GNSS capable
- 19 new stations, 3 m masts
- Mainly parallel to old ones (dual stations)
- Equipment (Javad)
  - Delta-G3T –receiver
  - RingAnt-DM antenna with SCIGN radome
- Applications to EPN later in 2014



GNSS	Signals
GPS	L1, L2, L2C, L5
Glonass	L1, L2, L3
Galileo	E1, E5a, E5b, AltBOC
BeiDou	B1, B2 (MET3)

Antennas are individually calibrated

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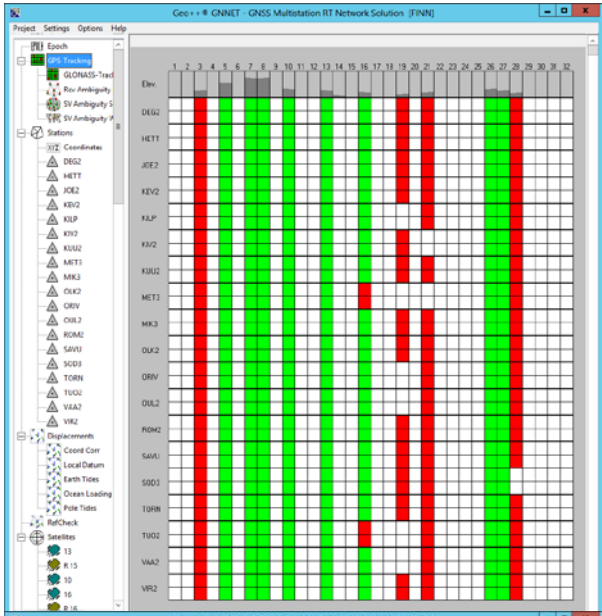
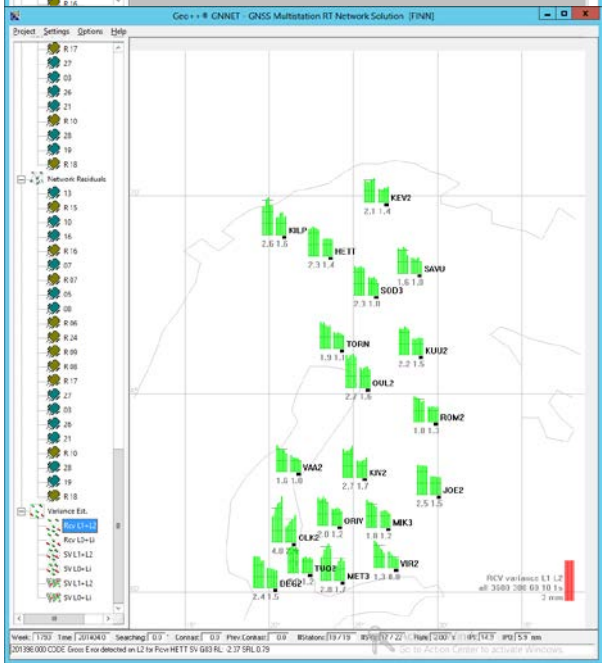
New FinnRef Positioning Service

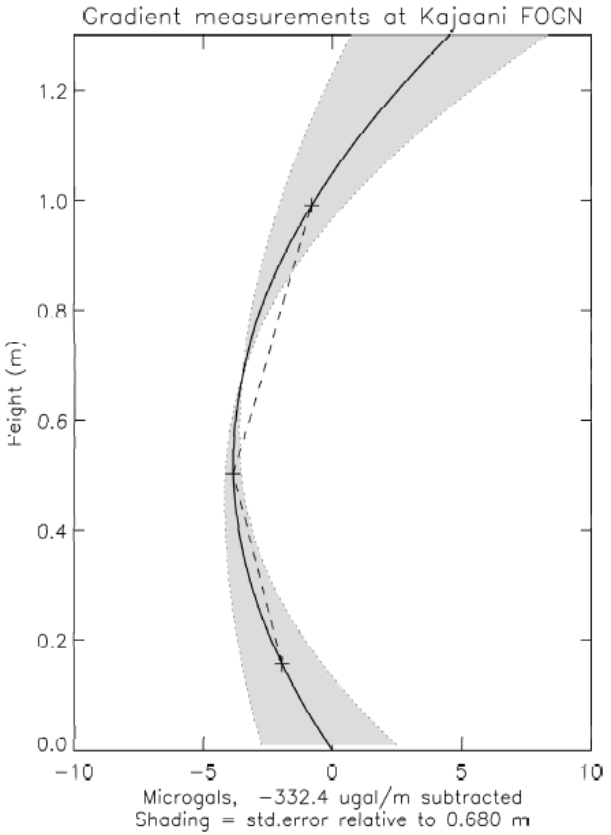
- Open data policy
- Real time data streams
- Positioning service opened in January 2014
  - GNSMART by Geo++
  - DGNSS service (free of charge)
    - Nearest station, single station 1/2014
    - Network solution 2/2014
  - Network RTK service (pilot)
    - Opened 6/2014
  - Rinex data (free of charge)
    - Webserver
    - Opened 6/2014
- More information
  - http://euref-fin.fgi.fi/fgi/en





Renewal of the First Order Gravity Net (FOGN)

- A10 measurements 2009-2010
- Supporting measurements completed 2011
  - 3-level gradients with Scintrex CG-5 for A10 computation, for users, and for connecting (picture)
  - relative ties when FOGN and A10 stations are not identical
  - levelling to BM with better than 1 cm accuracy
  - 3-D coordinates from RTK-GPS in combination with tachymeter
- Using the results
  - New values for FOGN in 2012 g=g(z)
  - Epoch: taking 2000.0 consistent with the new height system N2000
  - Recalculate all surveys connected to FOGN since 1962



Gravity above typical church stairs changes very non-linearly

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Open data

- Principal decision by the Finnish Government in 2011
  - Promote accessibility of digital data from the public sector
- National Land Survey of Finland opened some data sets free of charge in May 2012, see http://www.maanmittauslaitos.fi/en/opendata. Data include e.g.:
    - Laser scanning data
    - Benchmarks
    - Elevation models (2m, 10m, 25m and 200m)
    - Aerial and orthophotos
    - Topographic database
    - Basic, topographic and general maps in different scales
    - Municipal boundaries
    - Name register
- GNSS data/services by the Finnish Geodetic Institute became freely available in 1.1.2014
    - Rinex data for post-processing
    - Data streams from individual stations
    - Positioning services

New recommendations for the public administration (JHS)

- New guidelines were released
  - JHS184: Measuring of control points in EUREF-FIN reference frame
    - Control point hierarchy, including passive and active control points
    - Measurement techniques (static and kinematic GNSS surveys, tacheometry)
    - Guidelines to measure control points
  - JHS185: Large scale map for city plans
- www.jhs-suositukset.fi