

# User need for GNSS at high latitudes

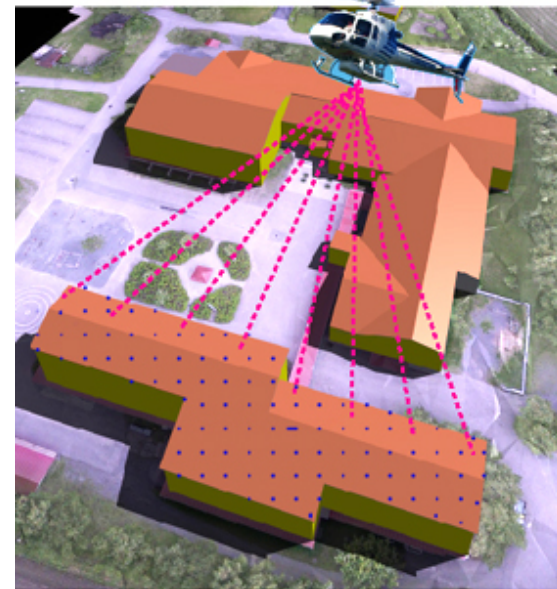
Hannu Koivula

# Key points for Arctic Strategy

- Location information plays a key role in most areas of current and future business opportunities
- Satellite navigation is the only option for providing location information
- Many applications require better accuracy, higher availability and more reliable position than the average GNSS user.
  - A-GNSS, SBAS, DGNSS
- Position information can be a matter of life and death.

# Open geographic information boosts the competitiveness of location based services

- **Satellite positioning** will enable intelligent transportation systems and create export of equipment and services.
- **Open geospatial data** released by government agencies and data collected by Earth Observation satellites will create new applications and boost the competitiveness of services in positioning, remote sensing and geographic information.



# Multi GNSS solutions



- Needed for increased reliability, accuracy and availability
  - VDOP high in the Arctic Region
  - Satellite constellation unique
- Support research into multi GNSS solutions
  - Algorithms and receiver hardware
- Interoperability work



# Jamming and interference

- Increasing global problem
  - Arctic Region more dependent on satellite navigation
- Support receiver research
  - Detection and mitigation
- Alternative positioning methods (Digital TV, INS)



# EGNOS

- EGNOS issues still remains in arctic region
- Integrity information for arctic regions