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Guidelines of Integrated Spatial Reference

• Nationwide uniform homogeneous network of control stations, consisting on:
  • Geodetic Fundamental Network (ETRS89/DREF91)
    - objective: realization of 3D spatial reference and integration of spatial reference, physical height (1.O.) and gravity (1.O)
    - max. distance of the stations: 30 km
    - maintenance of topicality by permanent or periodical control survey
  • Leveling network 1. O. (DHHN92, DHHN2006-2011)
  • Gravity network 1. O. (DSGN94, DHSN96)
  • Network of RTK Reference Stations (Satellite Positioning Service SAPOS® /DREF91)
• if necessary: Densification of the control stations by the Federal States
DHNN 2006-2011 - Modernization of the 1. Order leveling network

Leveling network combined with GNSS and Absolute Gravity

- Measurements between 2006-2011
- 21,000 km leveling planned
- March 2008: 7,600 km have already been measured (36%)
- 250 GNSS stations
- 100 absolute gravity stations
DHHN – Height network combined with gravity and geometry

- 250 GNSS stations
  - Observation in May/June 2008
  - 34 surveying crews
  - 18 sessions
  - 2 X 24 h observation
  - 2 receiver types (17 LEICA, 17 TRIMBLE)
  - individual robot controlled calibration of all antennas+near field
  - uniform technical equipment
  - aim: precision position < 2 mm, height < 5 mm
  - 2 analysis centers (different software)
  - GNSS stations will be part of the Geodetic Fundamental Network

- 100 Absolute Gravity stations
  - Observation planned for 2008/2009
• International VLBI Service for Geodesy and Astrometry (IVS)
• Replacement of old 20m-radiotelescope by a modern twin-telescope - planning is completed
• International Laser Ranging Service (ILRS) – observing of distances to satellites 365 days a year
• New laser ranging system is established – observation nearly automatically
• Optimizing of the previous system for distance measurements to the moon and high flying GNSS satellites