

Linking space to user needs

EU Space: how to Navigate in a rapidly changing and Connected planet

Space as an enabler for Governmental services: Showcasing the potential for Maritime and Security services

Malta 09/10/2024

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Outline

EUSpace for maritime: GALILEO enhancing EU Space Security in Maritime:

- Challenges and growing cyberthreats
 - Safe navigation
 - Response to emergencies
 - cyberthreats
- Some projects overview
- UCP 2024
- EUSpace4GOV network

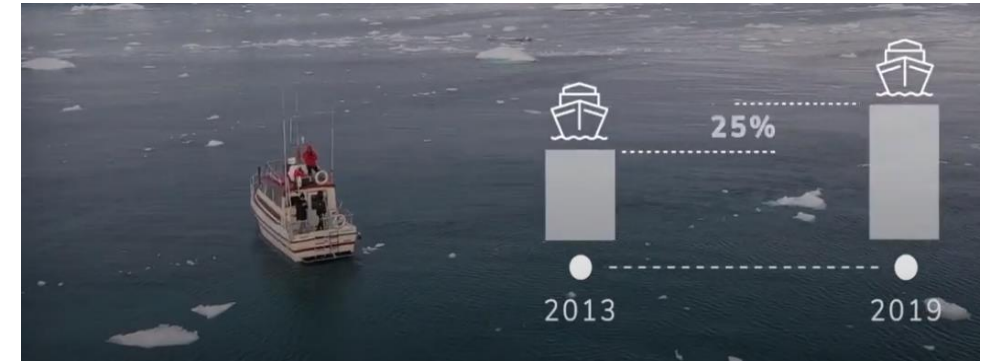
EU Space Programme helps addressing challenges at sea

Climate change: Ice melting creates new routes, increasing maritime traffic and associated risks.

Harsh weather conditions: Changing weather patterns lead to extreme and unpredictable weather, which affects various activities as well as rescue operations.

Connectivity Dead Zones: Vast and Remote Areas, with limited terrestrial infrastructure

Growing Cyberthreats (jamming and spoofing) affecting maritime and aviation transport, as well as Energy/Critical Infrastructure.

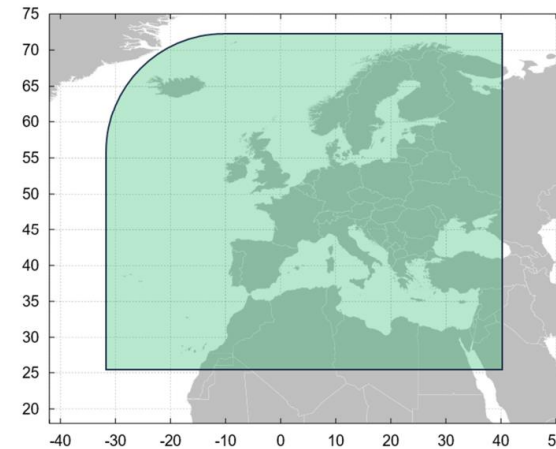


Source: Financial Times

EU Space for Safe Maritime Navigation



Navigation through sea ice: EGNSS positioning information combined with ice maps generated using satellite imagery enable navigation applications, thus **navigating faster and more safely.**



EGNOS Maritime Service (ESMAS)

- Pseudorange and ionospheric corrections to GPS L1 signal via EGNOS GEO SIS, allowing to reach **increased position accuracy**
- **Integrity Alerts** via EGNOS GEO SIS
- Open and free access

Operational since March 2024

Secure SATCOM:

- Maritime operations (real-time data exchange/AIS, fleet management, transfer of sat imagery/maps, etc.)
- Telemedicine
- Scientific missions
- Search and Rescue



Galileo for better preparedness and more rapid response to emergencies



Search and Rescue (SAR)

Contribution to the **COSPAS-SARSAT** MEOSAR

- Enhancing global coverage and coordination to locate and help people in distress.
- 24 SAR L-Band repeaters on board the Galileo Constellation
- **Forward link:** radio beacon distress signals (406Mhz) relay to relevant SAR crews.
- **Return link:** informs the sender that their distress alert has been received (L-band)



Emergency Warning Satellite (EWSS)

Disseminates **alert messages** directly to the population of **areas threatened by a looming natural or manmade disaster**.

- Suitable for people living in **remote and rural regions of Europe** with poor or no mobile signal at all (does not rely on terrestrial networks)
- Directly on smartphones or other Galileo-enabled devices.
- Strategic asset for the Union and its MS, in synergy with the Copernicus Emergency Management Service.

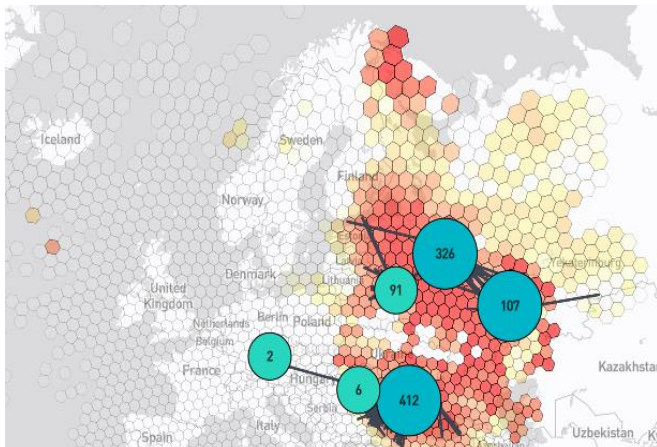
*Service declaration
in 2025*



EU Space contribution to mitigating cyberthreats

Jamming: electromagnetic interference which disrupts the use of electronic devices or systems.
Availability - Denial of Service.

Spoofing: transmission of counterfeit signals/data, causing the victim to misinterpret them as authentic ones. **Integrity – potentially catastrophic.**



<https://spoofing.skai-data-services.com/>
(live ADS-B data from the [OpenSky Network](#))



Second Finnair flight turns back flights there from Tartu due to GPS interference - ERR News - UPDATE
Finnair suspends all flights there

Galileo

OSNMA: Navigation Message Authentication (data only), operational in 2024

CAS: range authentication, under definition

PRS: Encrypted service. Ensures continuity of service to authorised users when access to other navigation services is denied



Secure SATCOM

- ✓ Resilience against jamming and interference
- ✓ Protection against interception and intrusion (eavesdropping, confidentiality)
- ✓ Service assurance

Primary or back-up connectivity: in case the terrestrial network is compromised/unreliable or down due to natural/man-made disasters.

Safe Navigation in Fundamental Elements



Advanced shipborne Galileo Receiver

- Development of DFMC Galileo shipborne receiver. Design and integration of the shipborne receiver.
- Type approval IEC 61108-3. Static and dynamic laboratory test campaign in the laboratory following IEC 61108-3 (Galileo) and IEC-61108-1 (GPS).
- Galileo OSNMA implementation. OSNMA verifies the authenticity of the Galileo navigation message.

Concluded in September 2023



Blue Box Porbeagle VMS as a cost-effective line-replaceable unit (LRU)

- Decode dual frequency position, velocity, and time (PVT) information from E1/E5a EGNSS signals and perform autonomous GNSS data messages authentication based on OSNMA.
- Anti-spoofing cybersecurity protection technology and improved accuracy with dual frequency enhancing the fishery VMS with E-GNSS Galileo Open Service (OS).

Concluded in September 2023



MEOSAR beacons in Fundamental Elements Search And Rescue



ISSAR- Innovative System for Reach and Rescue

- Development of a unique first-generation ELT-DT beacon that implement the GALELIO location, the Galileo Return Link Service, the automatic activation functionalities and the first ELT beacon with built-in GNSS device to be ICAO certified according to GADSS.
- The ELT-DT Galileo-ready beacons will be developed with the objective of improving safety of air operations in all phases of flight.

Status: Ongoing



COBALT

Development of a COSPAS/SARSAT

- Compliant 406MHz personal locator beacon (PLB). The PLB is a compact, lightweight and uniquely designed unit for distressed users in both a maritime and land capacity.
- The MRT Rescue unit increased chances of location and survival by improving the relay time of the distress alert, increasing the signal location accuracy, improving the signal detection in difficult conditions and provide user reassurance through the return link service.

Concluded in December 2023



SEASON

Next generation Survival ELT

- A new VDES equipment with integrated EWSS receiver capable of decoding Emergency Galileo Messages (EWM) and display notifications to seafarers
 - A device with audio/visual alert system to inform users of emergency warnings
 - Expansion of emergency warning capabilities to various users (Status: Ongoing) (fishing fleets, inland ship, etc.)
- THALES**
Building a future we can all trust

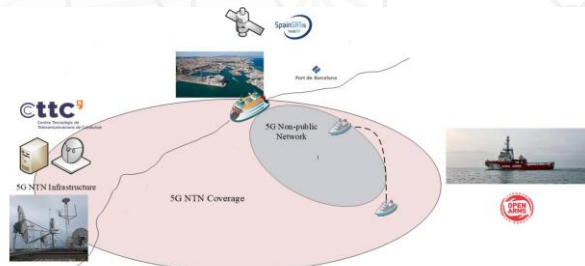
Security Satellite Communication in remote areas



Started in March 2024

Fifth Generation Technology Standard for European Union Governmental Satellite Communications

- Enabling end-to-end adaptation of 5G-NTN towards the EU-GOVSATCOM services, requirements and use cases to efficiently deploy European governmental satellite services.
- 5G-GOVSATCOM targets the development and evaluation of different key enabling technologies in a natural user environment that aim to provide full integration of 5G-NTN in the EU-GOVSATCOM framework



GEXTRECS



Started in February 2024

GOVSATCOM Extreme Events Crisis Management Service

- Increasing the EU's resilience against natural and man-made disasters Compliance with the SBAS guidelines
- GEXTRECS will define and demonstrate an End-to-End GOVSATCOM Service supporting Crisis Management. The project will prototype the Dynamic Planner to enable dynamic SATCOM resources allocation, integrate a Network Balancer for the required interoperability, and illustrate synergies with EU space programme components



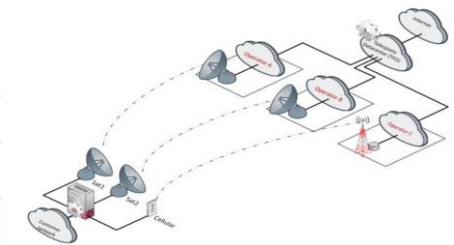
SIGMA



Started in February 2024

Satellite-enabled Interoperable system ensuring GOVSATCOM services' reliability, optimal traffic Management, security and long-term Availability for EU and national public authorities

- Improving GOVSATCOM capabilities and provide end-to-end security and interoperability between SatCom services and TCNs
- SIGMA will develop and demonstrate a technical solution incorporating pooled and shared capacities from different satellite systems



Success Stories



Supports manufacturers with specific guidelines for new SBAS DFMC receivers

- Receiver for the SBAS L5 service, using augmented dual frequency GPS and Galileo
- IEC 61108 test standards for GPS, Galileo and DGPS receiver requirements

Concluded in March 2024
EC contribution: 500 000,00 €



SOLAS and non-SOLAS applications both for navigations equipment and for AIS

- The SBAS functionality added to GPS and DGPS navigation receivers
- Compliance with the SBAS guidelines
- Three prototypes has been achieved in SOLAS vessels, in non-SOLAS vessels and (AIS) Automatic Identification System mobile station (tested in the Trondheim Fjord test area for autonomous vessels)

Concluded in December 2020
EC contribution: 500 000,00 €



Safely navigate in close proximity of other vessels and objects, being stationary or moving

- High accuracy, relative position measurements using GNSS service, dual frequency and multiple constellations
- Establishing an open standard for secure exchange of navigation data supporting relative positioning and exchange of 3D models

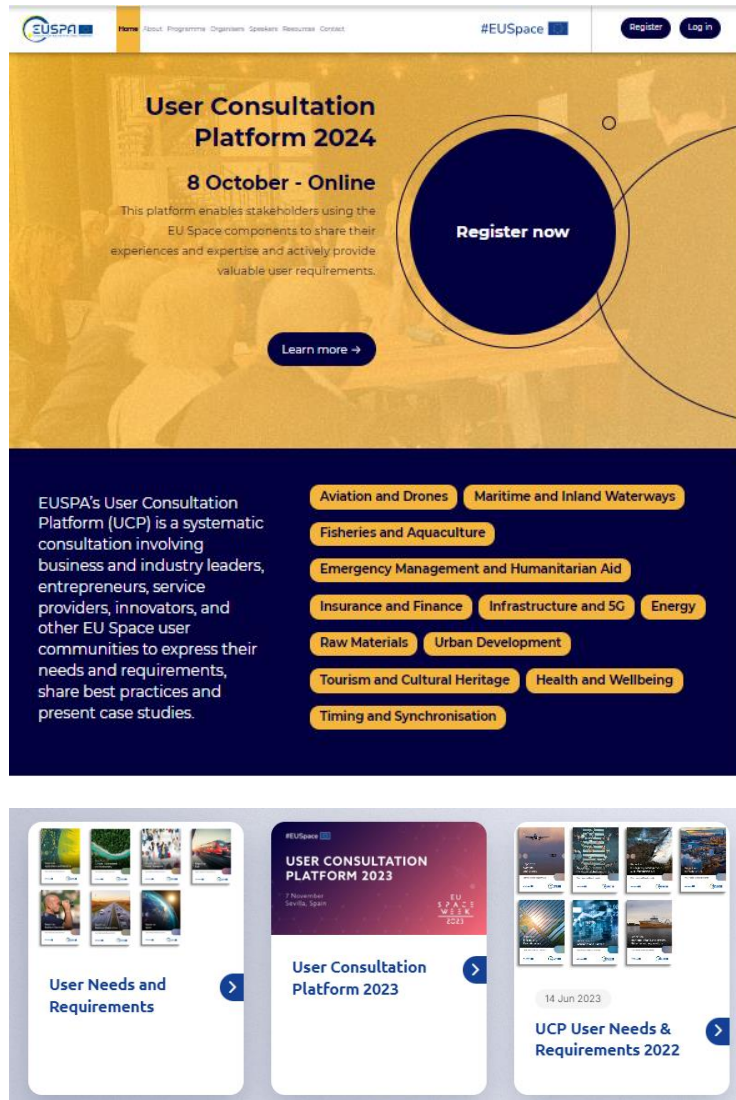
Concluded in May 2021
EC contribution: 2,489,382,25 €

USER CONSULTATION PLATFORM

User Centric



UCP 2024 – End Users engagement



2024 marks the 6th edition of the User Consultation Platform

12 dedicated workshops held online to market segments

on 14/10/2024 Plenary session during the International Aeronautical Congress (IAC), Milan

forum where users, industry leaders, service providers, and entrepreneurs can share their views on EU Space, discuss their needs and requirements, and present case studies

hear the voices of the end users and improve the space services to support their business

results of UCP compiled in Reports on User Needs and Requirements per market segment

Interested to know more?

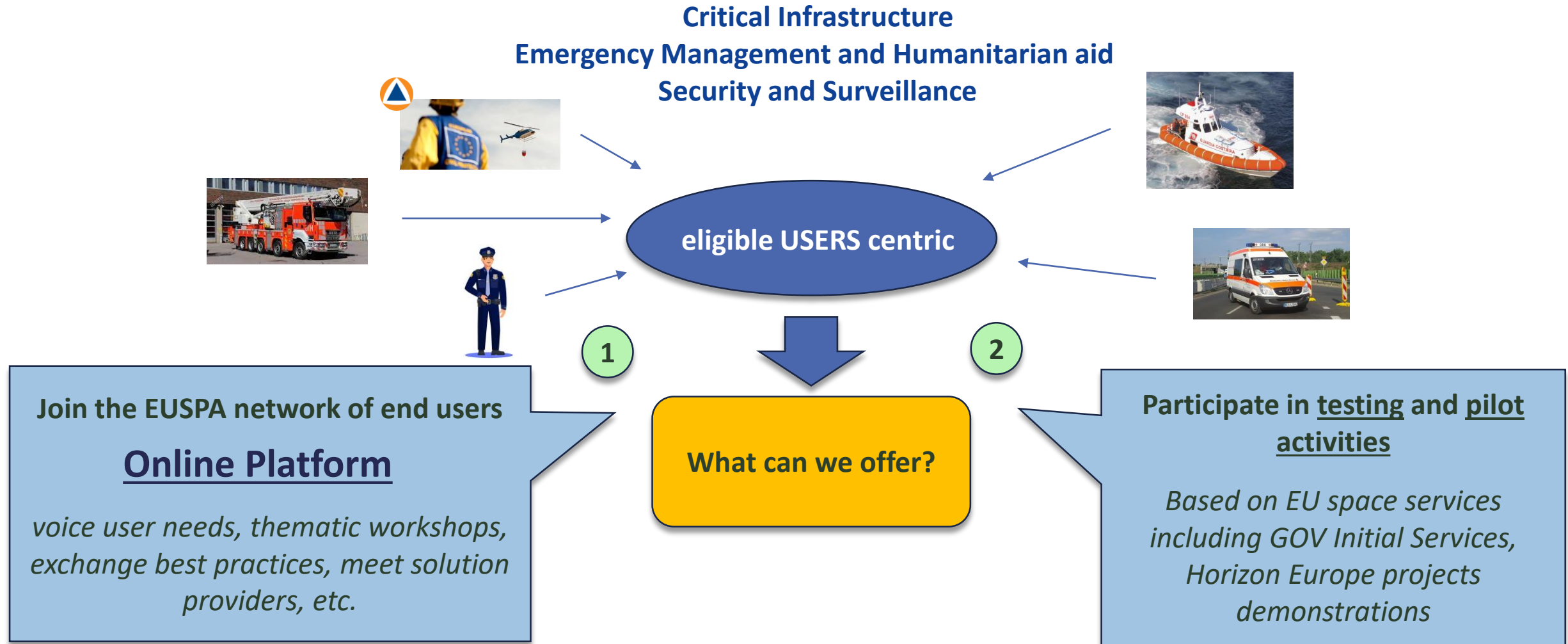
Please contact: MARKET@euspa.europa.eu

<https://www.euspa.europa.eu/eu-space-programme/eu-space-market-and-users/user-consultation-platform>

GOVSATCOM – Network of Users



Govsatcom & Network of Users



Govsatcom & Network of Users

MAIN FEATURES:

collaborative & private network dedicated to accelerating the uptake of space-based services

On-line platform with an access control mechanism will be in place

Target network members: Govsatcom users identified by national CGA + national CGAs + EU Agencies

End-users onboarding process

MAIN OBJECTIVES:

- Pave the way to the G-Hub Initial Services adoption by:
 - Disseminating relevant information to Users
 - sharing of experience across the network, focusing on priority use cases
 - identified new governmental use cases not identified in ENTRUSTED
- Develop and promote synergies with the other EU Space programme components

Interested to know more or join?

Please contact your **national CGA**

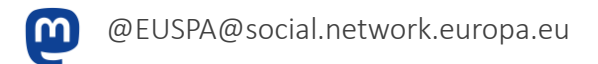
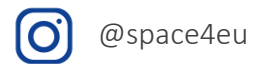
or us at EUSpace4Gov@euspa.europa.eu



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Get in touch with us

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