



# Global Navigation Satellite Systems in Finland

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Systems

# Time and location information systems based on satellite navigation systems are increasingly important

- Finnish space strategy
- National space legislation
- Finland's space administration
- Satellite navigation authorities in Finland
- Finnish competence and education
- Finnish space policy



# Finnish space strategy

- **The objective of the Finnish space strategy is to make Finland the most attractive and agile space business environment by 2025, benefitting all companies operating in Finland.**
- Finland published an action programme for developing satellite navigation in Finland on 16 November 2021.
- The programme's objective is to ensure the efficient utilisation of satellite navigation systems in Finland in the coming years.

# The act on space activities

- Entered into force on 23 January 2018.
- The act promotes competitiveness and growth of and a safe and secure operating environment for space industry.
- The act applies to space activities carried on within the territory of the State of Finland or on board a vessel or aircraft registered in Finland.
- There is a particular focus on ensuring the operator's technical expertise and financial capacity, the safety of the activities and compatibility with Finland's international obligations and Finland's foreign policy interests.

# The act on earth stations and certain radars

- Entered into force on 1 February 2023
- The objective of the act is to create a predictable and certain operating environment that takes national security interests into account for operators in the rapidly developing space sector in order to allow for the establishment and operation of receiving earth stations for satellites.
- Its objective is to improve the security of networks and services in the digital society.

# Finland's space administration

- Finland has decentralised space administration with multiple responsible ministries.
- Finnish Space Committee
  - strengthening of the national strategy for Finland's space activities
  - monitoring of the implementation of the strategy
  - setting guidelines and priorities for Finland's international influencing.
- Working groups for intersectoral preparation: the Navigation; Earth Observation; Security; Space Situational Awareness; Science and Research; and Business Working Groups.



# Satellite navigation authorities in Finland

- The Finnish Transport and Communications Agency (Traficom) operates as the responsible authority under the steering of the Ministry of Transport and Communications in matters relating to satellite navigation.

The key duties of the responsible authority are:

- coordinating EU GNSS development at the national level and representing Finland in programme working groups
- promoting information security and societal preparedness relating to GNSSs
- raising awareness of GNSSs in Finnish society
- and facilitating the creation of business opportunities for Finnish industry and commerce.



# Satellite navigation authorities in Finland

- The National Land Survey of Finland (NLS), operating under the Ministry of Agriculture and Forestry, develops and maintains the FINPOS service providing supplementary measurement data and the network of FinnRef reference stations.

The NLS also maintains the Ranging and Integrity Monitoring Stations (RIMS) of the EGNOS system.





# Finnish competence and education

- Finland has a large group of enterprises and research institutes that:
  - use GNSS in their products and services;
  - manufacture devices that contain a GNSS receiver;
  - manufacture and develop GNSS receivers and chipsets.
- Education in satellite positioning is available in the form of individual courses in Finnish universities.
- In addition to universities, GNSS-related research is conducted in particular by the Finnish Geospatial Research Institute (FGI) of the National Land Survey (NLS).



# GNSS usage in varying space weather conditions

- The concept “Space Weather” is used for solar activity that drives rapid variations in the Near-Earth space and in the upper parts of the atmosphere.
- Space weather storms are frequent particularly at high latitudes where they are accompanied by beautiful auroras.
- GNSS has a dual role:
  - It is among the most important critical infrastructures whose performance during strong activity should be monitored
  - On the other hand, with their ubiquitous appearance the GNSS networks offer a useful asset for monitoring space weather evolution in global scales

*More information: Space weather sessions of this meeting on Thursday Oct 26*



# Finnish space policy

- The themes of sustainable use of outer space and sustainable growth of the space sector, in particular the NewSpace economy, are key priorities of the Finnish space policy.
- There are currently 24 satellites registered in our national registry of space objects
- Finland underlines the importance of space activities and space-based services, including the role of space solutions in combatting climate change.
- Altogether, space capabilities are critical to the normal functioning of the entire society and important for realizing the sustainable development goals.



# Finnish space policy

- Finland is an Arctic country and one of the eight Member States in the Arctic Council.
- Sustainable growth of the Arctic area can be ensured through active development and use of space infrastructure.
- Finland wish to actively engage with all actors in assuring that space solutions keep helping us tackle global challenges and that the potential of space is availed in a sustainable manner.



# Thank you

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