

GNSSnet.fi

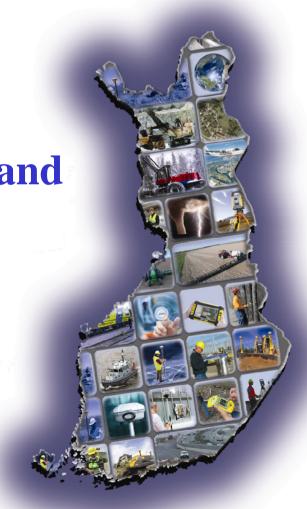
VRS GNSS Network in Finland

Seppo Tötterström, M.Sc. (Eng.) Geotrim Oy

Hakamäenkuja 1, 01510 Vantaa, Finland

www.geotrim.fi, phone. +358 207510600







Geotrim Ltd: 9 main product segments





Finland

Some Facts

- 5.3 million inhabitants total
- -> 1 million live in Helsinki metropolitan area
- < 0.1 million people live in Lapland, to the North from Arctic Circle
- 338 144 km2 area
- 0.2 million reindeers live in Lapland











VRS Networking in Finland, GNSSnet.fi

- owned by Geotrim Ltd
- Trimble VRS Network software
- started July 2000, nation wide since May 2005
- more than 9 years of continuous operation and experience
- 88 + 4 GNSS stations now
- Control center in Vantaa near Helsinki
- 24 / 7 service











Co-operation

National Land Survey of Finland

- main user of GNSSnet.fi

Finnish Geodetic Institute (FGI),

- computes/control coordinates for Network stations (EUREF-FIN reference frame)

TeliaSonera

- data communications

National Land Survey of Sweden

- ref. stations data on the border of Sweden/Finland



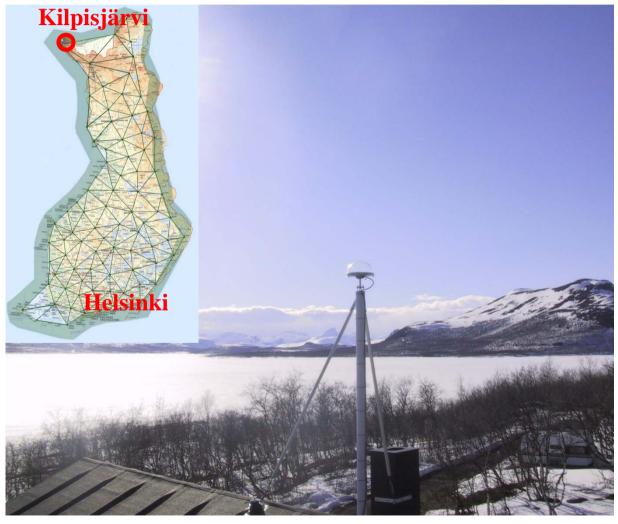




GNSSnet.fi station Kilpisjärvi



GNSSnet.fi receivers:
Trimble NetR5 GNSS 100%



Trimble Zephyr Geodetic 2/radome antenna



New GNSSnet.fi control center 2008

New server systems

New hardwares

New/updated softwares

New/updated communications

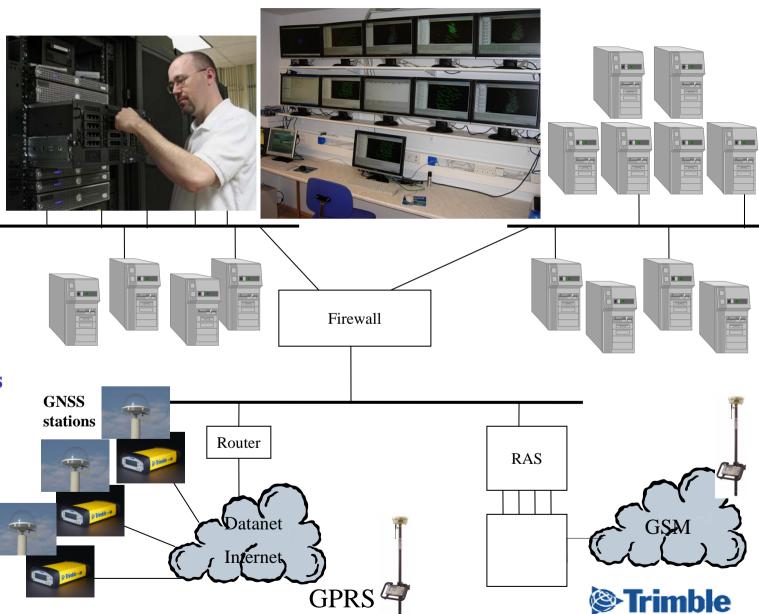
New backups

New/updated services for users

etc.





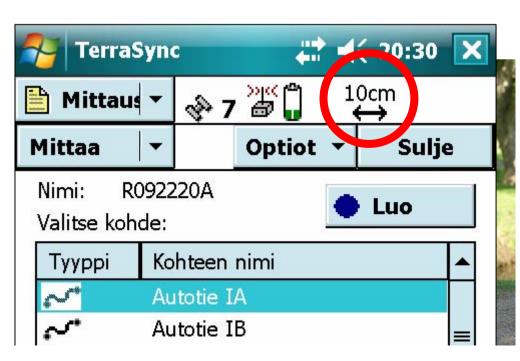




New VRS H-Star –service for GIS users

New horizontally and vertically accuracy level (10cm...dm) for GIS

by GPS/GNSS GIS receivers like Trimble GeoXH 2008 series, ProXRT









GNSSnet.fi services

GPS and GNSS (GPS/Glonass) SERVICES (24/7):

VRS RTK GPS - gprs or gsm

VRS RTK GPS/Glonass - gprs

VRS H-Star GPS - gprs VRS H-Star GPS/Glonass - gprs

VRS DGPS - gprs

postprocessing data (1 sec ...): single station/VRS data, web server





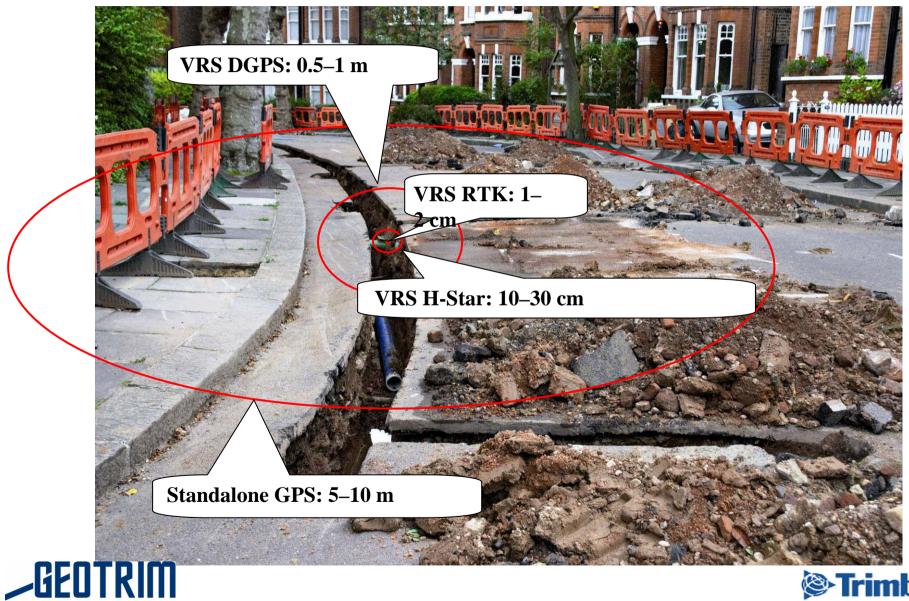






Real time applications

- Tailored tools for different needs







GNSSnet.fi users

National Land Survey Municipality organisations, cities

Government organisations Power utility companies

Forest organisations Telecommunication companies

Surveying, construction, road, railway and marine companies

Agriculture, Farmers

Geodetic/ Geological/ Meteorological institutes, Universities, schools etc.

Totally

300+ user organizations

850+ users







Typical conditions for GNSS field surveys in Finland – FOREST !!!





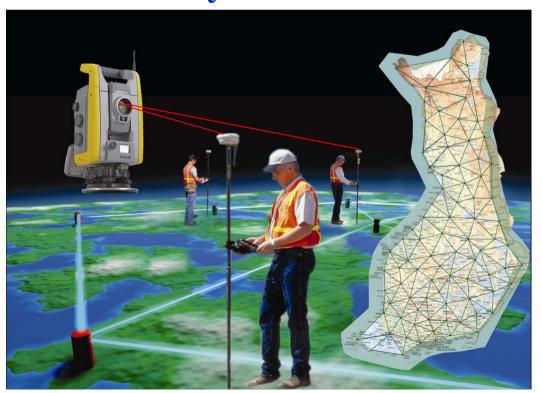




Typical VRS application in Finland

Integrated Surveying (IS)

Robotic tachymeter / VRS GNSS surveys





Trimble



GNSS postprocessing surveys in **GNSS**net.fi

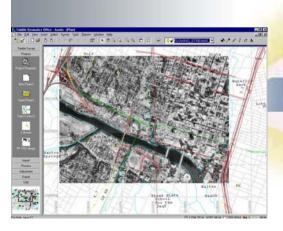


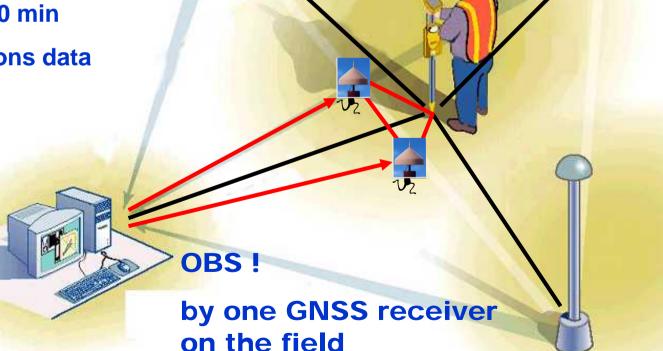
Kinematic/ DGPS surveys:

- single stations / VRS data
- H-star processing (Trimble)

Static/faststatic surveys

- period 10-60 min
- single stations data
- VRS data



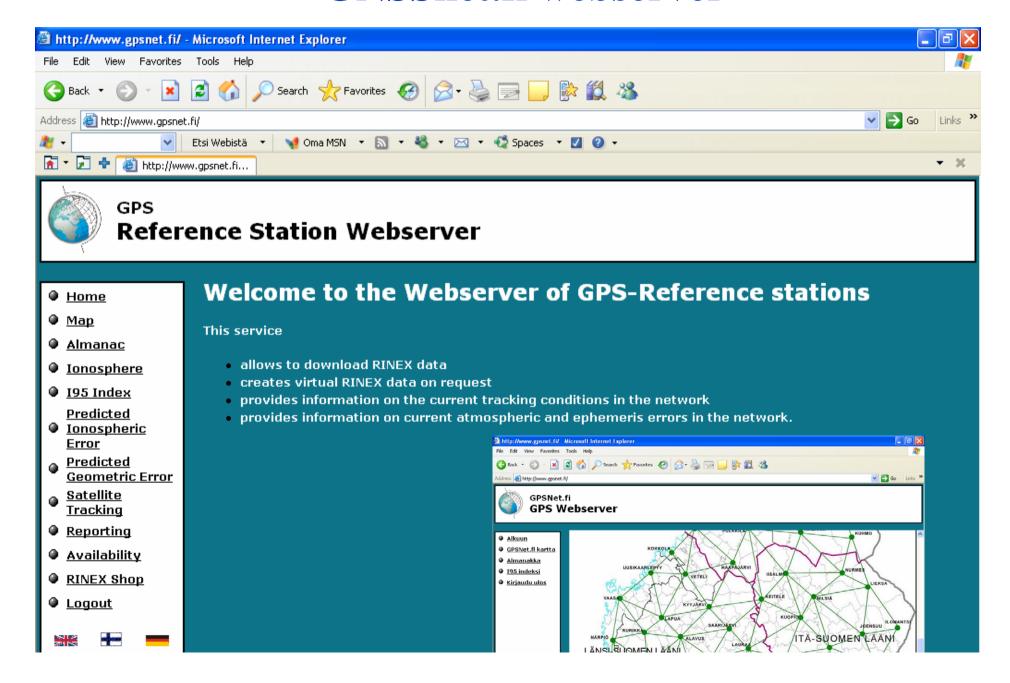


very cost effective

method (100-400%)



GNSSnet.fi webserver





VRS applications

excavator guidance in open mining









VRS applications - dozer guidance











VRS applications

Railway – Track control













VRS applications - new user segments

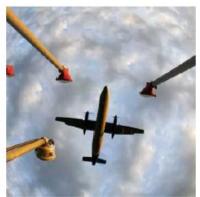














All applications

RTK,

H-Star

DGPS,

Postprocessing

Integrated Surveying

Machine control

Aerial surveys/scanning

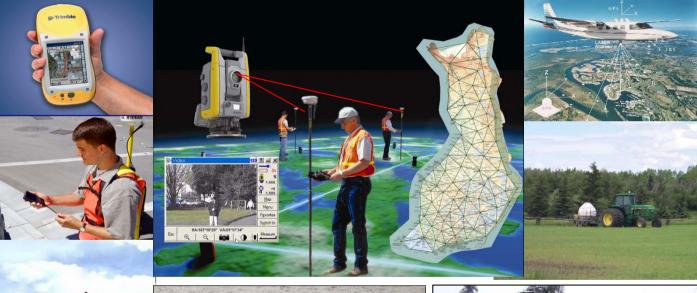
Monitoring

Ionosphere research

Weather forecast













VRS user day

- yearly
- 300+ participants
- meet and discuss with other users
- give the newest information from \boldsymbol{VRS} and applications











In the future



New satellite signals GPS L5, Glonass?

New satellite systems Galileo, Compass?

Next maximum of ionosphere activity











VRS is the best solution for every surveys in all conditions

