



NLS
FINNISH GEOSPATIAL
RESEARCH INSTITUTE
FGI

Finland

National Report

Hannu Koivula

Director, Geodesy and Geodynamics

FGI moved to Aalto University campus area

New address:

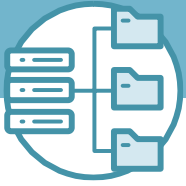
**Finnish Geospatial Research
Institute FGI**

National Land Survey of
Finland

*Vuorimiehentie 5, 02150
Espoo, FINLAND*

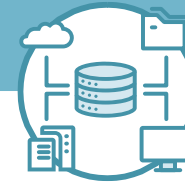
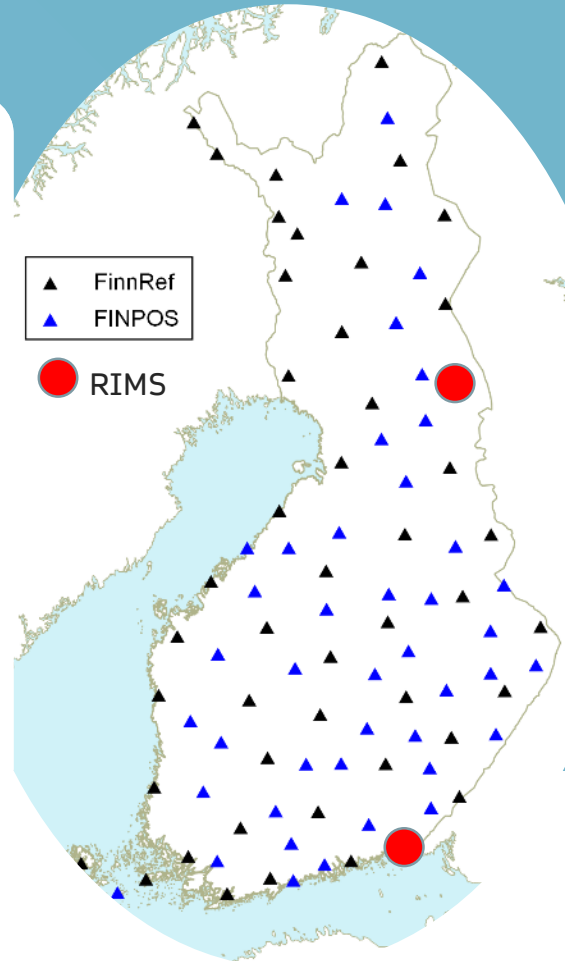


GNSS Network of the NLS



FINREF

- 47 stations
- 2 IGS, 20 EPN
- All will be levelled
- 20 has AG pillar
- SAR targets

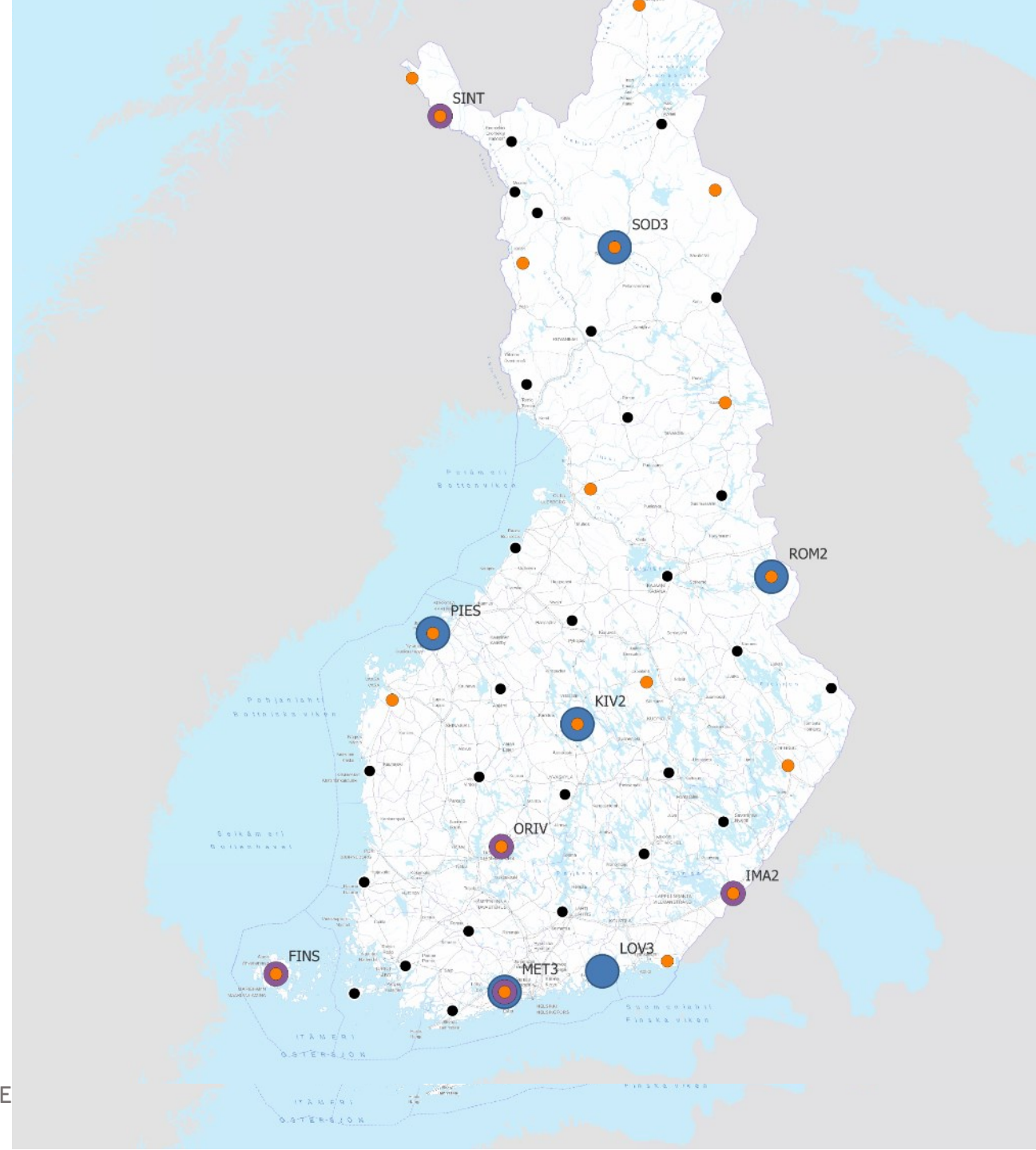


FINPOS

- ~100 stations (FinnRef and FINPOS)
- DGNS service (open)
- Rinex data (open)
- Raw data streams
 - Commercial service (2021-)
 - EPN data open
- Positioning service for internal use only (2021: 500 units)

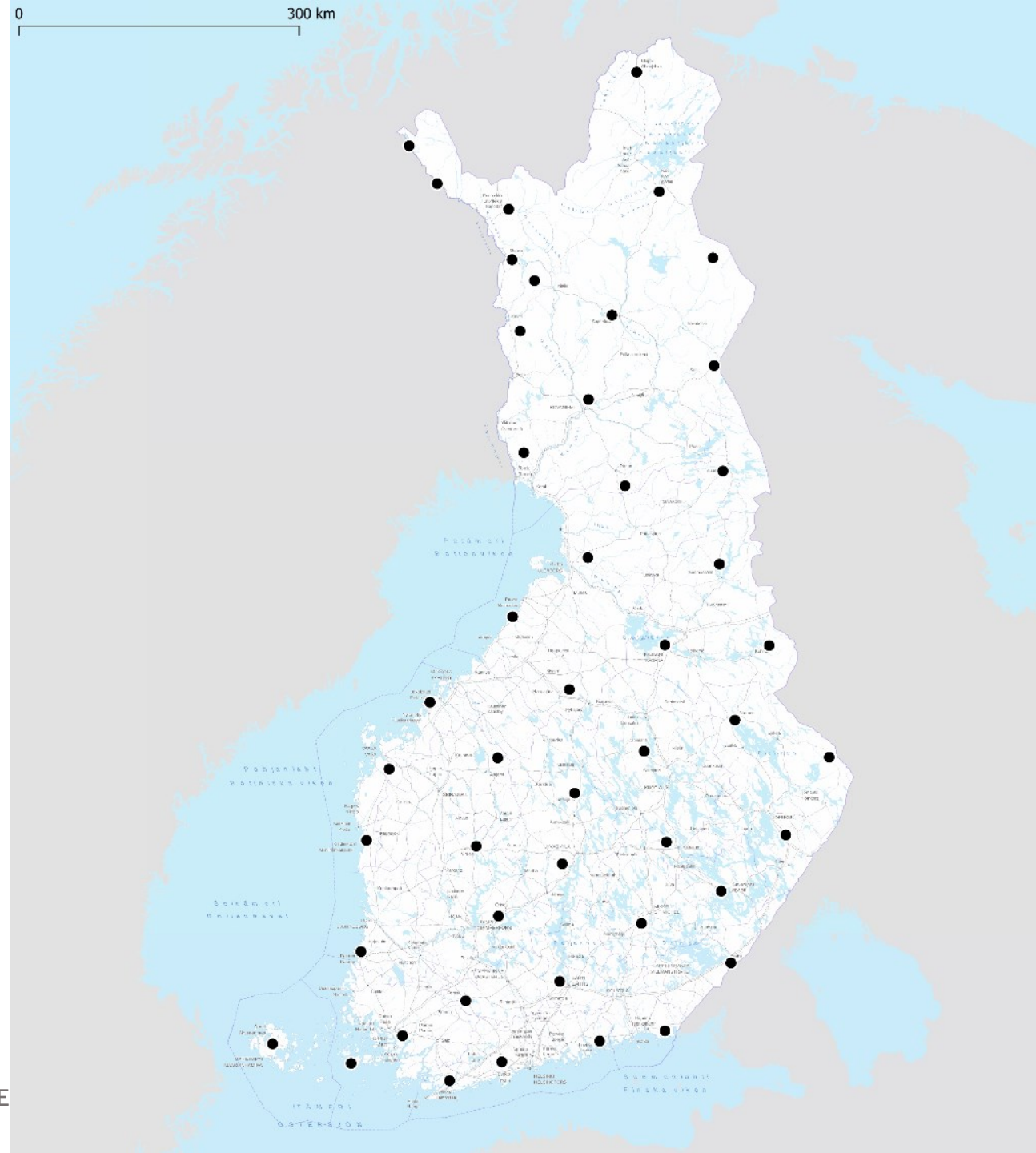
FinnRef: Backbone of reference systems

- Permanent GNSS stations
- Precise levelling of all stations ongoing
- Gravity pillar with repeated absolute gravity measurements
- SAR reflectors by end 2023
 - Blue: Zarges
 - Magenta: MK3D AB



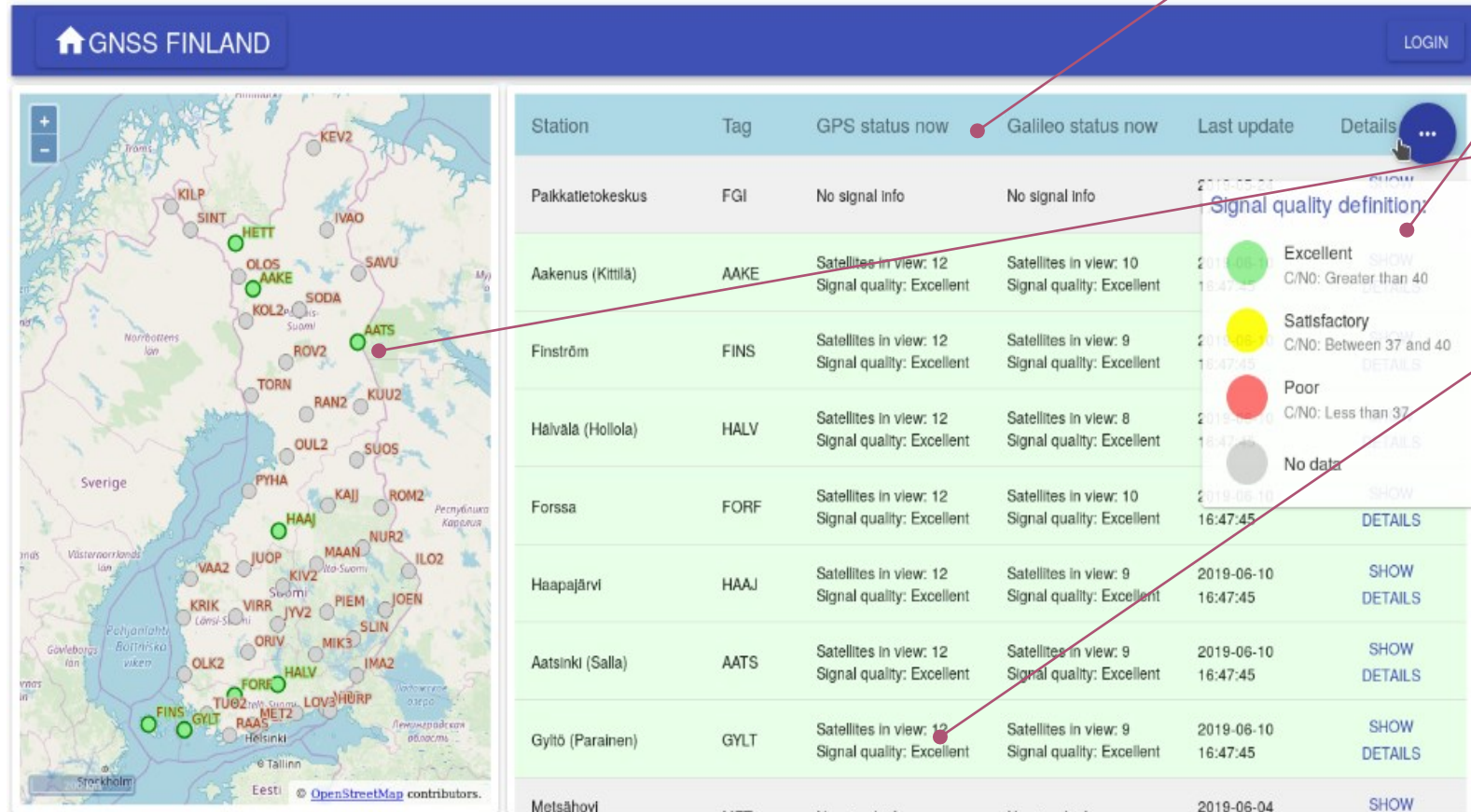
FinnRef: Backbone of reference systems

- E2 Service
 - Certified coordinates for GNSS stations
- New Benchmark Register
 - Coordinates, heights, gravity
 - Capable for dynamic systems
- Proj
 - Transformations available for general public



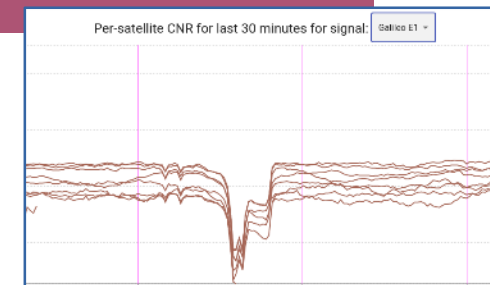
GNSS-Finland: Signal Quality Monitoring

GPS, Galileo,
GLONASS,
BeiDou



Color codes to help general public

More detailed/advanced information



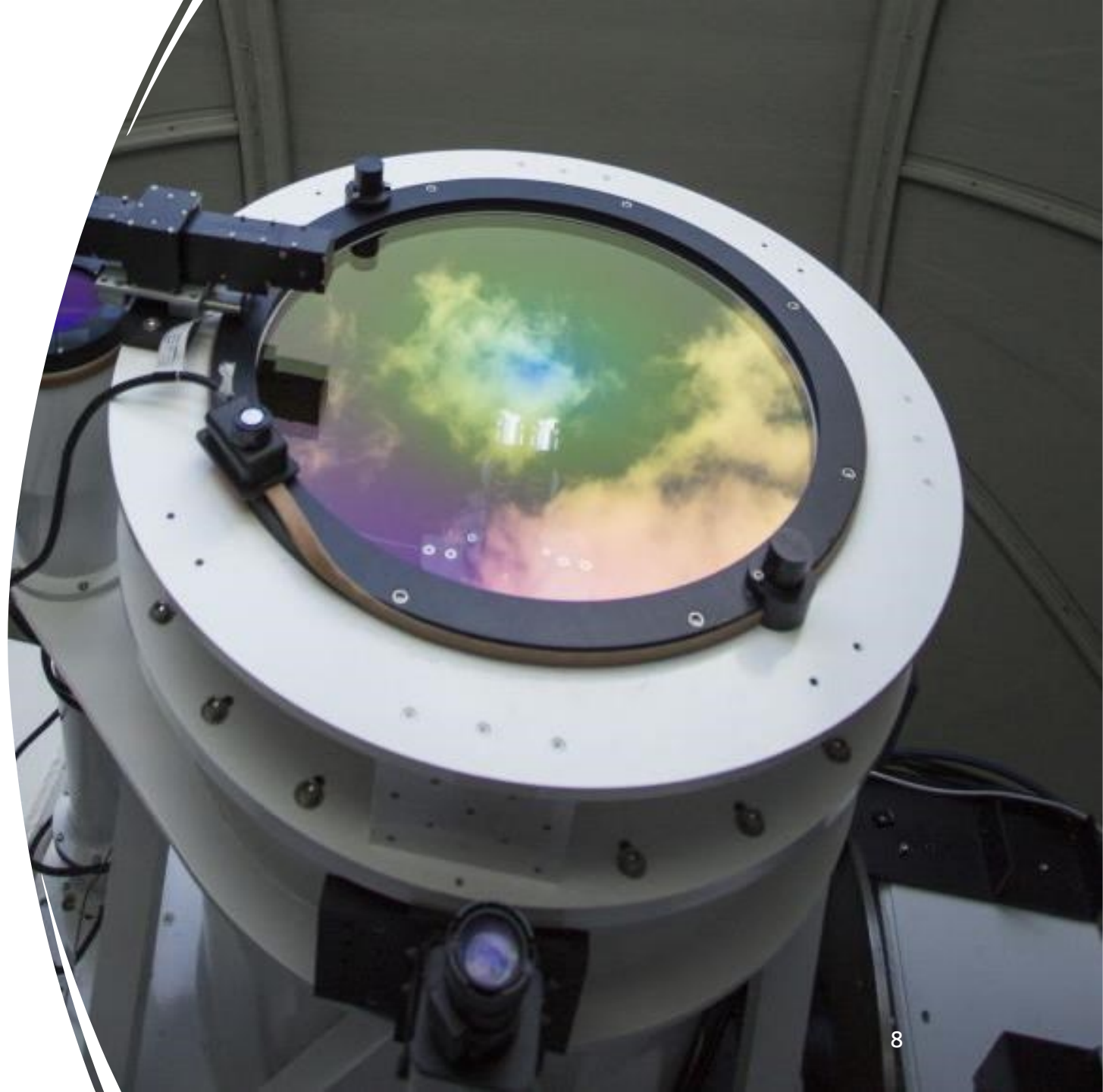
TRAFICOM

Snapshot of scientific projects

Project name	Project duration	Funder
EMPIR-GeoMetre - Large-scale dimensional measurements for geodesy	1.6.2019-30.11.2022	EURAMET
ESRIUM - EGNSS-enabled smart road infrastructure usage and maintenance for increased energy efficiency and safety on European road networks	1.10.2020-30.9.2023	H2020
SAMK-ISTLAB - Intelligent Shipping Technology Test Laboratory	1.1.2019-31.12.2021	EAKR
FAMOS Odin - Finalising surveys for the Baltic motorways of the sea	1.1.2017-31.12.2018	EU
NT-VGOS - From quasars to geodesy: how astronomy can enable a new era in ultra-precise geodetic measurements	1.9.2018-31.8.2022	Academy of Finland
REASON - RESILIENCE AND SECURITY OF GEOSPATIAL DATA FOR CRITICAL INFRASTRUCTURES	21.8.2020-30.11.2023	Academy of Finland
GRAVLASER - Improved absolute-gravity measurements in the Antarctic	1.1.2017-31.12.2020	Academy of Finland
ALBEDO - The Earth spherical albedo from space geodesy	1.9.2016-31.12.2020	Academy of Finland
SAR-HSU - Geodetic SAR for Baltic Height System Unification and Baltic Sea Level Research	1.5.2019- 31.10.2020	ESA
SNOWBOX – Arctic PNT Innovation Platform	1.9.2017 31.12.2018	ESA
GSA-Galileo	2018-19	GSA
Posiva GPS	Yearly	Posiva Oy

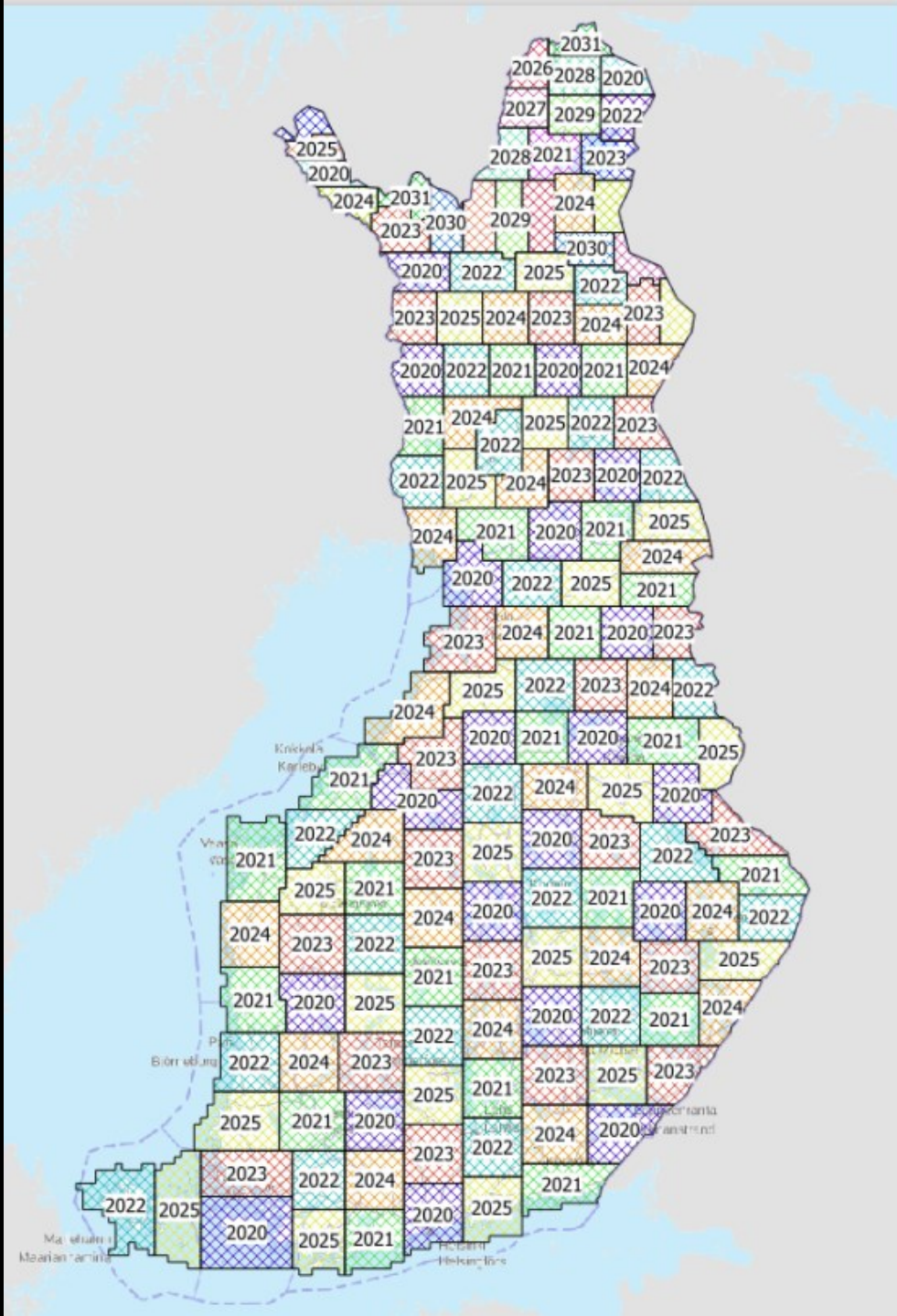
Metsähovi geodetic research station

- Official opening of the station
9/2022



National Laser Scanning programme 2020 →

- 6 year cycle
 - ~55 000km² /year
- Northern Lapland 12v cycle
 - ~3 000km² / year
- Co-operation: Finnish Forest Center, Forststyrelsen, Finnish Food Authority and Finnish Environmental Institute
- Also aerial photogrammetry on the same year



Education of surveyors for NLS

- In next 10 years hundreds of qualified surveyors will retire from the NLS
- 2019 NLS and Lapland UAS made an co-op agreement
- NLS gives oppertunity to study parallel to work
 - NLS chooses students in internal process
 - Individual study plan
 - Students sign into Lapland UAS

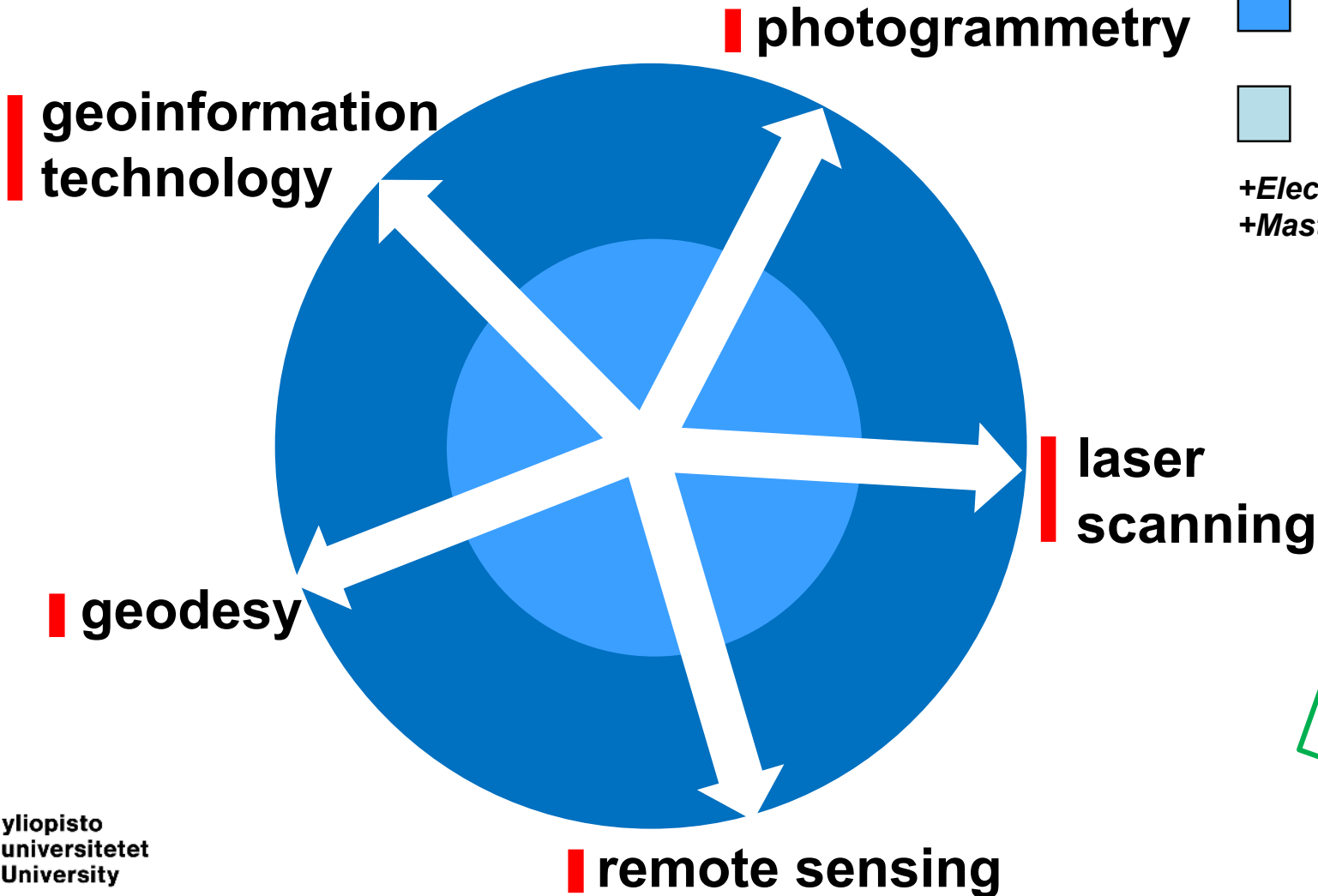
Aalto University

Department of Built Environment

Geoinformatics group



Master's programme in Geoinformatics



- Common courses 30 cr
- Advanced studies 30 cr
- +Elective studies 30 cr
- +Master's Thesis 30 cr

Provides a strong foundation to all aspects of geoinformatics, and possibilities to deepen knowledge in one or more subjects.

Geoinformatics group

Topics covered by the group:

Remote sensing (Miina Rautiainen)

Laser scanning and photogrammetry (Matti Vaaja, Petri Rönholm)

Geoinformation technology (Henrikki Tenkanen, Jussi Nikander)

Geodesy and positioning (Maaria Nordman, Mirjam Bilker-Koivula)

In charge of the Geoinformatics Master's programme (25 new students/year) and part of Bachelor's programme in real estate economics and geoinformatics (55 new students/year)

Geodesy group research

Sea level rise, future projections and consequences

Havu Pellikka (post doc)

Troposphere delays and VLBI

Vicky Liu (doctoral researcher)

Indoor/tunnel positioning, started 08/2022

Oskari Iivarinen (doctoral researcher)

Loading and geodetic time series

Fatemeh Khorrami (visiting researcher) + post doc to be hired

Bachelor's programme in Real Estate Economics and Geoinformatics

First students started 29.8.2022

Three study options (180 cr total)

- Geoinformatics
- Real estate economics
- Hybrid

In Geoinformatics, three courses given by us:

- Introduction to geoinformatics
- Acquisition of geospatial data
- Management of environmental data

Advancing together

