#EUSpace

Linking space to user needs

An introduction to the EU Agency for the Space Programme

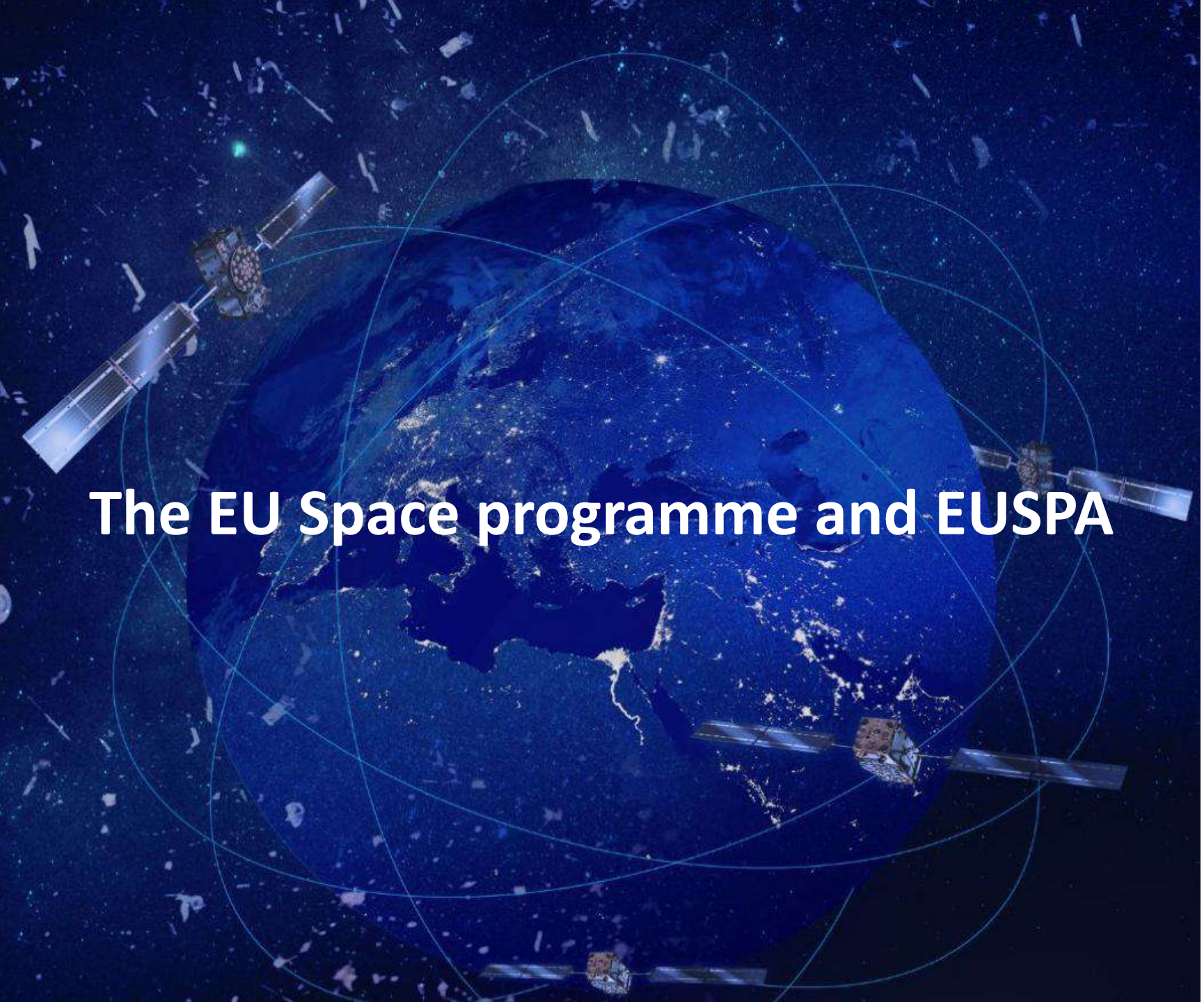
EuroGeographics webinar - September 8, 2026

Vasileios KALOGIROU and Jakub STEINER

EUSPA
European Union Agency for the Space Programme

Agenda for today

1. The EU Space programme and European Union Agency for the Space Programme (EUSPA)
2. Galileo, Europe's Global Satellite Navigation System and Its New Services
3. Benefits of Galileo's New Services to the surveying and mapping community



The EU Space programme and EUSPA

#EUSpace

EU Space Programme

Galileo

Global satellite navigation and positioning system (GNSS)

More than **4 billion Galileo receivers** worldwide

EGNOS

EGNOS "Makes navigation signals more accurate and trustable for Safety-critical applications"

Operational in **480+ airports** & helipads in 26 countries

97% of new tractors with GNSS in Europe equipped with EGNOS

Copernicus

Earth Observation (EO) and monitoring based on satellite & non-space data

Nr. 1 world provider of space data and information (25TB/day)

GOVSATCOM

Secure satellite communications for EU governmental actors

Rapid support over crisis areas

IRIS²

Infrastructure for Resilience, Interconnection & Security by Satellites

Sovereign multi-orbit constellation

Cutting-edge technologies focused on government service

Space Situational Awareness (SSA)

Space Surveillance and Tracking (SST)

Space Weather Events (SWE)

Near-Earth Objects (NEO)

NAVIGATION

EARTH OBSERVATION

COMMUNICATIONS

#EUSpace

The user oriented European Union Agency for the Space Programme

Foster innovation and strengthens autonomy & resilience of the Union and its Member States

Exploitation

- Galileo and EGNOS services provision and 24/7 operations – including management, operation, maintenance, improvement, evolution & protection of infrastructure
- GOVSATCOM Hub and IRIS^2 preparation
- Space Surveillance and Tracking Front Desk

Security

- Security Accreditation
- Security Monitoring Centre operations (GSMC)
- Governmental Service Provision
- Key contributor in the implementation EU Space Strategy for Security and Defence

Utilization

- Market development, communications, user uptake, applications, innovation
- For Galileo, EGNOS, commercial use of Copernicus, GOVSATCOM, SST, and soon IRIS^2

Galileo, Europe‘s GNSS constellation

- First satellites launched in October 2011 => Galileo became operational in 2016
- Second-generation (Galileo G2) satellites are now in production
- Galileo transmits on four frequency bands: E1, E5a, E5b, and E6
- Galileo is owned and controlled by the European Union under civilian governance
- Why was it created?
  - To secure Europe's strategic autonomy in positioning, navigation and timing
  - To offer a highly accurate, freely accessible service under civilian control

Galileo's New Services

#EUSpace

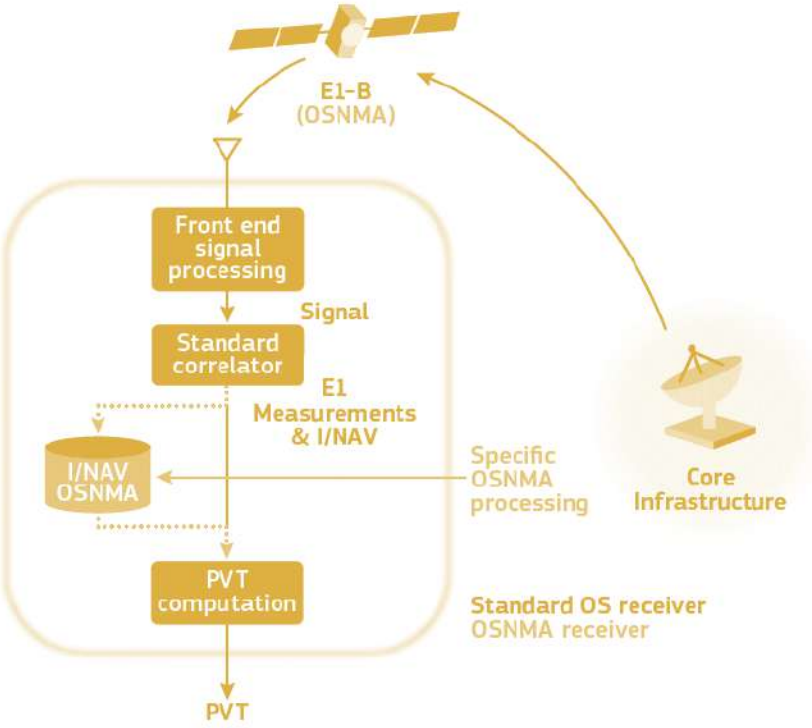
Galileo Services

Galileo Services are provided to worldwide users **since December 2016**

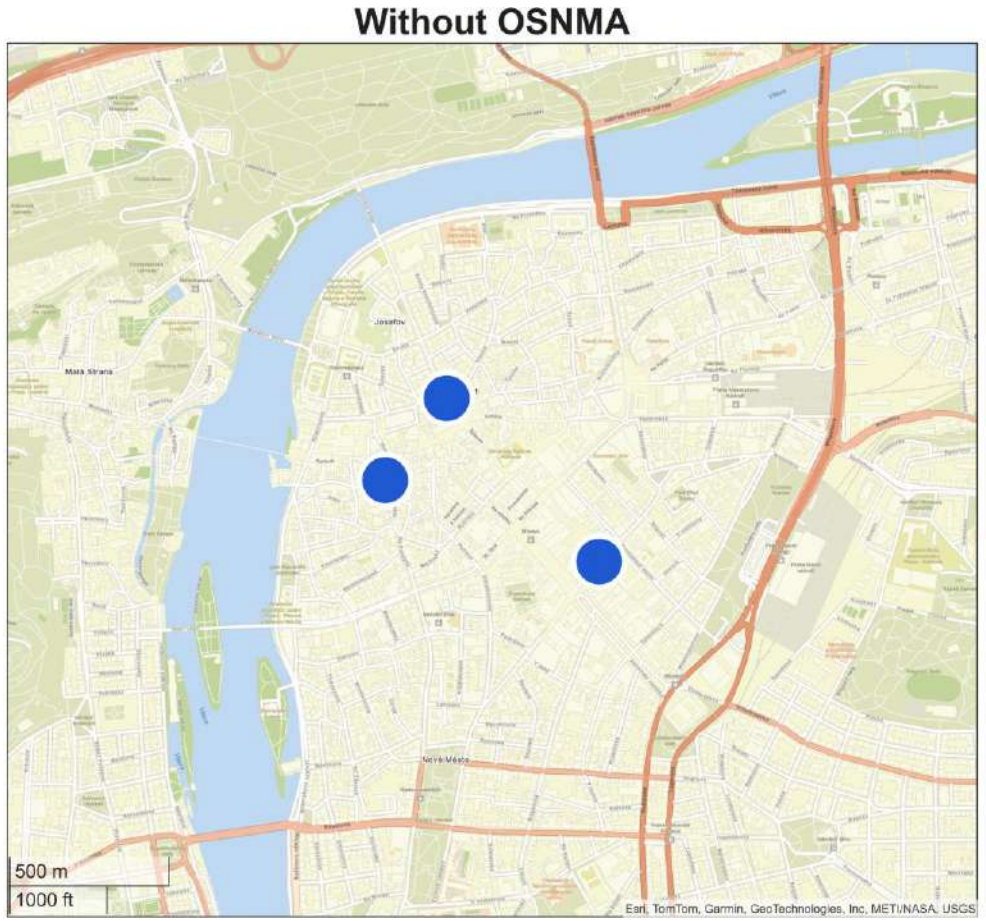
Open Service (OS)	**High Accuracy Service (HAS)**	**Search and Rescue Service (SAR)**	**Public Regulated Service (PRS) –** Governmental Service	Under preparation **Emergency Warning Satellite Service (EWSS)**	Under preparation **Signal Authentication Service (SAS)**
Freely accessible service for positioning and timing Under Initial Operational Capability Phase: Navigation Message Authentication **(OSNMA)**	Delivers high accuracy services, freely accessible	Locates people in distress and acknowledges that the distress signal has been received	Encrypted service designed for greater robustness and higher availability – secure satellite communication	Supports and complements the civil protection services and the resilience of its infrastructures.	Delivers authentication services for commercial applications

Galileo OSNMA – Open Service Navigation Message Authentication

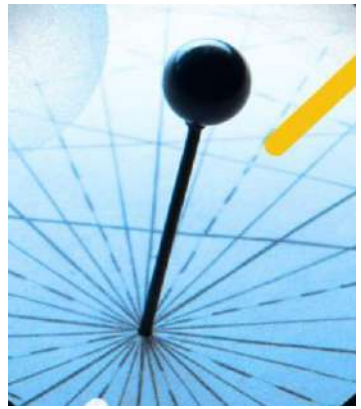
- Authenticated of the navigation data receiver from Galileo satellites
- Providing resilience against (most types of) spoofing attacks
- More secure and reliable positioning and timing information
- Stronger evidential value for legal use and court-admissible evidence
- Independent verification of the measurement
- More information:
  - OSNMA Reference Documents
  - Receiver guidelines



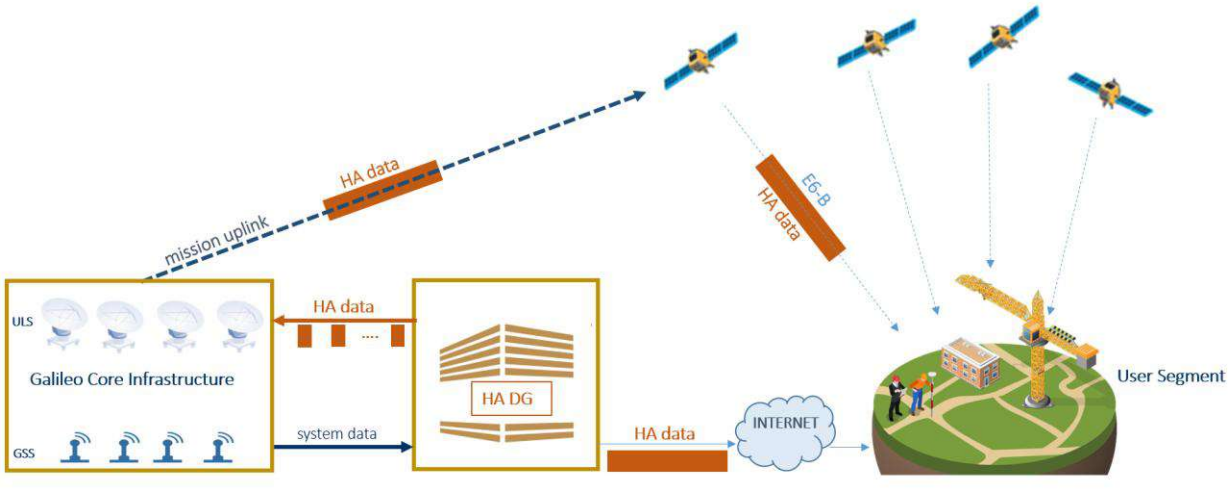
Galileo Differentiators – OSNMA



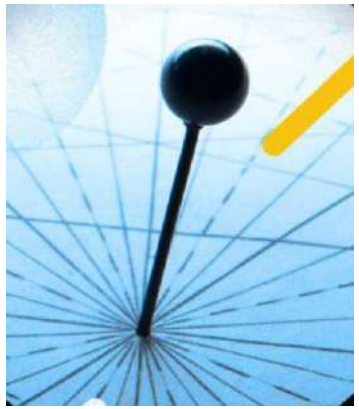
Galileo HAS – High Accuracy Service



- Free, global correction service enabling Precise Point Positioning (PPP)
- No subscription and no dedicated ground infrastructure required
- Augments both Galileo and GPS
- Corrections are distributed through the Galileo E6-B signal and the internet



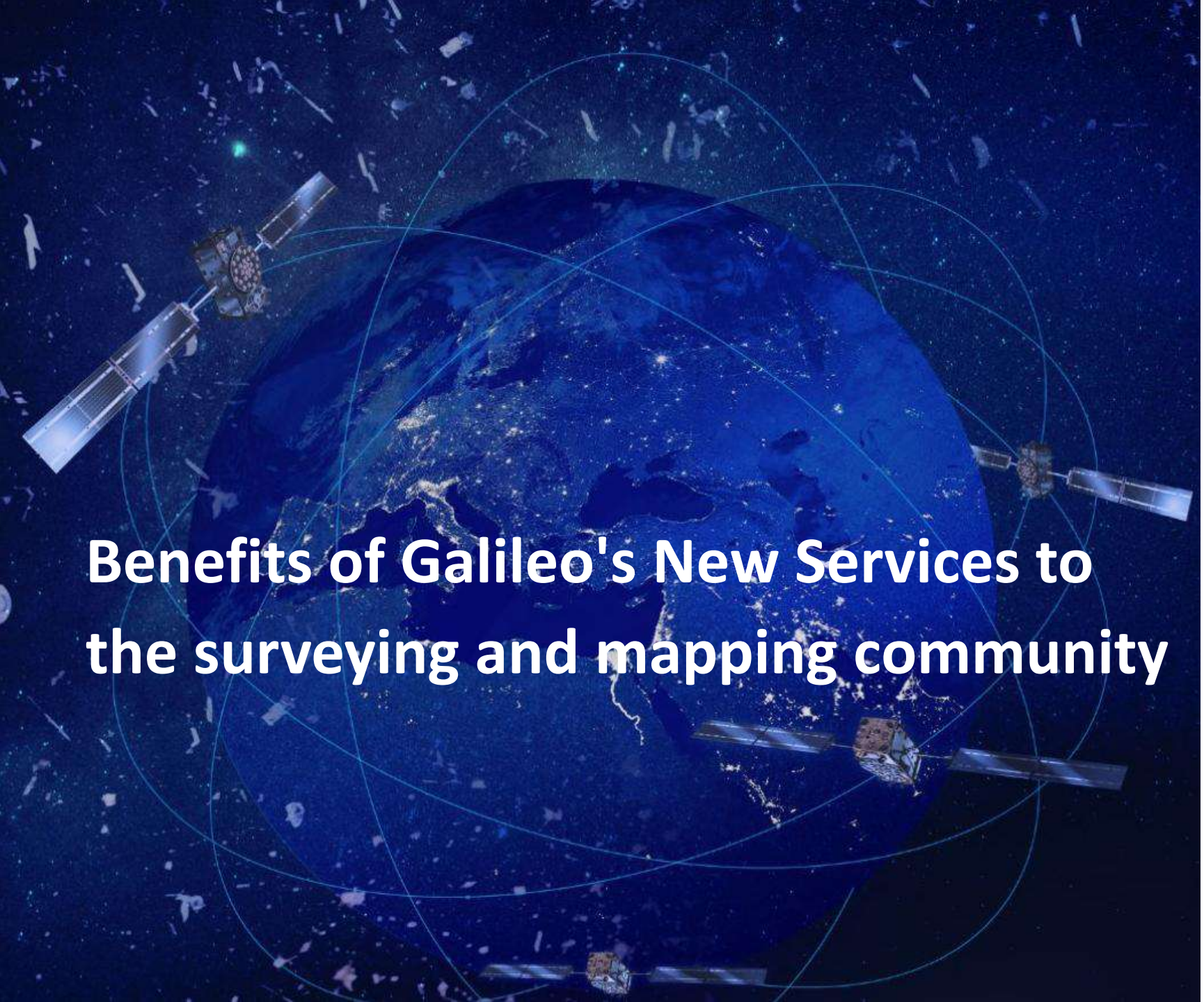
Galileo HAS – High Accuracy Service



- **Service Level 1 (SL1)** — global coverage; convergence time <300s
- **Service Level 2 (SL2)** — regional coverage - the European Coverage Area; convergence time <100s

- Accuracy: 20 cm horizontal / 40 cm vertical at 95% confidence
- Availability: 99%

- More information:
  - HAS overview

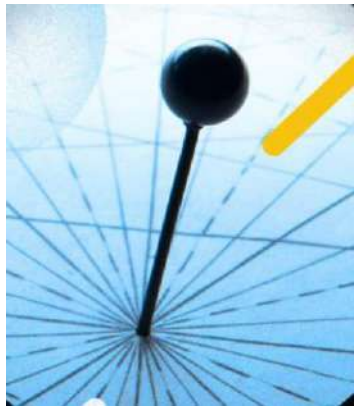


Benefits of Galileo's New Services to the surveying and mapping community

Galileo OSNMA benefits for surveying and mapping

- OSNMA field work related to **border delimitation and demarcation** or **boundary maintenance**
  - Providing unbiased and independent „third party“ verification
  - Potentially allowing single-party fieldwork where two-party presence was previously required for auditability
- OSNMA for field work related to **Land Registry**
  - Land measurements can be a subject of legal disputes over land ownership or developments on the land
- In broader terms, OSNMA can find its utility in any survey work that extend to legal matters (insurance for example)

Galileo HAS benefits for surveying and mapping



- HAS for areas with limited access to RTK corrections (outside of national CORS/RTK networks) and uses where 20 cm is enough
- Example of HAS utilisations
  - Italian Revenue Agency is developing with a new cadastral surveying solution, based on Galileo HAS and GNSS Software-Defined Radios (SDR) (Source)
  - EUSPA project GISCAD-OV: The main scope was to design, develop and validate an innovative and cost-effective HAS for Cadastral Surveying applications

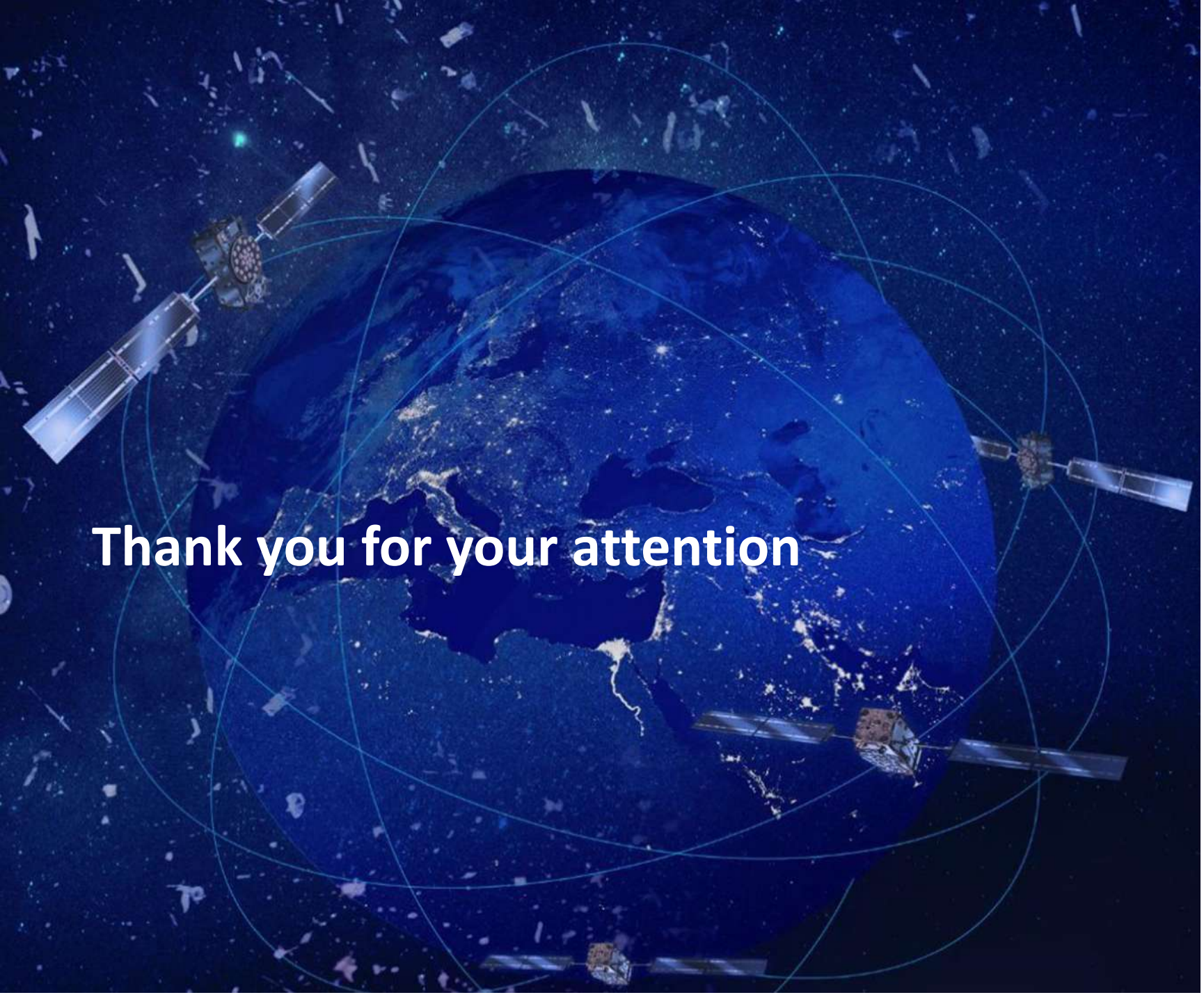
HW already using Galileo HAS and/or OSNMA

Galileo OSNMA – Examples of compatible device (link)

- Septentrio mosaic family as well as other models
- ANAVS model V-ROX
- Juniper model GNS3

Galileo HAS – Examples of compatible device (link)

- Septentrio mosaic family as well as other models
- Trimble receivers with firmware 6.50
- Juniper model GNS3H
- Many receiver models from CHCNAV, Geometer International, Hi-Target, Meridian, etc.



Thank you for your attention

#EUSpace

Q&A

- Vasileios KALOGIROU - Vasileios.KALOGIROU@euspa.europa.eu
- Jakub STEINER - Jakub.STEINER@euspa.europa.eu

#EUSpace

EUSPA
European Union Agency for the Space Programme

Linking space to user needs

Get in touch with us

www.euspa.europa.eu

EUSPA | EU4Space | EUSPA | @space4eu | EUSPA