



PROGRAMME OF
THE EUROPEAN UNION



EGNOS

#EUSpace

Galileo Programme Status

Radio Navigation Workshop for NAM and SAM Regions

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Galileo Status



- Galileo **Space Segment** Status
- Galileo **Ground Segment** Status
- Galileo **Services** Status
 - Galileo **Open Service**
 - Galileo **High Accuracy Service**
 - Galileo **Emergency Warning Satellite Service**
 - Galileo **Authentication Services**
- **European Competitiveness Fund (ECF)**





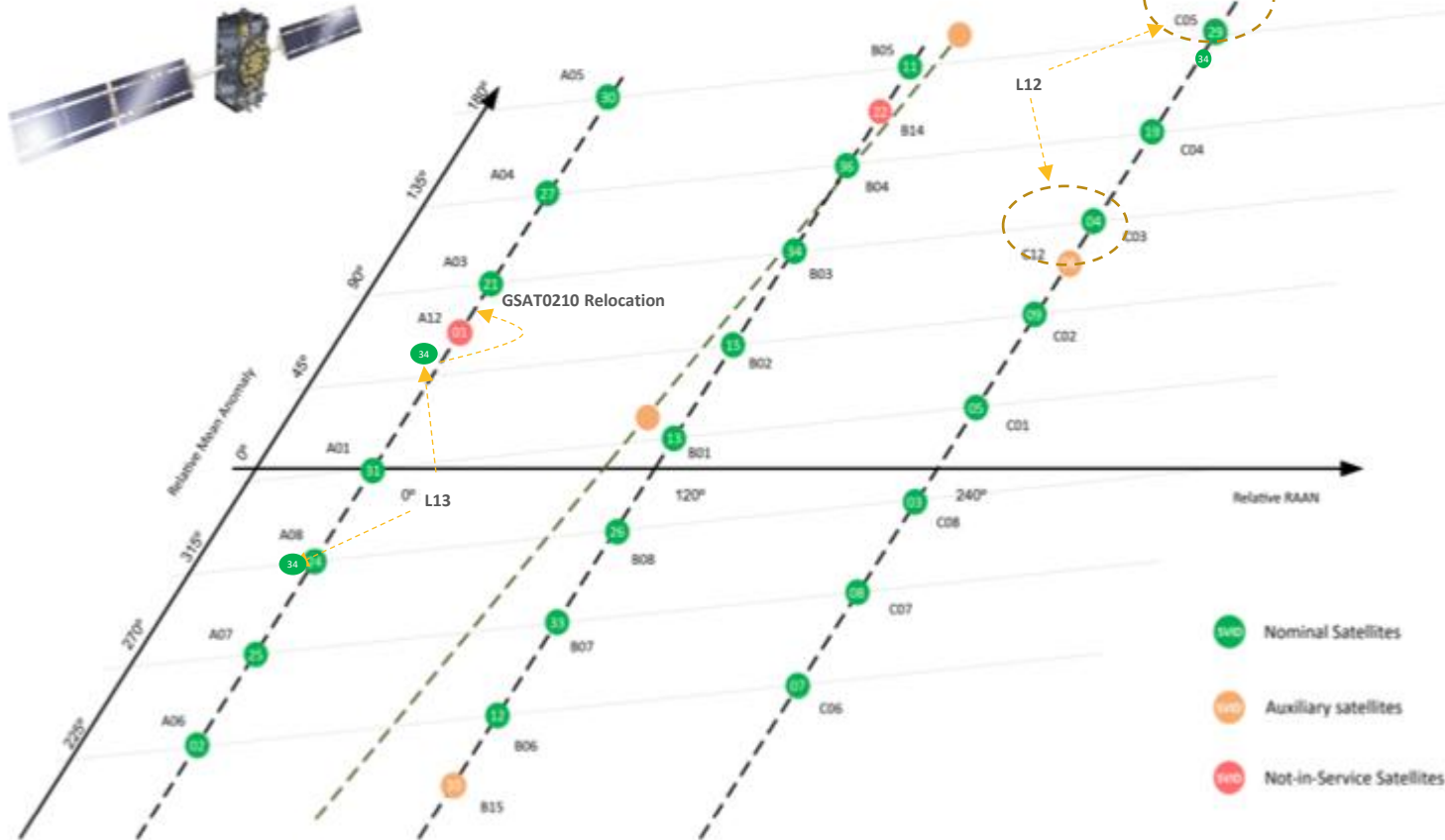
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Galileo Space Segment Status



Two successful launches (4 satellites) in 2024

Next launch (L14) planned end of 2025



Plane A	Plane B	Plane C
✓ L13	✓ L11	✓ L12

Current Status

Space Segment: 32 Satellites in Orbit

- **27** in service for **Navigation**
(3 from spare slots)
- **28** in service for **Search and Rescue**
(4 from spare slots)
- **2 Auxiliary** not in Service (L3)
- **2 Inactive Spares** in spare slot
- **1 Decommissioned**

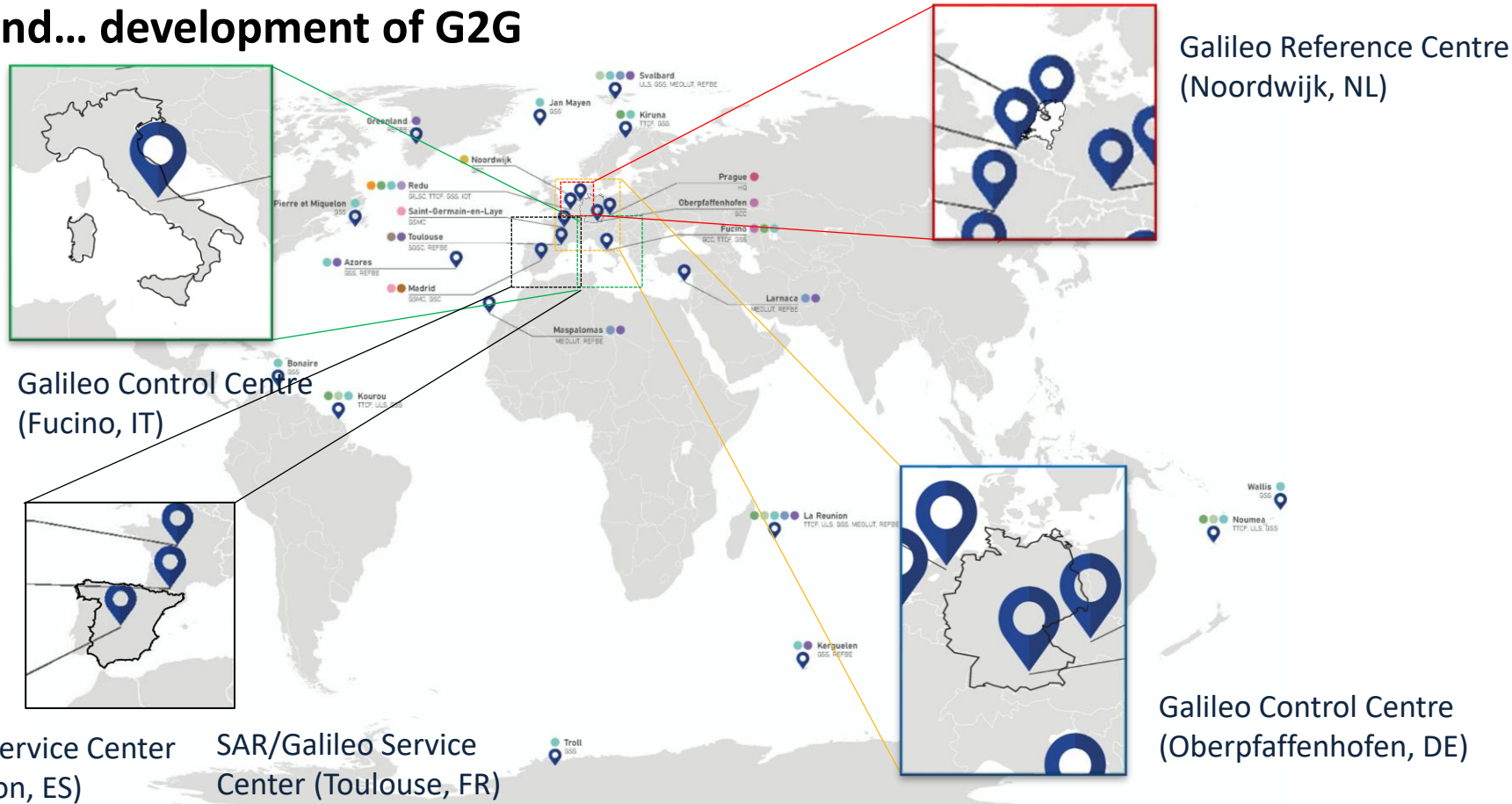
This Space Segment configuration enables Open Service Final Operational Capability



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Galileo Ground Segment Status

- Major Galileo System Migration (SB2.0) in Jan-Apr 2024 with PRS SIS V2 broadcast
- New Station in Bonaire (Caribbean), Tracking Station (Fucino) under deployment
- Extensions of Galileo Control Centers in Italy and Germany
- Cross redundancy of Galileo Service Center and SAR Service Center
- Selection of New Site in Antarctica
- And... development of G2G





Galileo Services Status

Now, Then & Next



Open Service (OS)

- Positioning Navigation & Timing (3 frequencies) + Quasi Pilot (E5)
- Emergency Warning Satellite Service + Timing Service + Space Service Volume



Public Regulated Service (PRS)

- Encrypted, more robust, unlimited & uninterrupted access
- PRS Initial Operational Capability, PRS evolutions



Search and Rescue (SAR)

- Forward link + acknowledgement "return link"
- Remote Beacon Activation + Two Way Communication + Distress Position Sharing



High Accuracy and Authentication

- High Accuracy Service and evolutions
- Authentication services (OSNMA + Signal authentication) + Open Service-Authentication



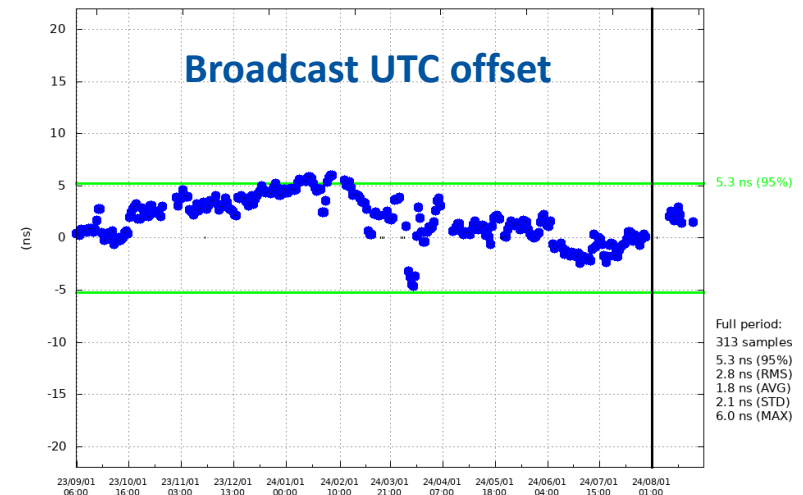
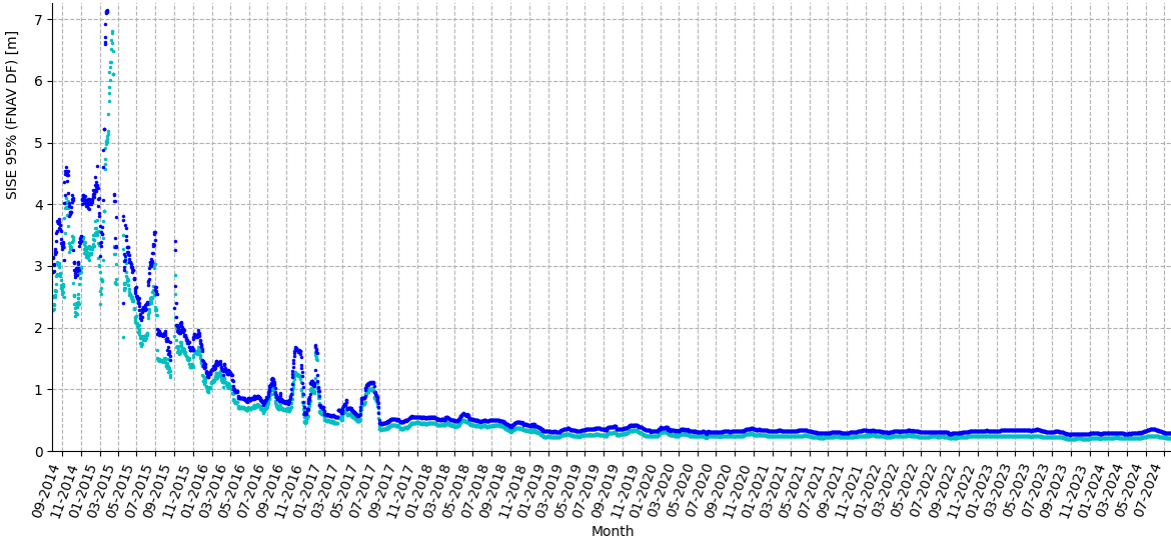
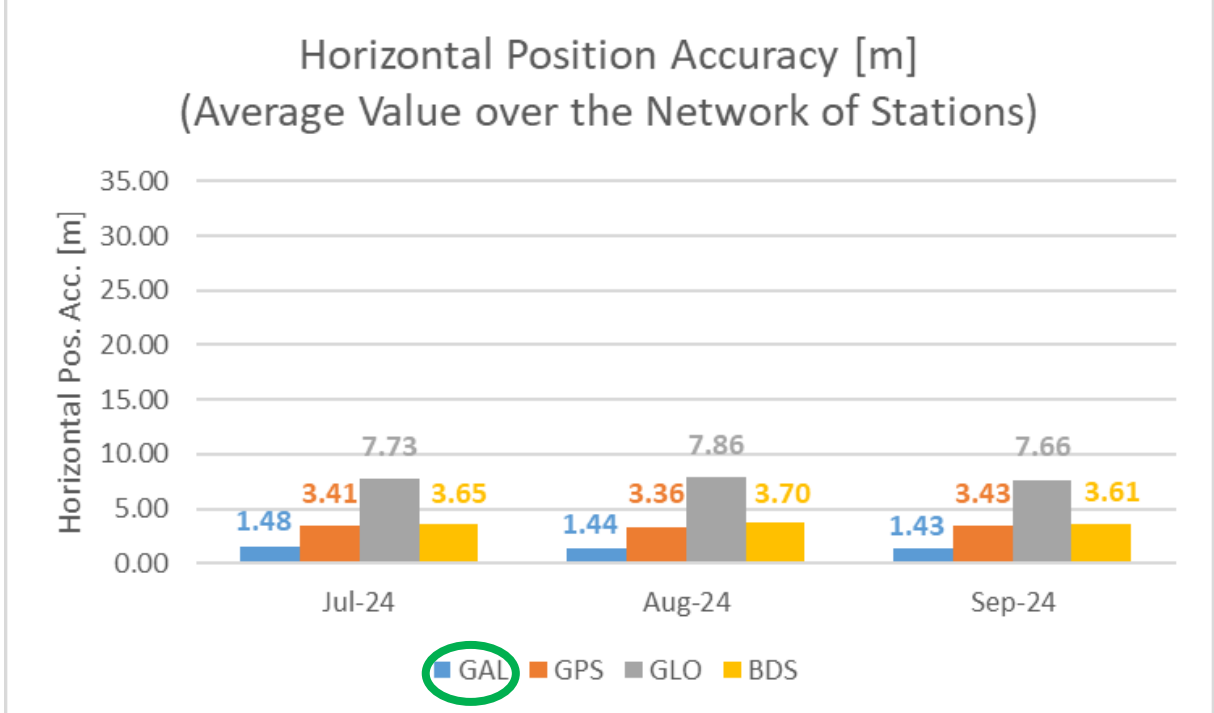
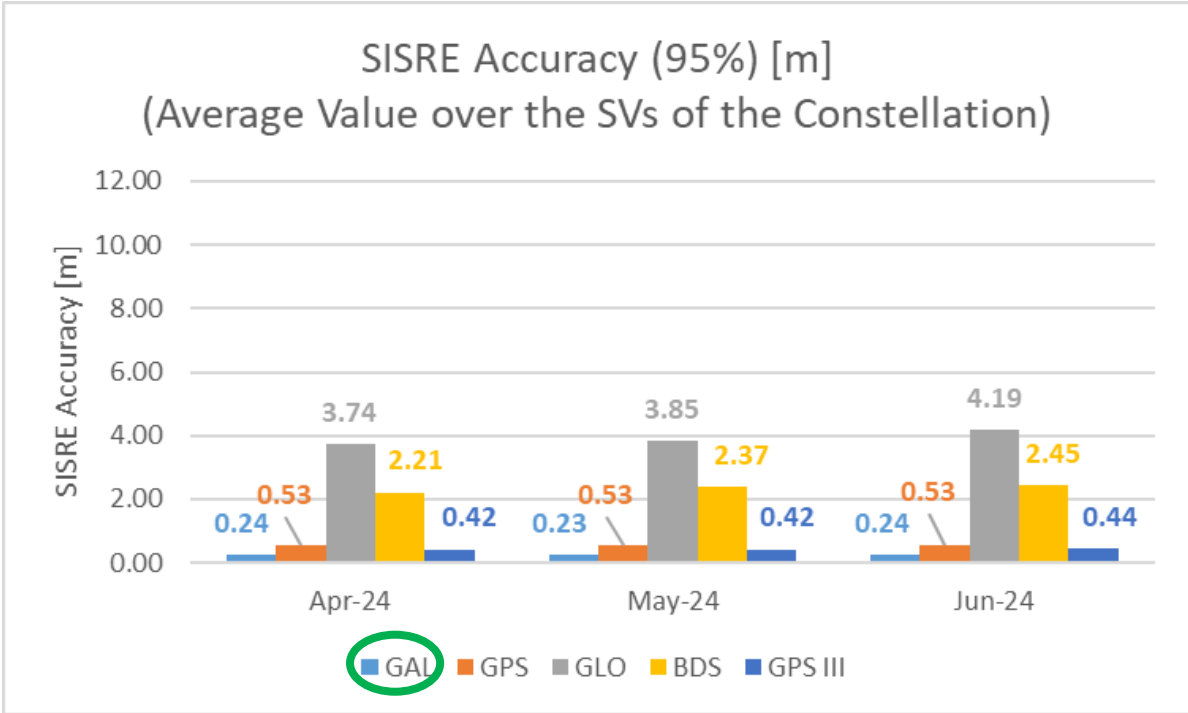
Safety-of-Life (SoL)

- Advanced Receiver Autonomous Monitoring (ARAIM) + evolutions (ISM)
- SBAS Dual Frequency (EGNOS Version 3)





Galileo Open Service Performance





Galileo High Accuracy Service (HAS)

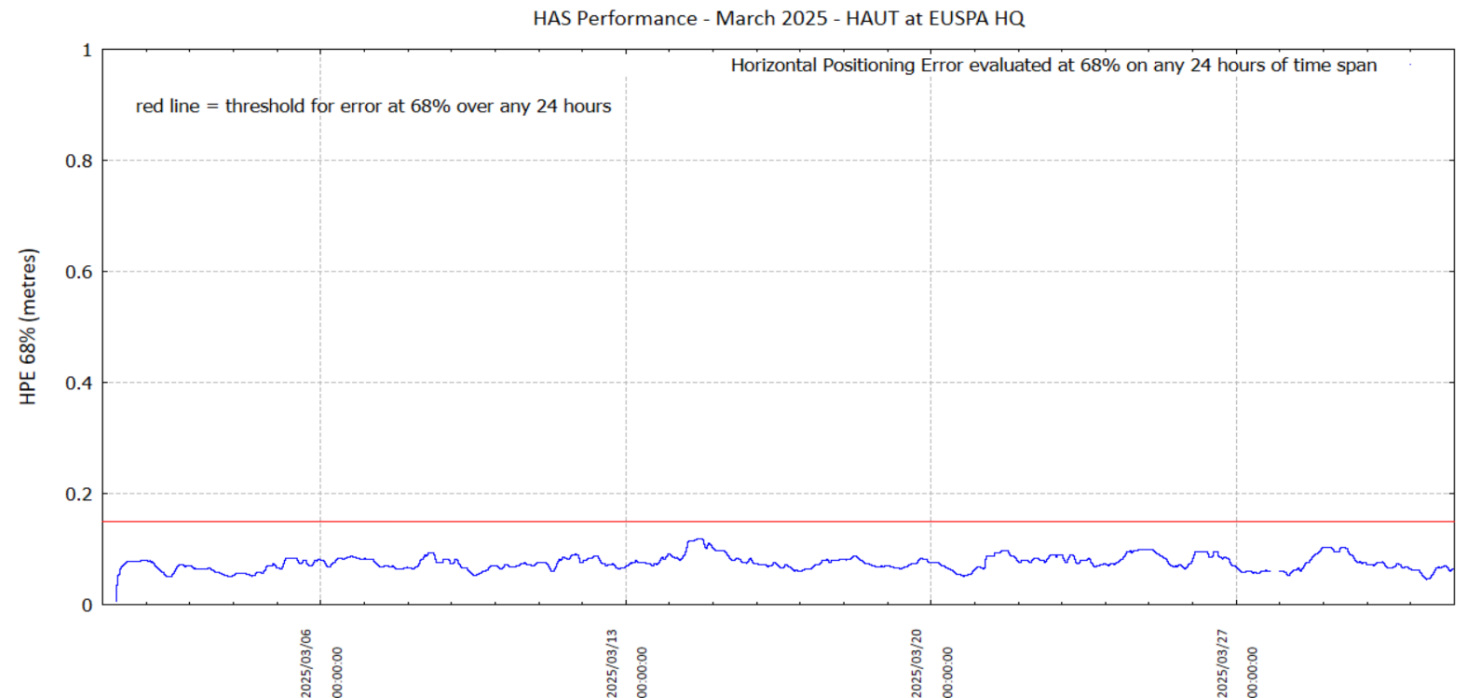


1st GNSS providing free-of-charge, Precise Point Positioning corrections worldwide, increasing the accuracy to decimeter-level

Initial Service went live in Q1 2023. Stable performance with all Performances Levels consistently met

Excellent adoption rate with increasing demand for Internet Distributions: >400 registered Users

[Receivers implementing HAS](#)



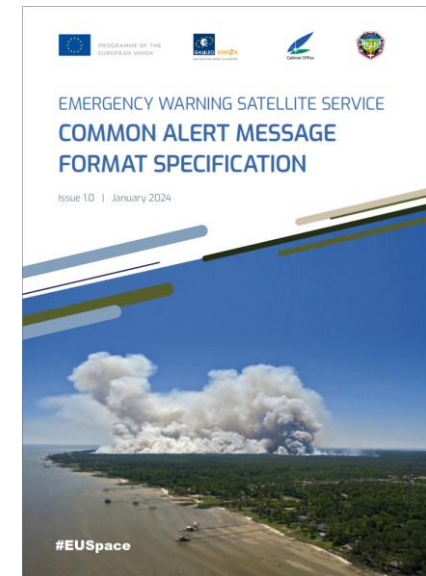
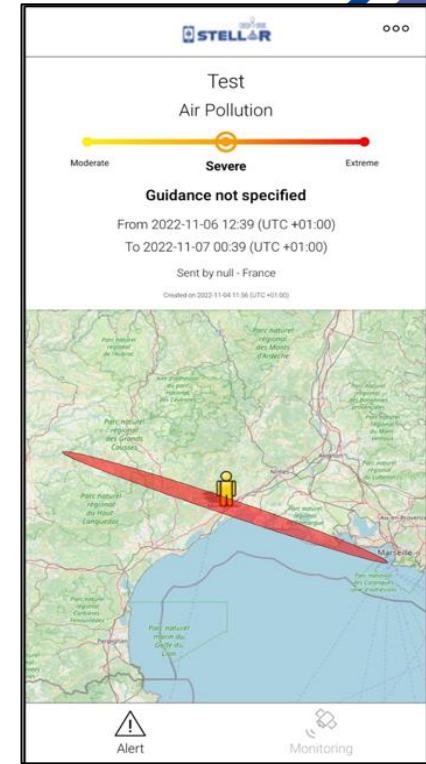


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Galileo EWSS (Emergency Warning Satellite Service)

Description: Dissemination, by National Civil Protection Authorities, of alert messages to population in case of hazards in a given area. Independent of telecommunication terrestrial networks

- **Test Phase** with Member States currently on-going
- **Workshop with MS** in April 2025, to prepare declaration of initial service
- **Market adoption activity on-going:**
 - Main market sectors: mobile, automotive, static receivers.
 - Standardisation actions on-going at ETSI
 - Mobile alert app' (Apple+ Android) available in the coming months
- **Initial Services** in 2026





PVT authentication requires:

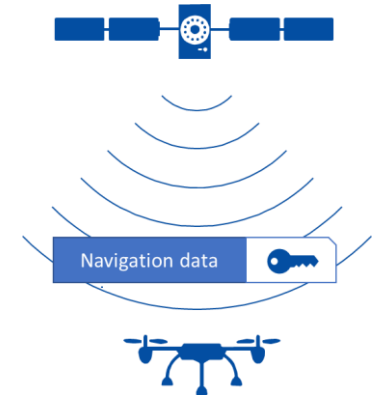
- **Data (i.e., Message) authentication:** Galileo OSNMA E1 (July 2025) also for GPS (2028+), SBAS authentication (2030+)
- **Ranging authentication:** Galileo SAS E6 (2027) and G2G OS-A in E1, E5 (2028-2032)
- **On-board receiver checks:** OSNMA Guidelines, Aviation MOPS ED-259B



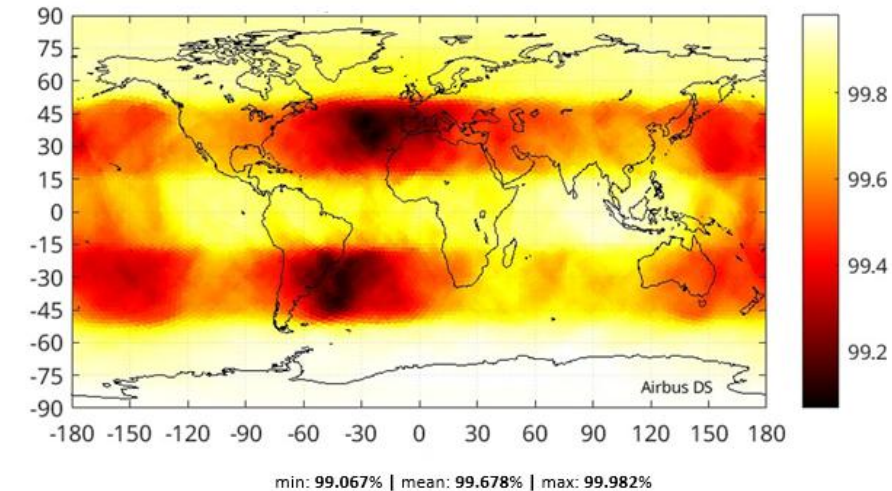
Galileo OSNMA (Open Service Navigation Message Authentication)

Description: Galileo OSNMA provides cryptographic authentication for Galileo navigation message, to protect against spoofing attacks.

- **Initial services declared in July 2025 !**
- **Signal In Space** transmitted as per signal specifications since 2023
- Latest **cryptographic material** published in January 2024
- Several **OSNMA receivers** available in the market
- **Smart Tachograph** in road sector is the first regulated use of OSNMA (all trucks in Europe required to implement OSNMA as of Dec 2025)
- **Adoption by aviation** (ICAO SARPs Jan 2026 – MOPS ED-259B 2027)



Availability of OSNMA for Galileo I/NAV orbit & clock data for 4 sats in view over 30s, Jan 2025





Galileo SAS (Signal Authentication Service)



Description: User PVT authentication service will be possible thanks to:

- * **OSNMA data** authentication
- * **SAS ranging** authentication

SAS: Encrypted E6C pilot tone enabling end-to-end encryption

- **Encryption testing** in 1 satellite in July 2025
- **All constellation encryption** from 2026
- **Initial Service declaration** in 2027





European Competitiveness Fund (ECF)



EC published in July 2025 the [proposal](#) for the **2028 – 2034 EU PNT activities** (Art 59 below)

3. The services provided by the Union's PNT component shall in particular cover:
 - (a) an open service for use by consumers (OS);
 - (b) a high-accuracy service for professional or commercial use (HAS);
 - (c) a high-accuracy service for professional or commercial use (OSNMA);
 - (d) a public regulated service restricted to government-authorized users (PRS);
 - (e) a multi-hazard emergency warning service (EWSS);
 - (f) a timing service (TS);
 - (g) a space navigation service for use by operators of space assets;
 - (h) a global stand-alone search and rescue service, including for governmental users, integrating return communication capabilities to support rescue operation (SAR);
 - (i) a safety of life services for users for whom safety is essential, including civil aviation, maritime, and other transport applications (SoL);
 - (j) a data dissemination service (EDAS);
 - (k) radio-frequency interference monitoring services for different authorised user communities of all space components;
 - (l) a contribution to complementary PNT services, which shall increase the resilience in case of disruptions to the services provided by the PNT component.



Main take-aways



- The **EU PNT** component of the EU Space Programme, which includes Galileo and EGNOS, is **in constant evolution** (infrastructure and services), including EC proposal in the ECF of satellites in Low Earth Orbits (LEO-PNT)
- **Galileo is a panoply of services** (not just Open Service) **answering to user needs**
- **Aviation needs are drivers for Galileo:** Safety of Life, Authentication, SAR (ICAO GADSS)
- **The provision of services resilient to spoofing is also a driver:** Galileo OSNMA and SAS

Exciting years to come for Galileo !!!



Thank you



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