ECAS (Emerging Capabilities, Application, & Sectors)

Name	Role
Frank van Diggelen	Chair
Bryan Chan	Vice-chair
Scott Burgett	Vice-chair
Gary Thompson	Member
Logan Scott	Member
Matthew Higgins	Member
Mike Hamel	Member
Renato Filjar	Member
Russell Shields	Member
Thomas Powell	Member
Tim Murphy	Member
Todd Walter	Member
Vahid Madani	Member

Subcommittee meeting, Dec 3, 2024

Report, v1.0

ECAS (Emerging Capabilities, Application, & Sectors)

1) HARS (High Accuracy & Robustness Service)
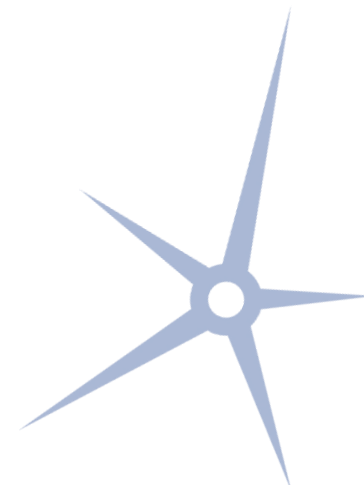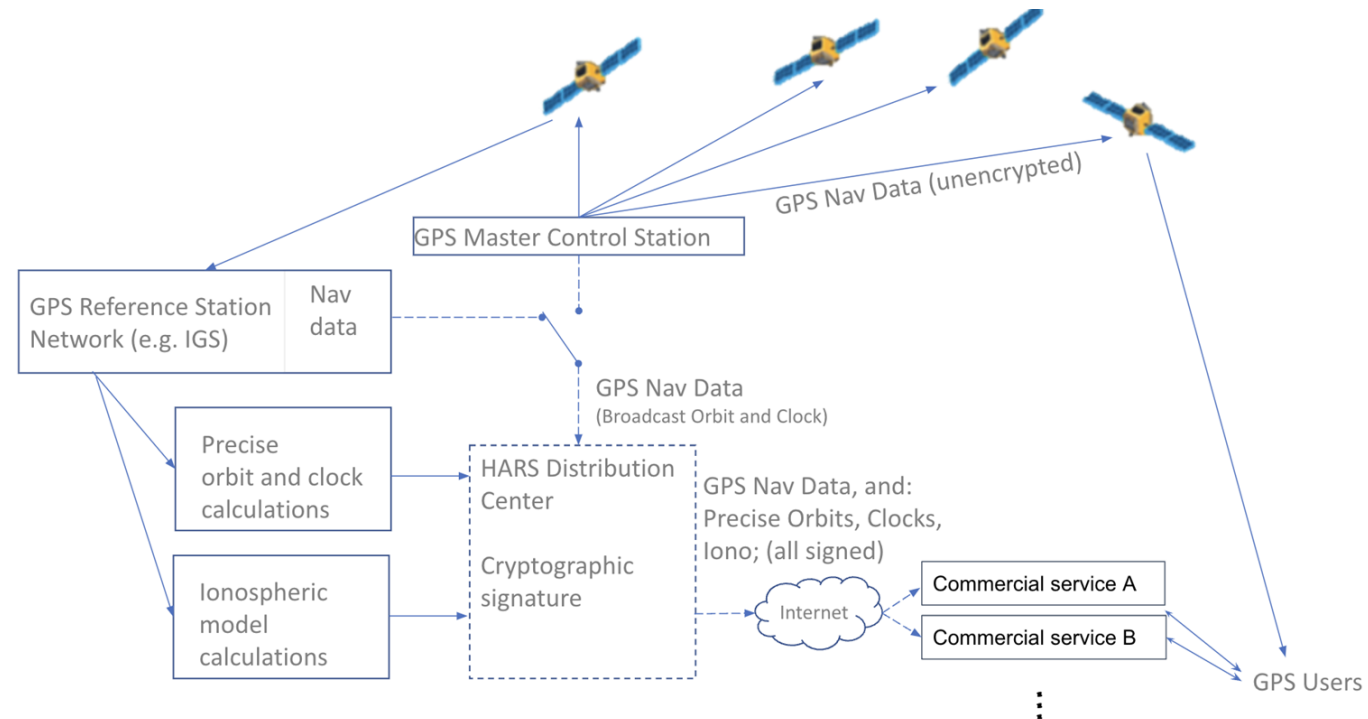2) LEO PNT
3) AI in PNT
4) Other business

HARS

- **Orbit and clock corrections, and**
- **Ionosphere corrections, and**
- **Data symbols,**
- **for GPS and Galileo satellites;**
- **Distributed over the internet.**

Several meetings with NOAA NGS (National Geodetic Survey)

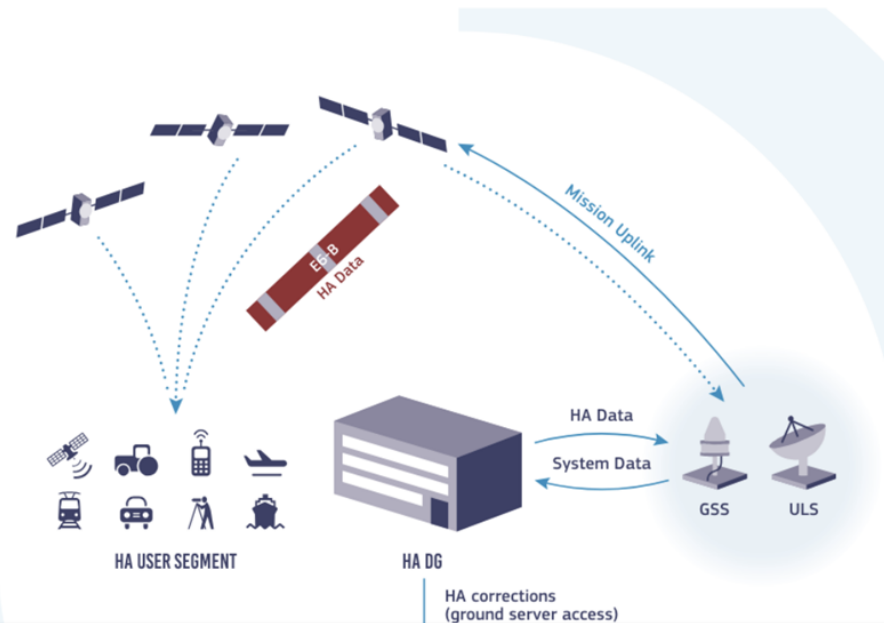June, July, September (in person @ ION GNSS+, Baltimore).

NGS has the capability, and the desire, to implement the HARS system as envisioned in our white paper.

NGS presentation, Day 1 (Wed) of PNTAB Public Meeting

NOAA's GPS HARS proposal

NGS Presentation for the PNT Advisory Board

10:30-11:00 (30 min)	National Oceanic and Atmospheric Administration (NOAA) Update: *Implementation of a GDGPS-based GPS HARS* (*Opening Remarks by C. Bonniksen*)	Maj Christine Bonniksen (USAF, ret.), *Deputy Director for Flight Projects, NASA Langley Research Center* Dr. Shachak Pe'eri, *Acting Director, National Geodetic Survey, National Ocean Service, NOAA*

LEO PNT

LEO PNT Efforts Around the Globe

esa

- FutureNav Program: awarded 2 contracts of €78.4 million each (GMV, Thales)
- In-orbit demonstrations in 2027
- UHF/L/S/C band frequencies
- Aug '24: FutureNAV 2 RFI released

- USSF/Space Development Agency
- LEO constellation for communications – 300 to 500 satellites
- Nov '24: RFP released, includes distribution of PNT solutions to end users
- DISA PLEO: DOD contract vehicle to buy commercial satcom and now includes satnav. Oct '24: Budget expanded from $900 M to $13 B

JAXA

- Oct '24: 6-month LEO PNT Phase I concept study awarded to ArkEdge Space

OneWeb

- Sept '24: User equipment is enabled with resilient PNT via Iridium LEO satellites "and other alternate sources"

xona space systems

- May '24: Closed $19 M Series A round to launch next satellite in June '25
- Nov '24: Space Force R-GPS awardee, leveraging flexible LEO PNT payload for MEO

FrontierSI publishing LEO PNT operator survey by end of year [sponsored by Australian Space Agency]

AI in PNT

AI in PNT

Overview provided by Prof. Renato Filjar

- Educating sub-committee members on basic concepts of SL/ML/AI:
  - Statistical Learning
  - Machine Learning
  - Artificial Intelligence

Beginning of ongoing briefings for subcommittee members.

Other business

Quantum PNT

Speaker for subcommittee speaker at next PNTAB meeting

- Possibly from Boeing
- And/or other

End