

SUNSHINE Training Webinar 3

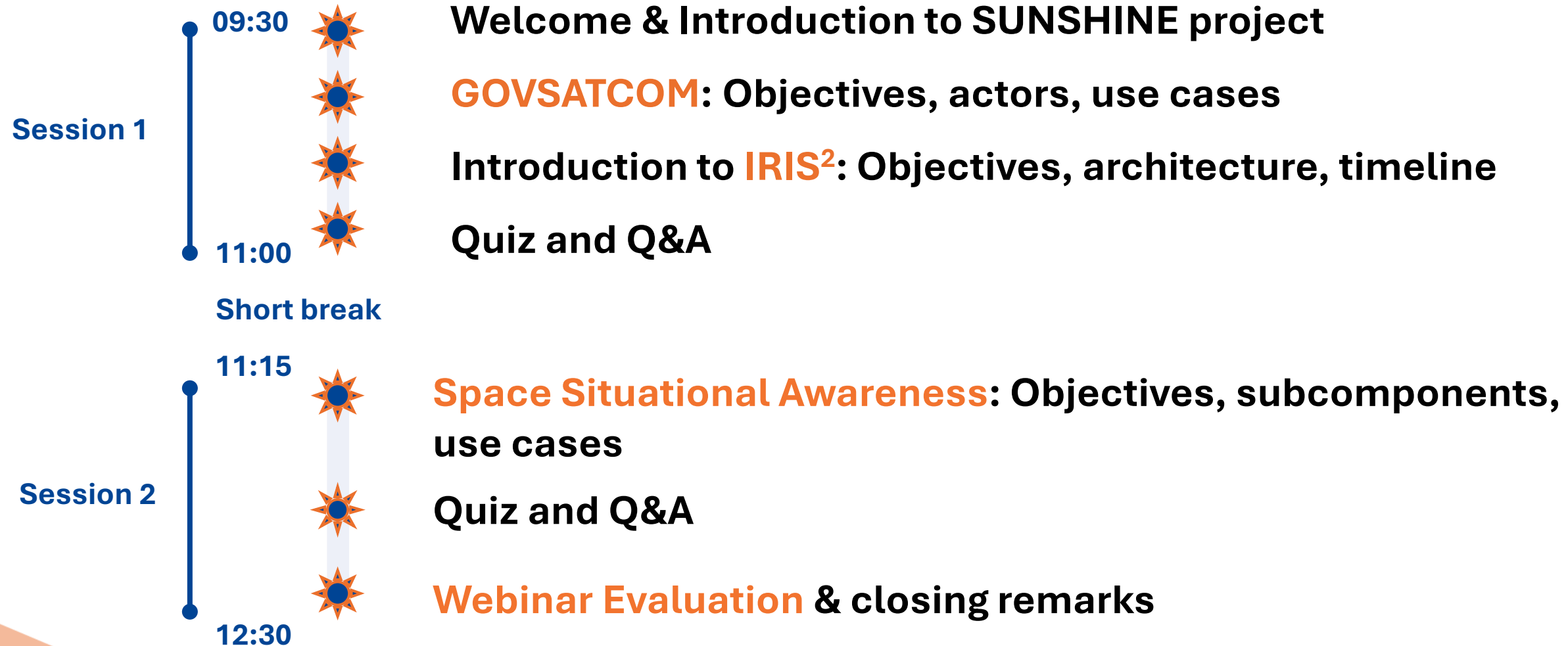
Using EU Space Services for Secure Communications
and Space Situational Awareness



SUNSHINE

Leveraging EU Space data and
services for disaster resilience

Agenda



Some rules to consider



- ★ This webinar is being **recorded**
(recording of the webinar will be available on the *SUNSHINE* page of the UCPKN website)



- ★ **Stay muted** when not speaking to avoid disruptions and background noise.



- ★ Use the “**Raise Hand**” function or the Chat during the Q&A sessions.



- ★ **Be respectful and concise** when sharing comments or questions.



- ★ You may activate the option for automatically translated captions by clicking on “**Live Transcript**”.

Meet the Speakers



Annita Elissaiou
Project Officer
EENA



Gianluca Gargiulo
GOVSATCOM / IRIS²
FDC



Javier Soto-Aguilar
SSA
Telespazio

The SUNSHINE Project



SUNSHINE

The **SUNSHINE** Project



Europe in the face of disasters...

- ☀ Climate change, natural hazards, safety threats increasing in frequency and intensity.
- ☀ Pressing need for stronger civil protection and international cooperation
- ☀ The need to be well-prepared to handle disasters is more important than ever.

The SUNSHINE Project

Background

- **Request** made by the **European Parliament & the Member States of the European Union**:
 - ✧ *How to better understand the EU space services?*
 - ✧ *What is the potential of EU space services to support national civil protection authorities?*

The SUNSHINE Project

Satellites at the service of disaster management

EU Space Programme

- ✳ EU is developing and operating space infrastructures with great potential for civil protection community
- ✳ Space data and services for observation, monitoring, mapping, public warning...
- ✳ Applications for safety and security expanding fast.

How to make best use of space capabilities in times of crisis?

The SUNSHINE Project

What is the SUNSHINE project about?

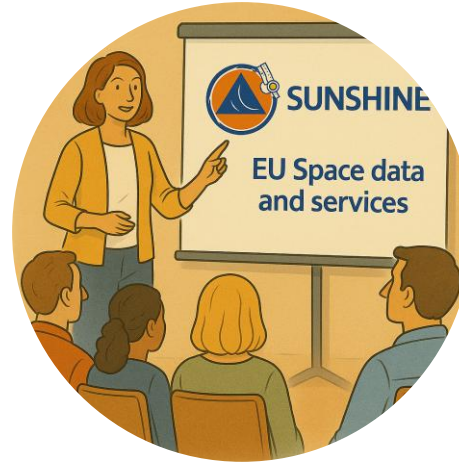
- ✧ Present and demonstrate the EU space services
- ✧ Help the civil protection community understand what they can do & how to use them
- ✧ Support operational integration in national systems and procedures

The project will strengthen resilience of EU Member States through dedicated trainings and exercises on the use of EU Space services.

The SUNSHINE project consortium



Seminars



Webinars



SUNSHINE Trainings

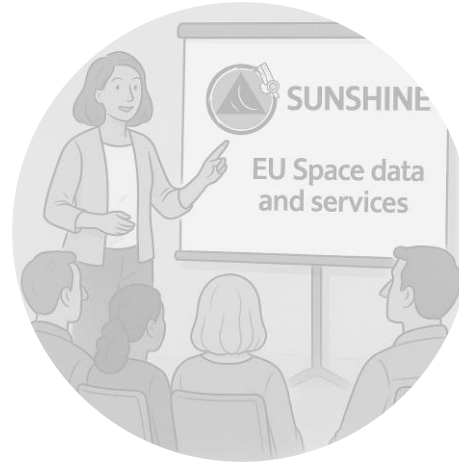


Bilaterals



Exercises

4 Seminars



5 Webinars

2 communication webinars

3 training webinars



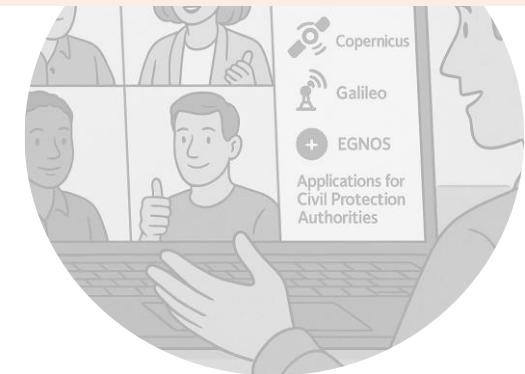
SUNSHINE Trainings



2 Exercises

1 Bilateral

per Member State



SUNSHINE Exercises

Putting theory into practice again with immersive simulations

★ SIMEX:

- **Walk through a realistic crisis scenario** and work with the full range of **EU Space data and services**
- **Turn knowledge into action** and build a better understanding of the **EU Space services!**

★ How to participate?

- Next session: 6-7 October in Brussels (DG DEFIS headquarters)
- **1 and ½ days format**
- **Last chance to register here:**



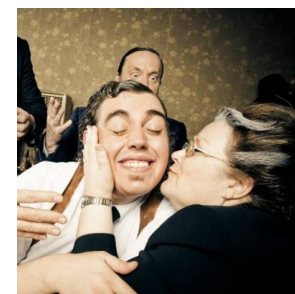
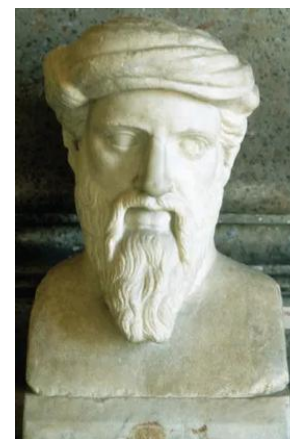
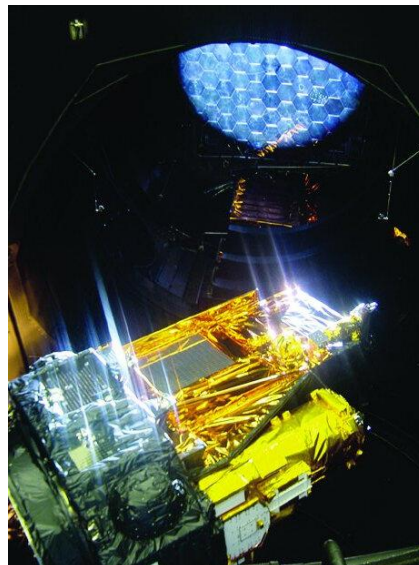
Gianluca Gargiulo

Principal Advisor



My expertise: GNSS and
SATCOM communications

What I'll be presenting:
GOVSATCOM & IRIS²



GOVSATCOM



SUNSHINE

You will be able to



Describe how the EU GOVSATCOM component can support your activities



Identify how you can access the GOVSATCOM services

Agenda

1. Introduction to SATCOM

- Architecture
- Benefits and drawbacks
- Use Cases
- User terminals

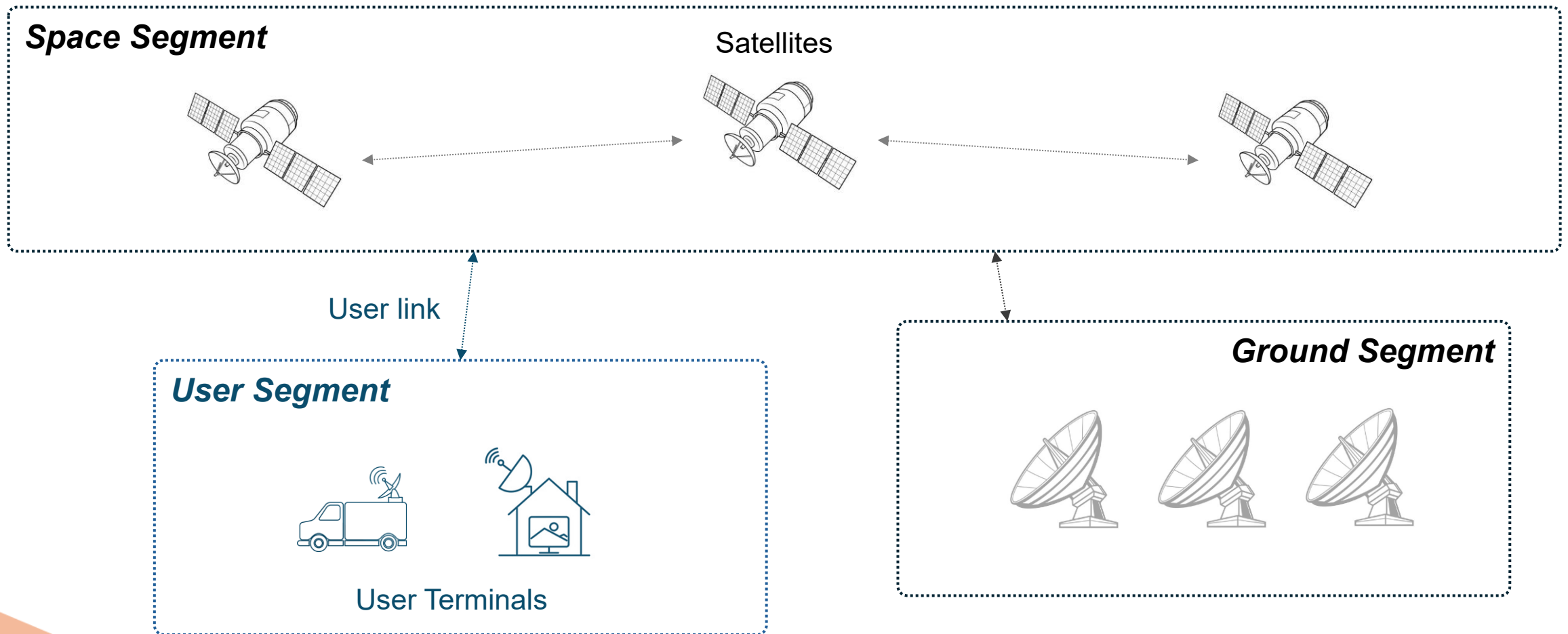
2. GOVSATCOM

- What is GOVSATCOM
- Actors and Service Access
- Future Steps

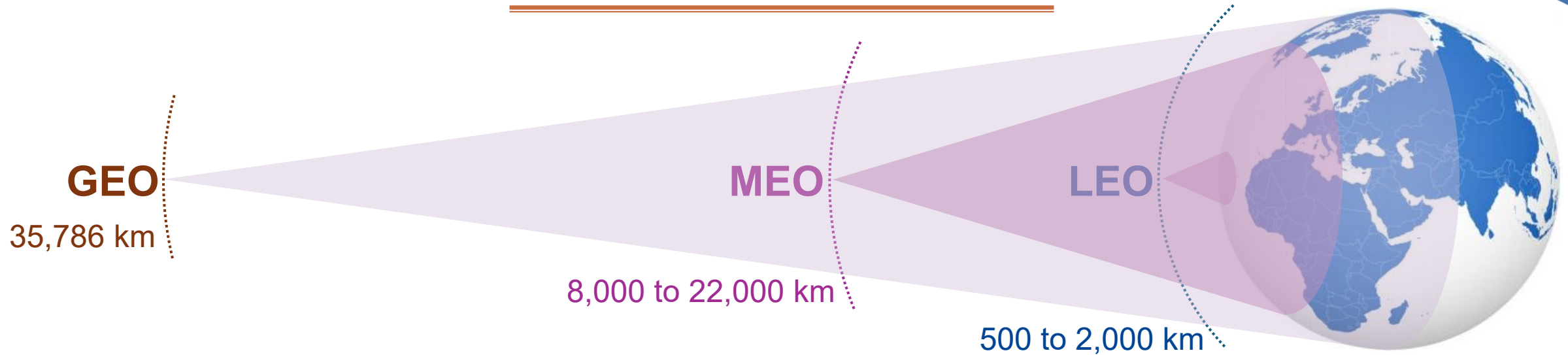
1. Introduction to SATCOM



SatCom architecture



Satellites and Constellations



	GEO	MEO/LEO
Antenna	Fixed	Steering
Coverage	Large (1/3 world)	Limited (1-20% world)
Life cycle	Long life (15-18 years)	Shorter life (5-15 years)
Service delivery	Fast entry into service	Minimum amount of satellites
Latency	Higher delay	Lower delay
Terminal size	Bigger	Smaller

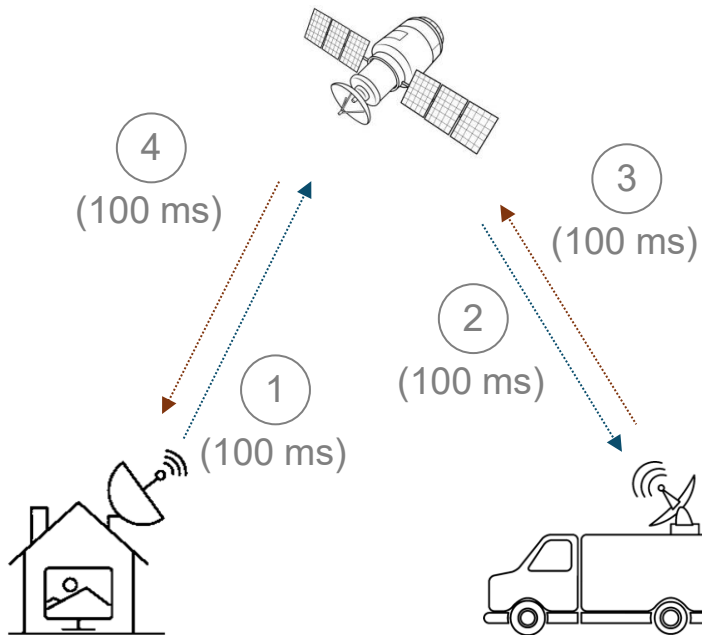
Advantages

- **Within the served zones**, communication service is available **anytime**
- Communication service available **“on the move”**
- Communication service **available in areas without deployed terrestrial network**:
 - Service available in underserved zones
 - Service available in crisis zones
- High data rate
- High Quality of Service (QoS)
- Easy connection to SatCom service: **Terminal = Antenna + Modem**



Drawbacks

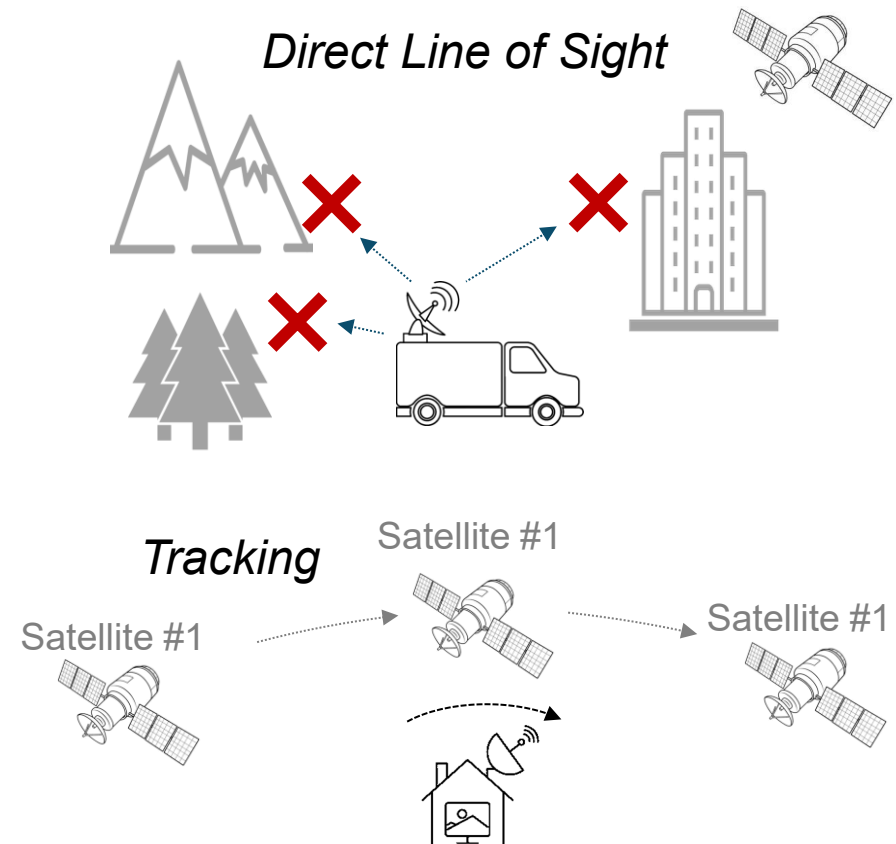
Latency



Weather conditions (Attenuation)

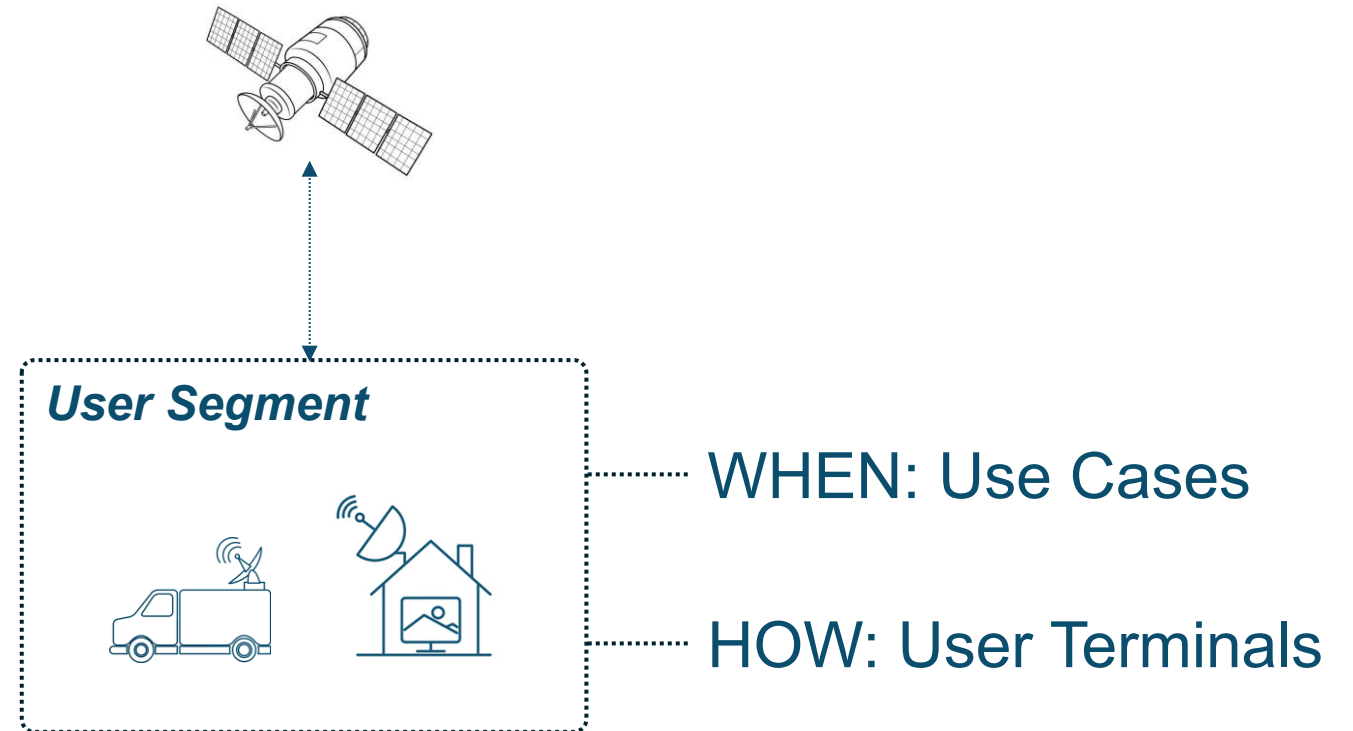


Satellite movement





Use Cases & Terminals



Remote areas

Remote areas



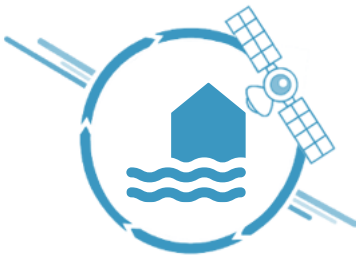
Underserved areas



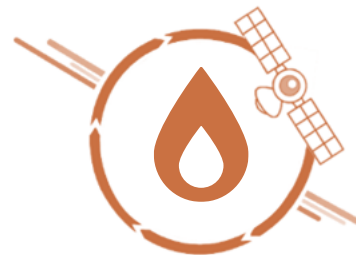
Crisis Management

- Provide resilient communication links for emergency and disaster response operations.
- Maintain critical communications when infrastructure is disrupted.
- Fast deployment as time-critical is of essence in those situations
- Past examples in which SATCOM could provide benefits:

Flood, Central
Eastern Europe

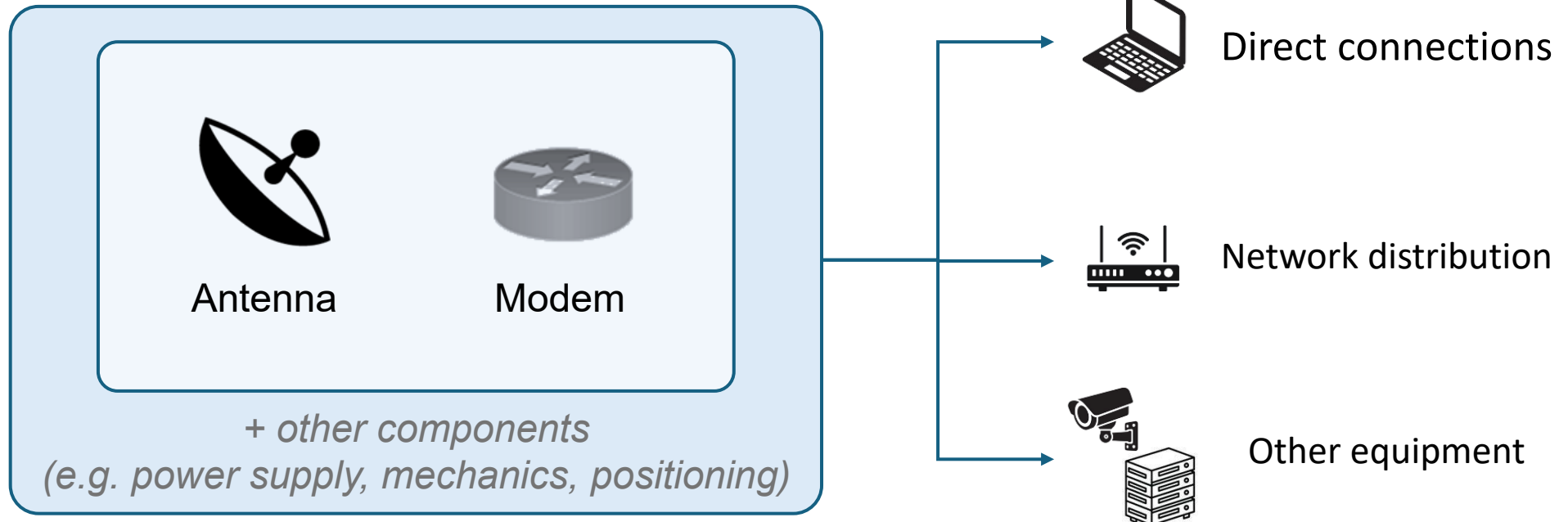


Wildfire, Portugal



User Terminals

Satellite User Terminal



Different types of user terminals meet different user needs and operational requirements.

Portable Terminals

Satellite phone



Source: <https://globalsatellite.us/iridium-satellite-phones/>

- Light and portable phone
- Easy back-up system where terrestrial networks do not provide service

Manpack



Source: <https://www.expeditioncommunications.com/product/rps-manpack/>

- Low weight and compact size
- Fast Deployment
- Remote location difficult to reach

Fly-away



Source: <https://airbus-ds-gs.com/ranger-flyaway-terminals/>

- Small/medium-sized antenna
- Can be carried in any transport (not man-carried)
- Fast deployment

Mobile Terminals

Vehicular/Mobile

- Installed on a terrestrial vehicle
- Typically used to connect isolated sites
- Allow WIFI for mobile user terminals



Helicopters and airplanes

- Connectivity in-motion: auto tracking antenna while the platform on which it is mounted is moving
- The size and design of an antenna depend on its application

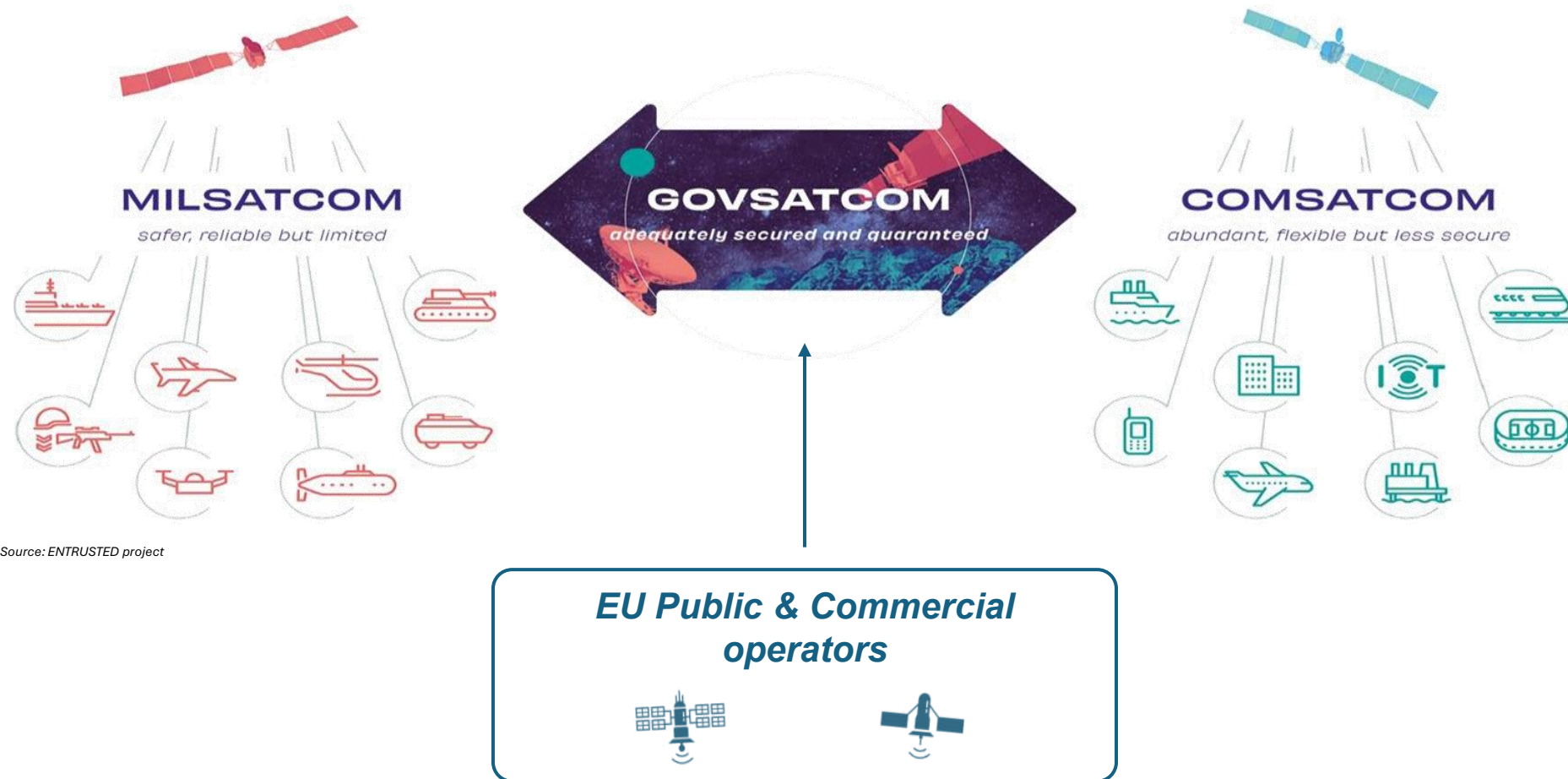


2. GOVSATCOM



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SATCOM & EU



Source: ENTRUSTED project

GOVSATCOM - Architecture

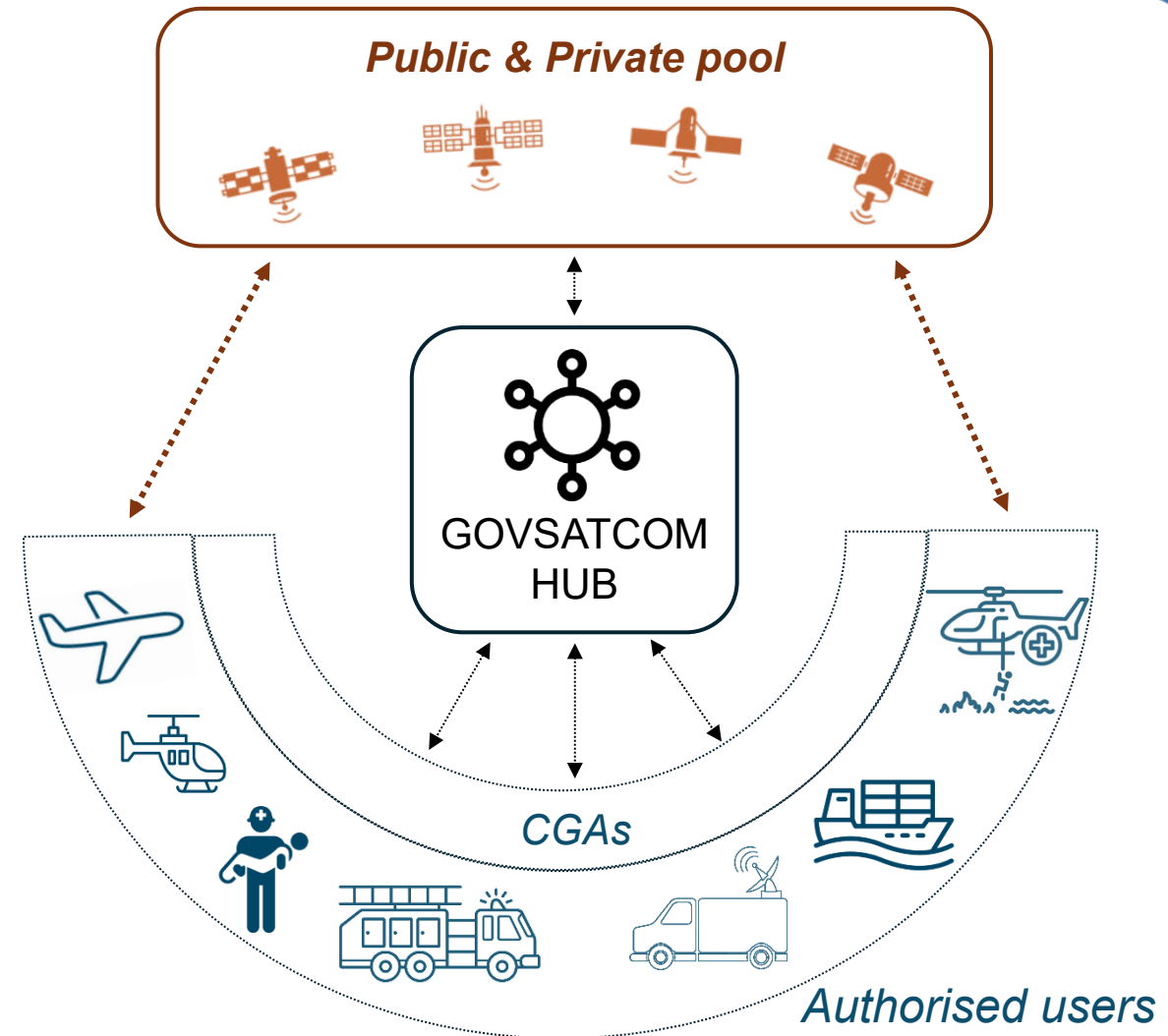
The EU GOVSATCOM component **is**:

- Satellite communications **service** under civil and governmental control
- National capacities and services combined into a **common Union pool**
- **Establishment of GOVSATCOM HUB**, to link the GOVSATCOM users to the providers

Surveillance

Crisis Management

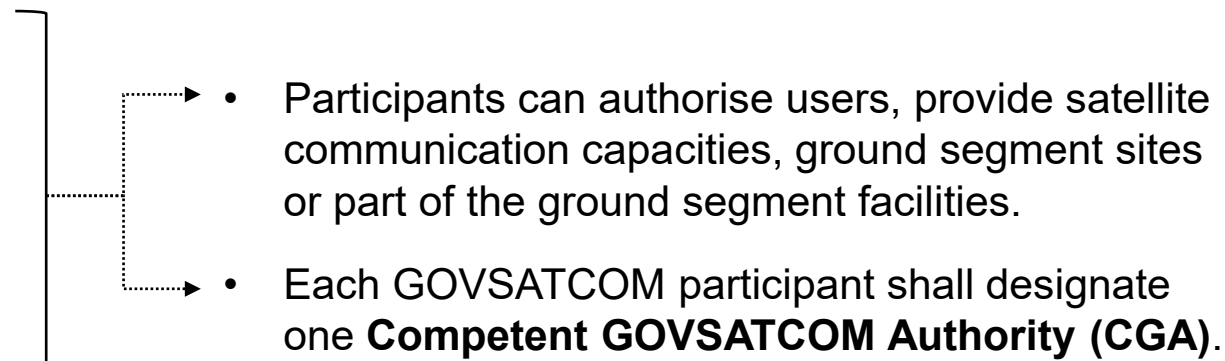
Key Infrastructure



GOVSATCOM - Actors

GOVSATCOM participants:

- The Member States
- The European Council
- The European Commission (EC)
- The European External Action Service (EEAS - EU's diplomatic service)



A CGA is responsible for:

- the access rights for GOVSATCOM users are determined and managed;
- the use of services is in compliance with applicable security requirements
- user equipment and connectivity are managed with applicable security requirements;
- a central point of contact is established for SECURITY topics

GOVSATCOM – Access management

- Each EU Member State designates a CGA.
- The CGA manages the interactions and requests with the GOVSATCOM Hub.
- Role of the CGA:
 - To evaluate and decide their own users.
 - To establish procedures to interact with the selected users.
 - To provide relevant information regarding user terminals (where and how to access the terminals).
 - To manage service activations when there is a user need.

GOVSATCOM – Service provision

GOVSATCOM users



Service Need

Exchange procedure is determined by each CGA!

Competent GOVSATCOM Authorities (CGAs)



Service Request

GOVSATCOM HUB



Resource Request and Management

Public & Private pool



Service provision

GOVSATCOM – Future Steps

Status as Sept'2026:

- Communications Hub entered into service in January 2026. Cyprus became the first country to use services.
- Integration of existing SATCOM systems and establishment of Service Provision.
- Development of interoperability and seamless handover.
- Integration into the services provided by other components of the EU Space Programme.
- Integration with IRIS² in the medium term (initial services expected by 2031).

Key takeaways

Now you know:



Qualities of the satellite communications



Types of user terminal



CGA is the one-stop-shop at national level for accessing the service

Thank you for your attention

Any questions?



IRIS²



SUNSHINE

You will learn

 How the EU IRIS² initiative benefits civil protection

 The relationship between **GOVSATCOM** and **IRIS²**

IRIS² initiative

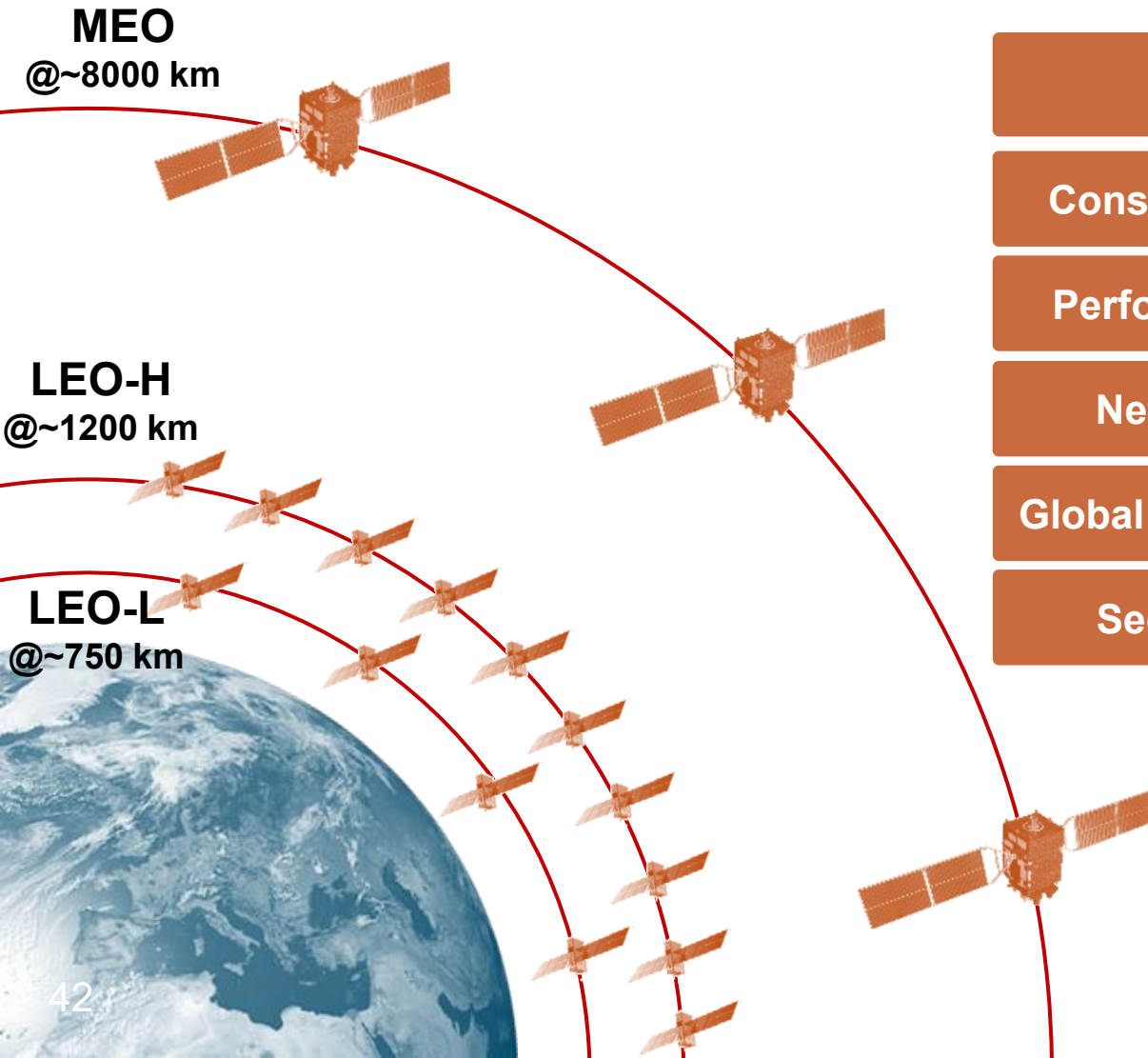
- **IRIS²**: Infrastructure for **R**esilience, **I**nterconnectivity and **S**ecurity by **S**atellite.
- Constellation of satellites for safer, faster and more resilient communications, serving governments, businesses and citizens of the European Union.
- Main objectives:
 - ✓ Ensuring EU autonomy and sovereignty
 - ✓ Secure and resilient by design
 - ✓ Global coverage



Consortium



Architecture

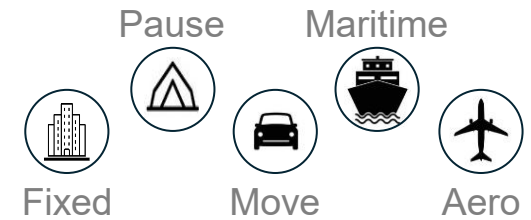


IRIS² architecture - status as of September 2026

Constellation	330 LEO + 18 MEO	
Performance	Very low latency	High Availability
Network	5G 	
Global coverage	Polar coverage (MEO)	Europe coverage (MEO+LEO)
Secured	Highest standards, with robust services	

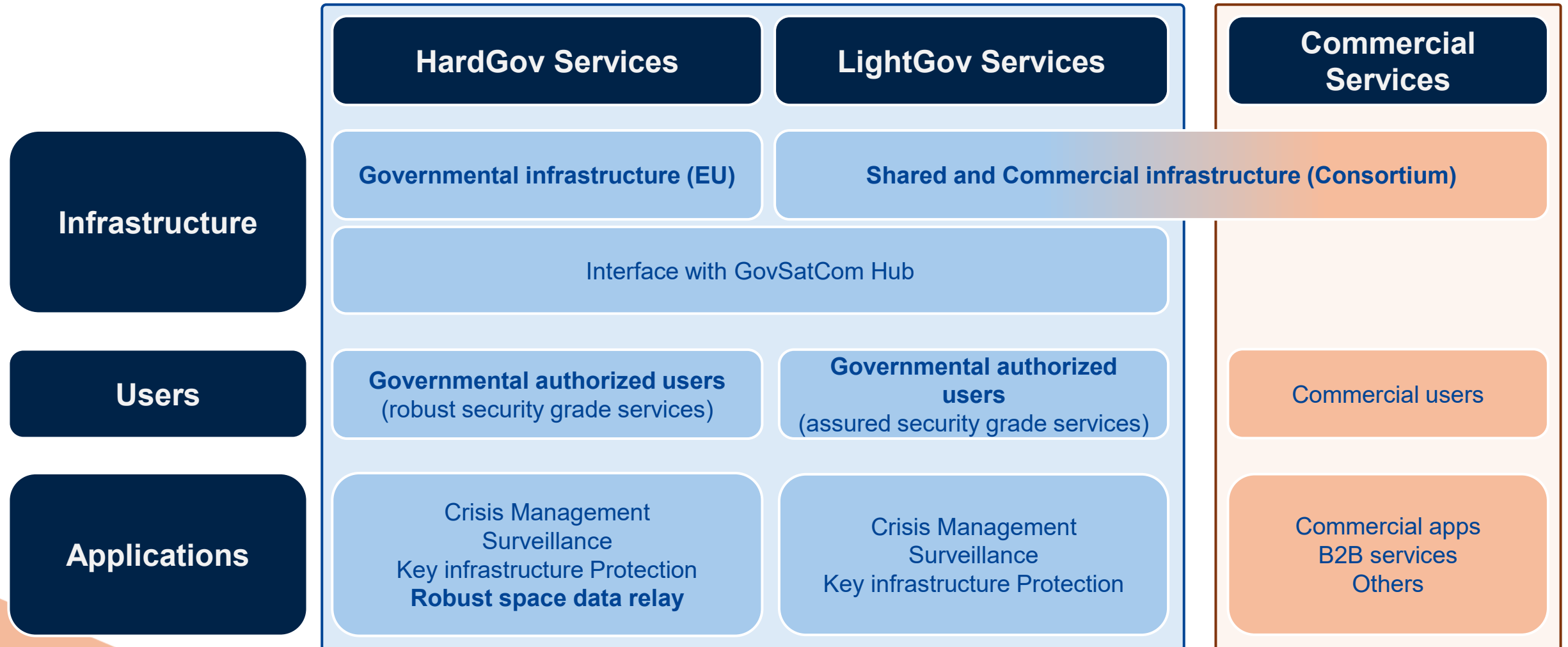
User Terminal

- ***One single User Terminal***



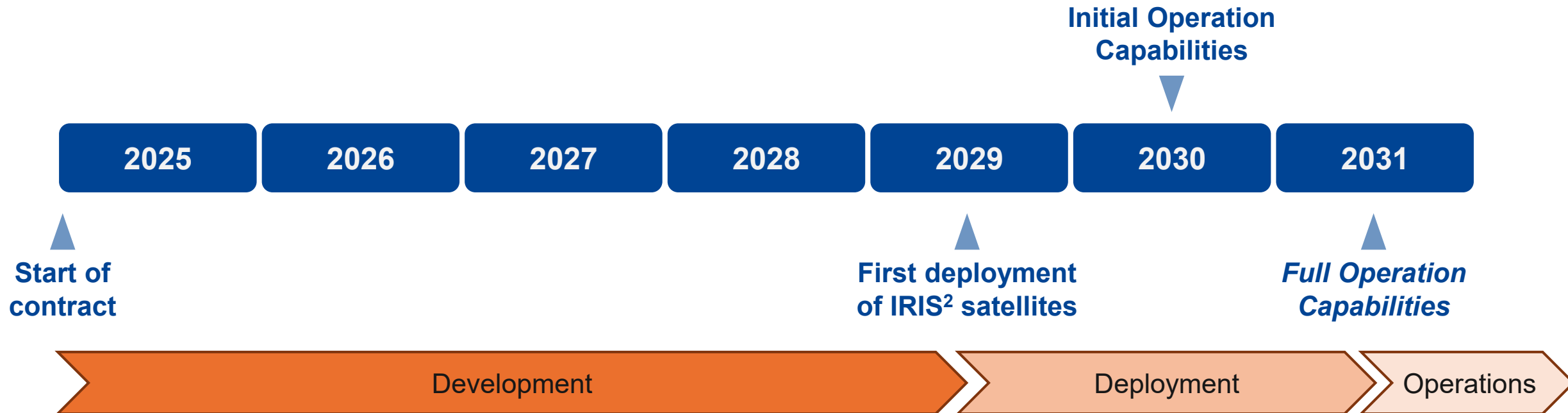
- Multi-purpose Flat Panel Antenna
- Based on 5G technology, and interconnectable with external Modem
- End-to-End (E2E) encryption

Services and Use Cases



Timeline

(Status September 2026)



Key takeaways

Now you know:



The IRIS² expected services



The single User Terminal that IRIS will use



The benefits that IRIS² will provide

Thank you for your attention

Any questions?



Now, let's check you were not sleepy ...

Join us in an interactive quiz to
challenge your knowledge on
GOVSATCOM!

SCAN ME



Q&A session



*Please use the “**Raise Hand**” function, or write your question directly in the Chat*

Evaluate the webinar!

SCAN HERE



What comes next?

Upcoming Training Opportunities

Simulation Exercises

- ★ 6th to 7th of October 2026 in Brussels, DG DEFIS
- ★ Gain **hands-on skills in using EU Space data and services** for disaster management!

REGISTER HERE



Interested to participate? **Scan the QR code** to fill in the Expression of Interest form!

Webinar Evaluation

SCAN HERE





15-minute break

Evaluate the webinar!



SUNSHINE Training Webinar 3

Using EU Space Services for Secure Communications
and Space Situational Awareness

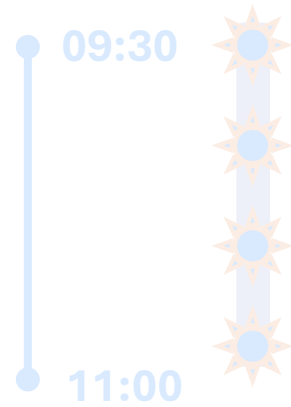


SUNSHINE

Leveraging EU Space data and
services for disaster resilience

Agenda

Session 1



Welcome & Introduction to the SUNSHINE project

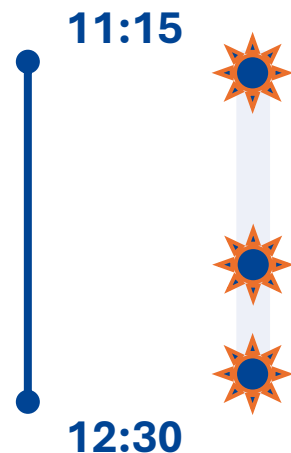
GOVSATCOM: Objectives, actors, use cases

Introduction to **IRIS²**: Objectives, architecture, timeline

Quiz and Q&A

Short break

Session 2



Space Situational Awareness: Objectives, subcomponents, use cases

Quiz and Q&A

Webinar Evaluation & closing remarks

Javier Soto-Aguilar

EWSS Engineer



My expertise: Space engineering,
SSA & Galileo EWSS

I will be presenting SSA



Space Situational Awareness



SUNSHINE



**Risk to
population**



**SPACEX ROCKET DEBRIS
IS FALLING FROM
THE SKY IN POLAND**



**Loss of critical infrastructure
is a civil protection concern**

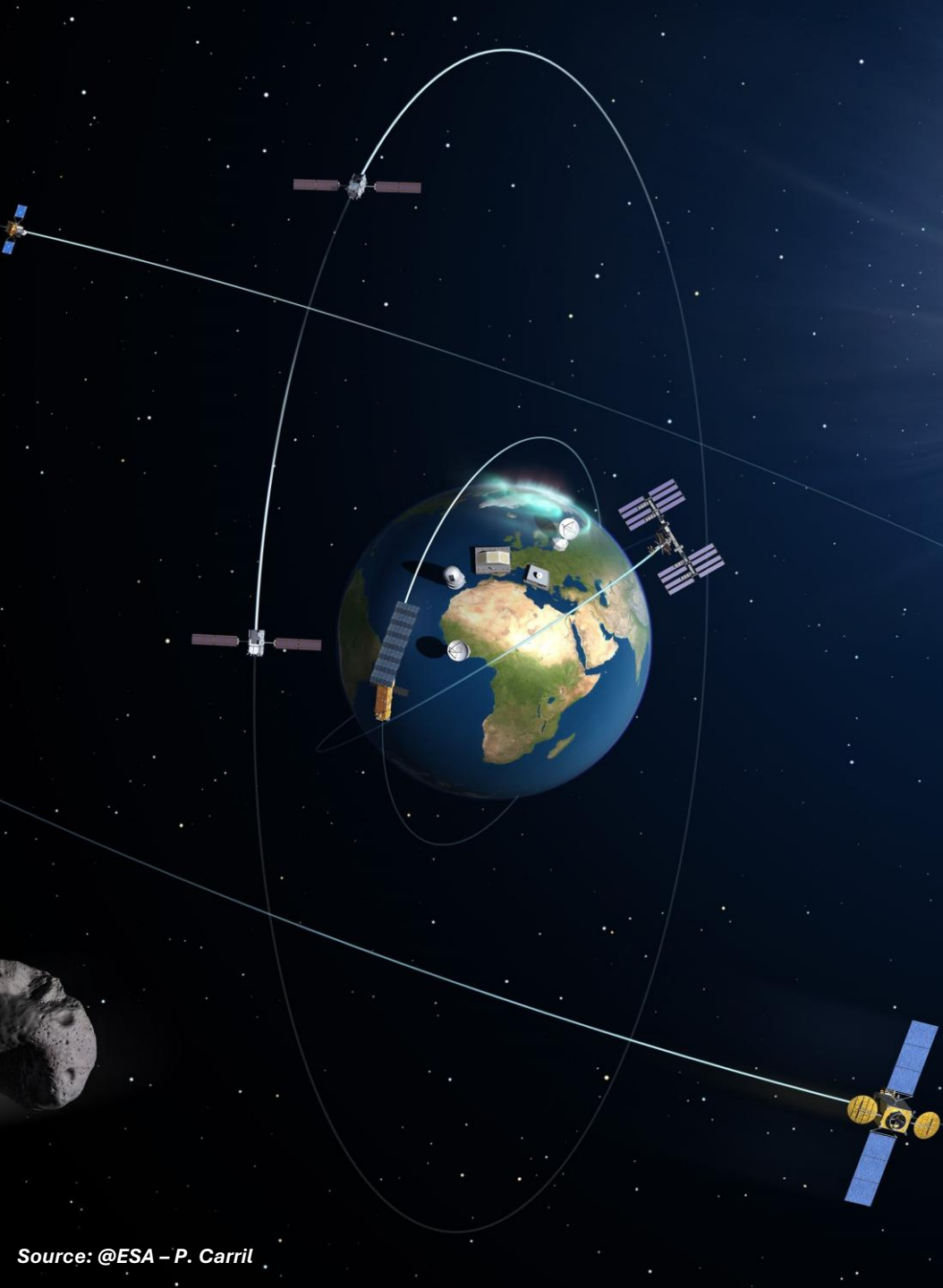




~~EU Space
components~~

You will be able to

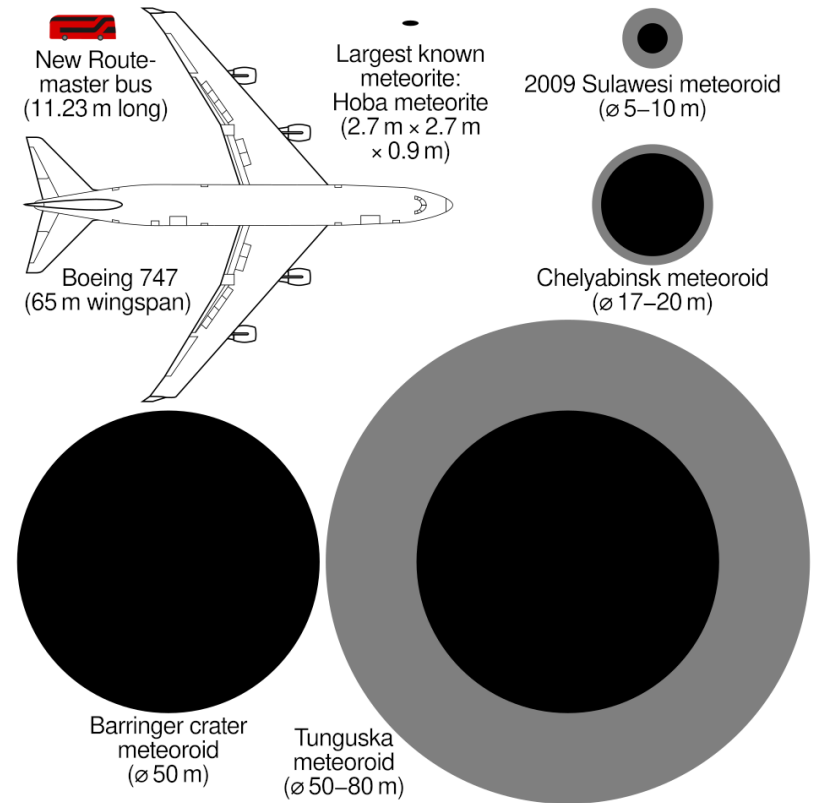
- ☀ Explain the basic principles of SSA and its components
- ☀ List the different threats monitored by SSA
- ☀ Identify how SSA can support your daily work



Chelyabinsk meteor – Feb. 15, 2013



- ✦ 200 kilotons of TNT of energy on explosion
- ✦ 112 hospitalizations
- ✦ 7200 damaged buildings, estimated cost of 30M€
- ✦ Wasn't detected in advance



Falcon 9B rocket re-entry

19/02/2025

Approximate final trajectory



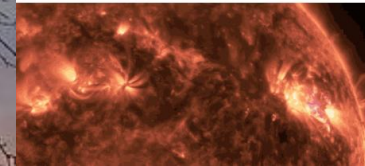
Blackout of March 1989 in Canada

Space Weather®

Research Article |  Free Access

A 21st Century View of the March 1989 Magnetic Storm

[D. H. Boteler](#) 



Preparing the Nation for Intense Space Weather

By Elizabeth Goldbaum

SPACE & PHYSICS | MARCH 13, 2009

A Scary 13th: 20 Years Ago, Earth Was Blasted with a Massive Plume of Solar Plasma

The Great Québec Blackout

MARCH 12, 2021 / DR.TONY PHILLIPS

TPL-007-4

Transmission System Planned Performance for
Geomagnetic Disturbance Events

Mandatory Subject to Enforcement 10/01/2020



Uncontrolled Chinese rocket over Europe

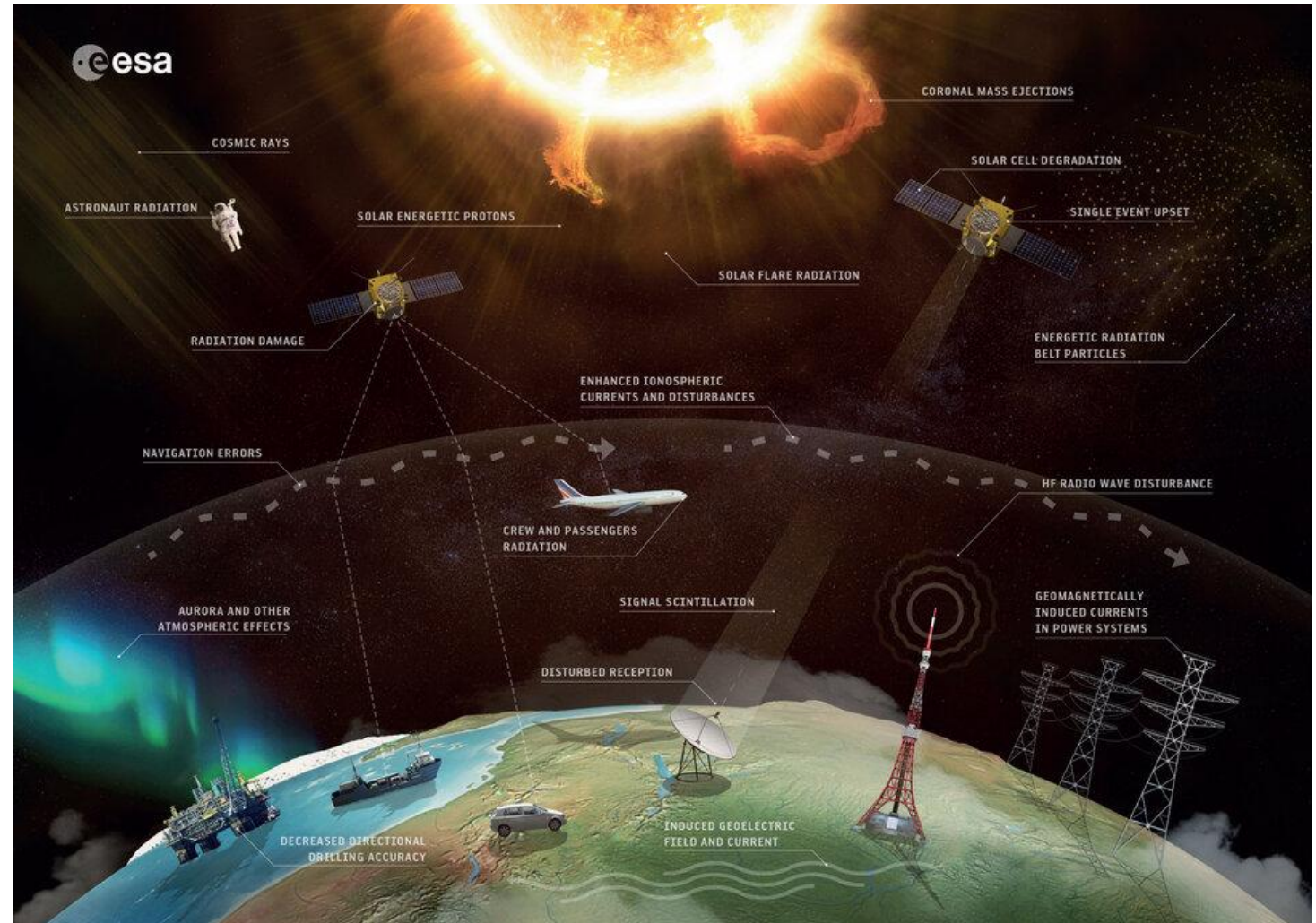


<https://www.eusst.eu/newsroom/news/eu-sst-closely-monitors-upcoming-re-entry-space-object-zq-3-rb>

Solar radiation can impact global aviation



[https://www.esa.int/Space_Safety/Space_weather/When the Sun disrupts aviation](https://www.esa.int/Space_Safety/Space_weather/When_the_Sun_disrupts_aviation)



Source: ESA

What is SSA?



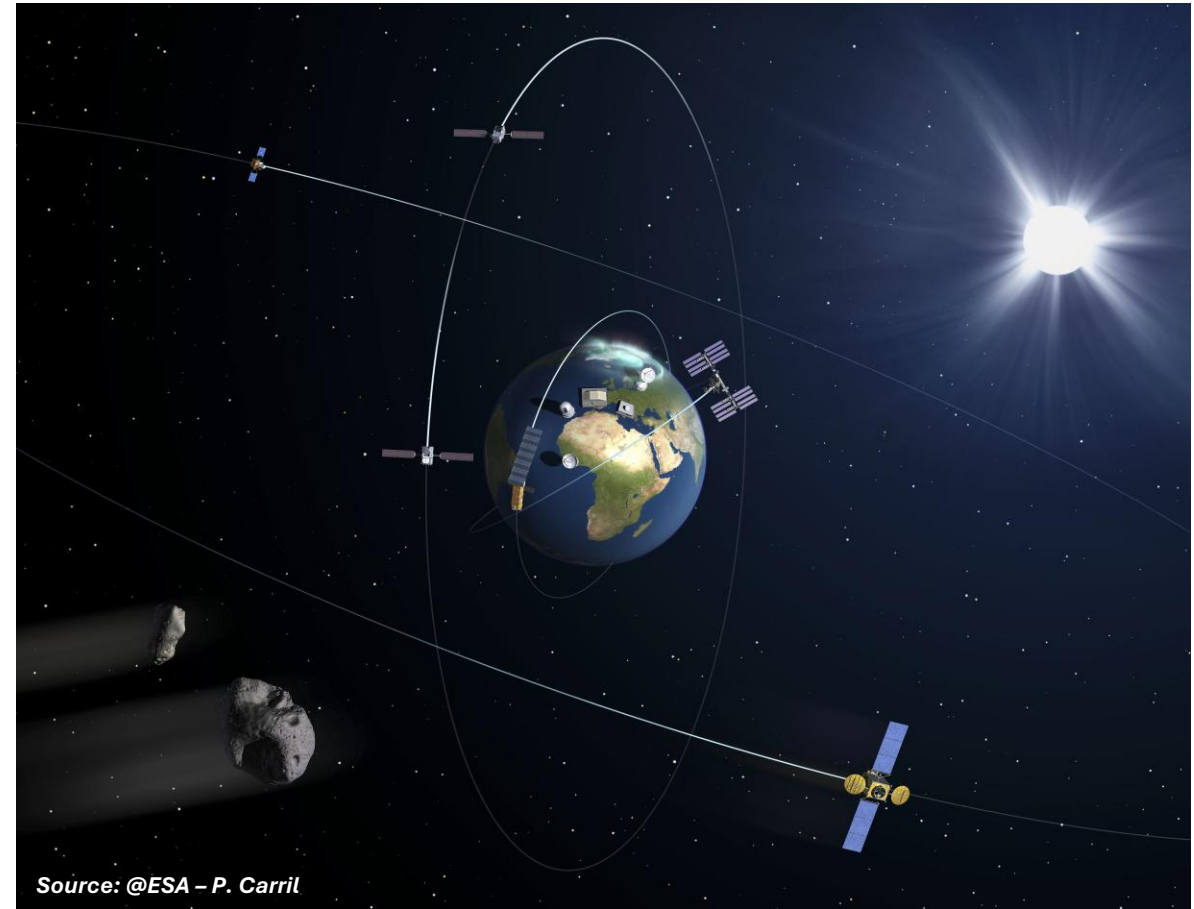
Space Situational Awareness

What is space monitoring?

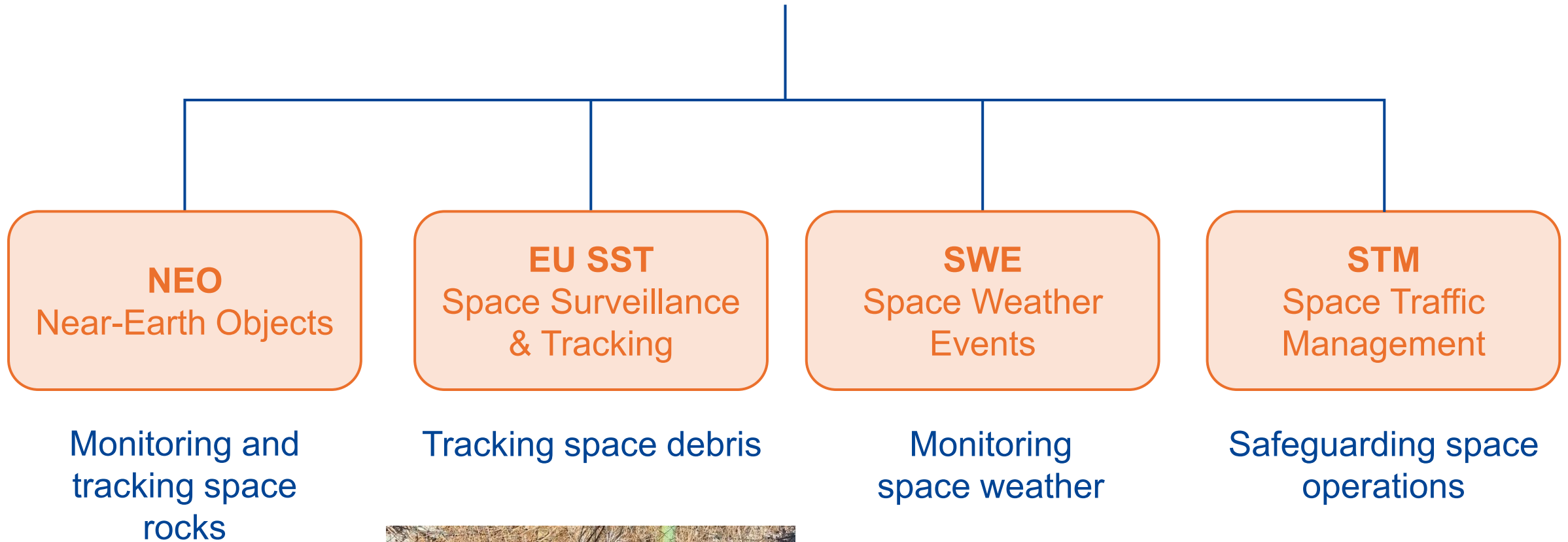
- Detect and track space objects
- Assess space weather threats

Examples of applications for civil protection:

- Safeguard ground infrastructures and space assets used by CPAs
- Provide early warnings about space events



SSA global picture



The 4 main threats from space

Near-Earth objects

Space rocks like comets, asteroids, ...
orbiting around the Earth

Natural

Space Weather

Solar activity (rays, wind, flares, ...)
Space radiations (cosmic, ...)

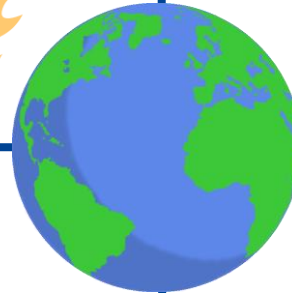
Space debris



Orbital occupation by satellites & debris:

~10 000 active | ~50 000 >10 cm
~1.2 M >1 cm | ~140 M >1 mm

Data from 08/2024



Hostile activities

Malicious RF emissions (spoofing/jamming)
Space weapons (lasers, beams, kinetic, ...)

Human made



SUNSHINE



Funded by
the European Union

Re-entry Management

The primary metric dictating mandatory controlled re-entry across major agencies is the **Casualty Expectation (E_C)**, set at a maximum threshold of:

$$E_C \leq 10^{-4} \text{ (1 in 10 000 risk of ground casualty)}$$

Respected mainly by the EU agencies, ESA and NASA.

- On average, approximately 100 t re-enter in the atmosphere uncontrolled every year;
- Objects with a mass greater than 500 kg re-enter uncontrolled every about 8 days;



Source: NASA



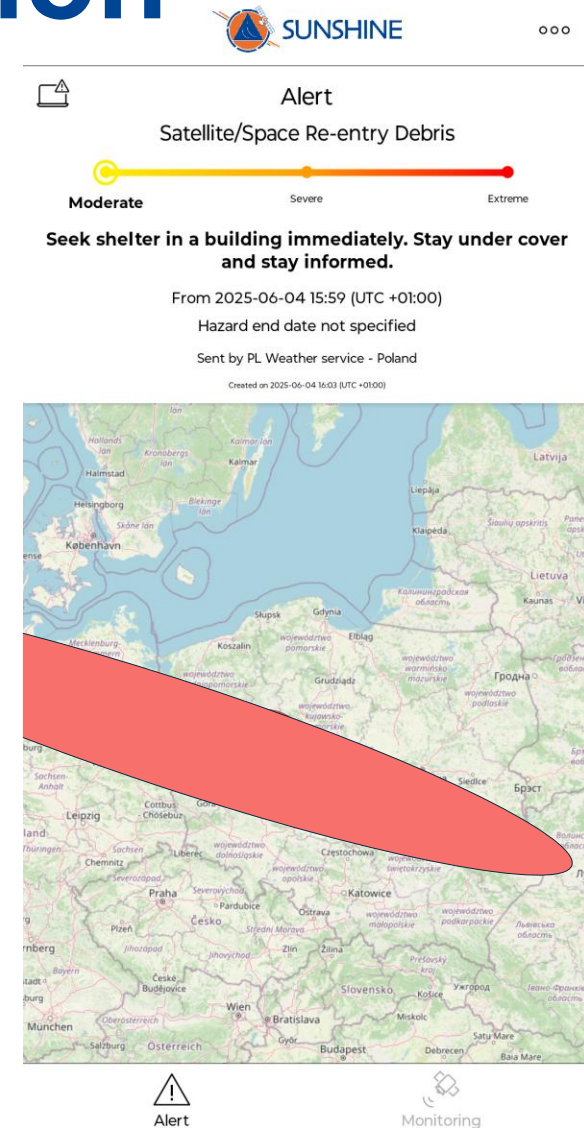
Alerting the population

Re-entry events can be predicted a few days in advance with high uncertainty.

Precise estimation of reentry zone and time slot can be determined only a few hours in advance.

Countries adopting the Emergency Warning Satellite Service get:

- Special hazard types,
- Adapted guidance to react,



SSA overview



[The EU Space Programme Explained -
Space Situational Awareness \(SSA\)](#)



Front desks you can use



EU Space Surveillance and Tracking

- EU SST portal supports 2 missions:
 - **Surveillance**: Observing, detecting and measuring parameters of space objects in orbits
 - **Tracking**: Getting more accurate data on a specific event or object in space
- Mainly used for:
 - Collision Avoidance
 - Re-Entry Analysis
 - Fragmentation Analysis

RF Data



Optical

EU SST Front Desk

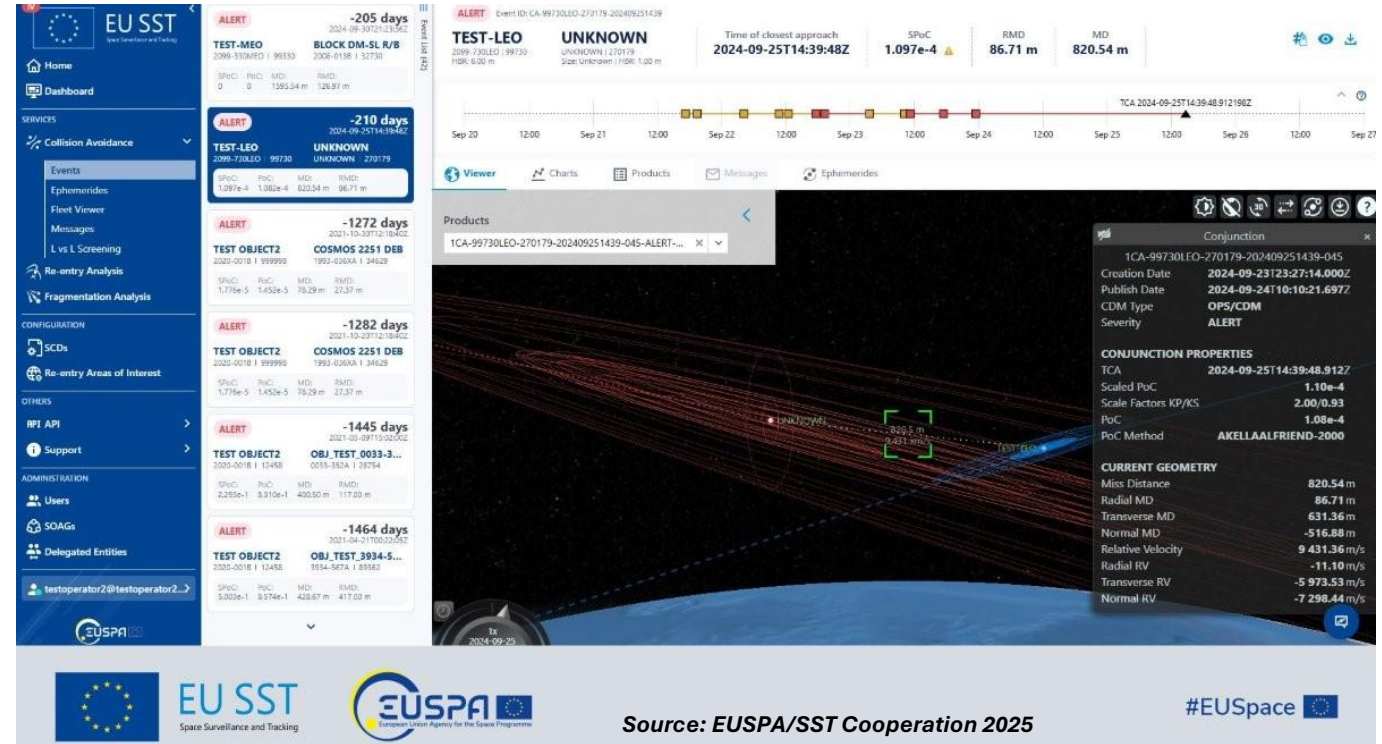
Free access after registration and approval from Helpdesk to:

- Third countries or international organisations related to SST
- EU SST users (MS, EUSPA, EC, ...),
- Other EU public/private entities

[EUSST - Terms of Use](#)



[EU SST - EU Space
Surveillance and Tracking](#)



Source: EUSPA/SST Cooperation 2025

#EUSpace 

How does EU SST work



SUNSHINE

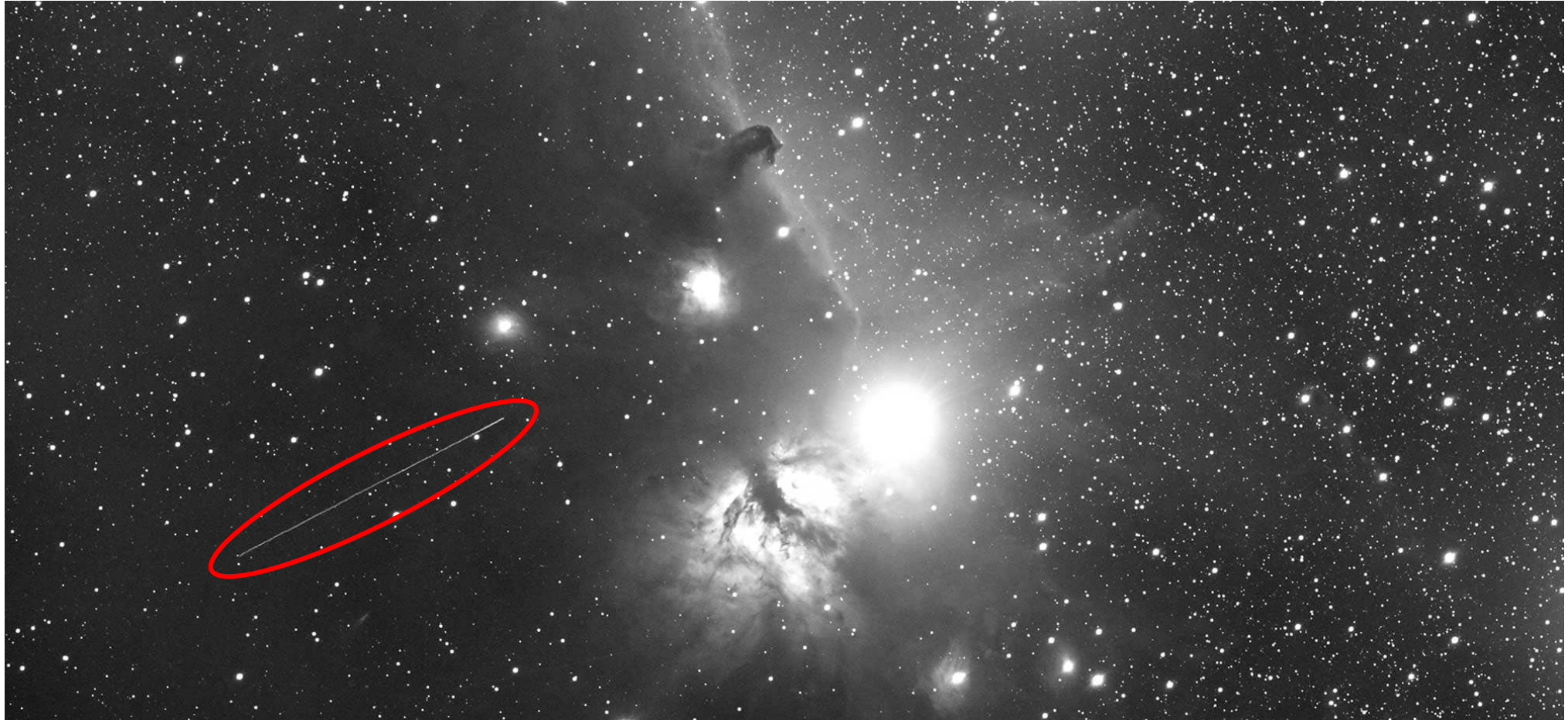
Main ground-sensor types

Radars / Telescopes / Passive RF

- Can target different satellite orbits
- Contain complementary performances and limitations
- Widely different implementation cost and complexity

Fused together, they allow to improve situationally awareness and predict future space events with greater accuracy

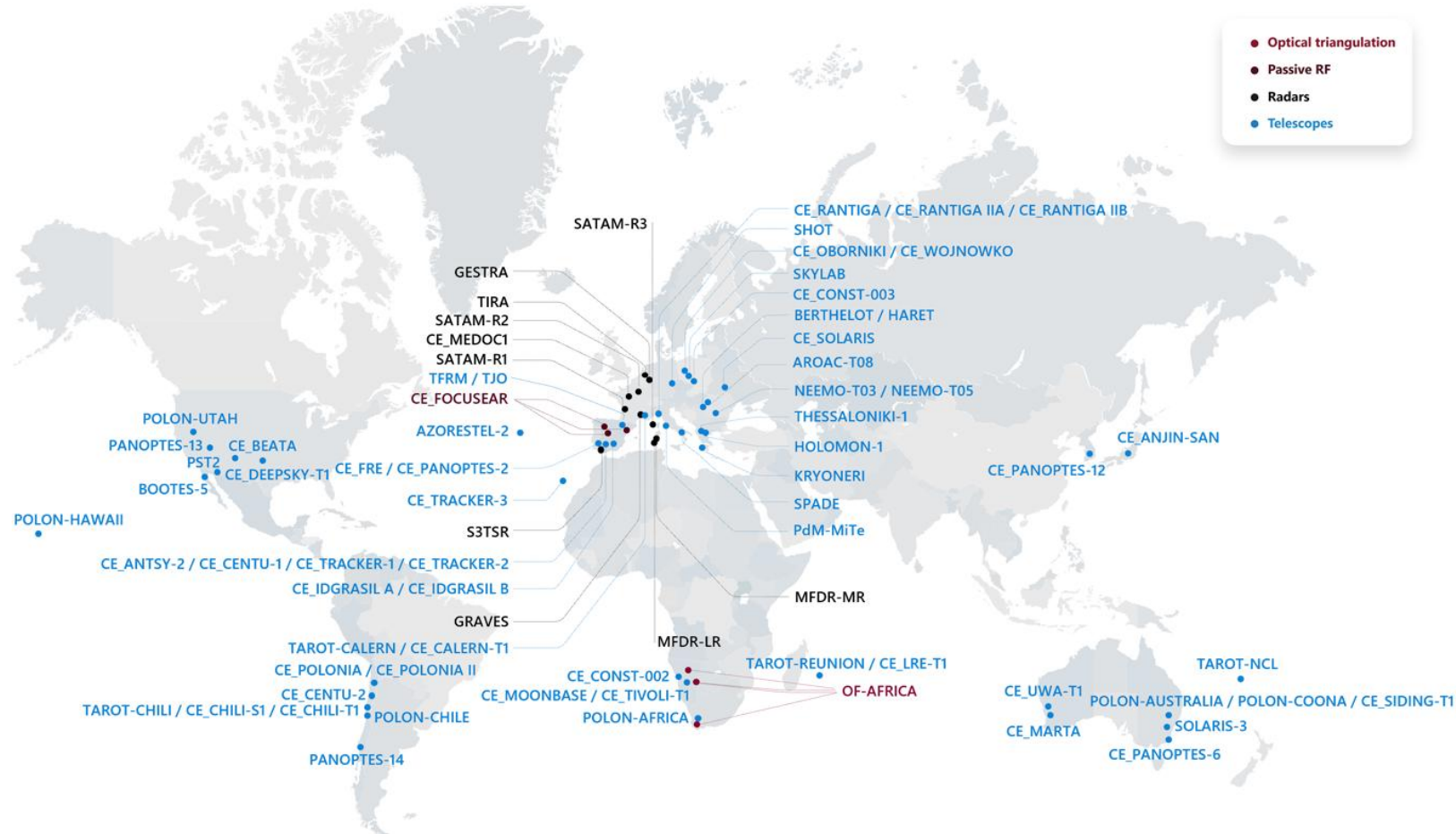
Satellite crossing



Source: Aldoria

Ground sensor network

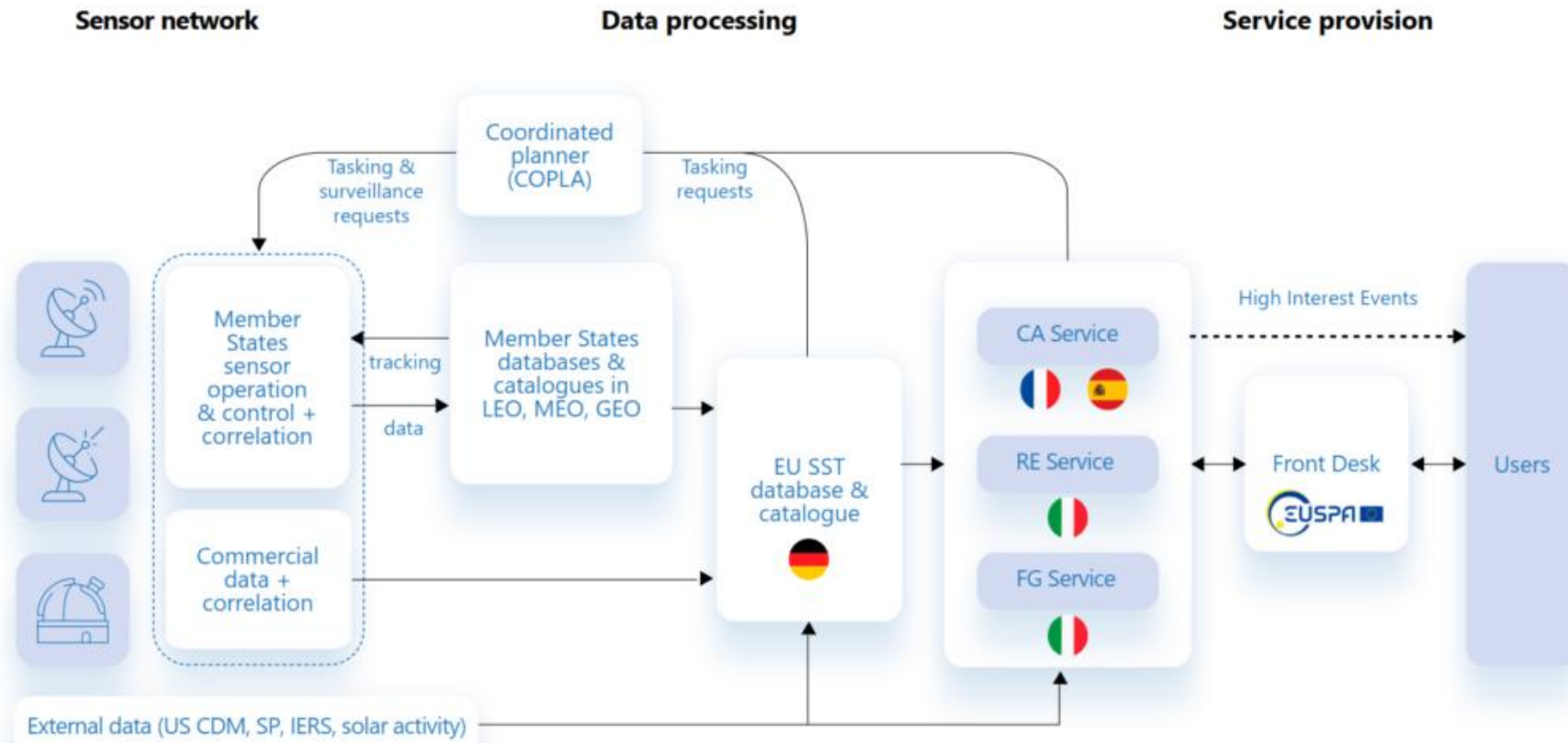
A worldwide network of sensors to survey and track space objects in all orbital regimes



Source: EUSPA/EU SST

EU SST Processing function

A common database for the EU SST catalogue and service provision



Source: EUSPA/EU SST

Union SST users & service scope

CA

**Collision Avoidance
(CA)**

FG

Fragmentation (FG)

RE

Re-entry Analysis (RE)

MITIGATION

**Debris Mitigation &
Remediation**



SST Core Users

FULL ACCESS

- **EU Governance Bodies:** EU Member States, the EEAS, the Commission, the Council, and the Agency (EUSPA).
- **Spacecraft Operators:** Public and private owners and operators of spacecraft **established in the Union**.

Eligible Services [Art. 56]

CA

FG

RE

MITIGATION



SST Non-Core Users

RESTRICTED ACCESS

- **Other EU Entities:** Other public and private entities established in the Union that do *not* operate spacecraft.
- **Typical Scope:** Universities, research institutes, civil protection agencies, and national entities without satellite assets.

Eligible Services [Art. 56]

FG

RE

MITIGATION

Source: Regulation (EU) 2021/696 of the
European Parliament and of the Council



All SST services are provided free of charge and 24/7 without interruption (Art. 55.2)

International SST access



International SST Users

Defined under **Art. 56(2)** as third countries, international organizations without headquarters in the EU, and private entities not established in the Union.

Key Regulatory Distinction

Access to some services require formal EU international security treaties.



Publicly Available SST Services

CA

FG

RE

- **No International Agreement Required:** Access to publicly available Collision Avoidance, Fragmentation Analysis, and Re-entry Analysis does not require an Art. 218 TFEU treaty.
- Access remains subject to a formal request from potential users pursuant to Article 56.



Debris Mitigation & Remediation

MITIGATION

Access to activities preparing space debris mitigation and remediation requires:

- Concluding an agreement laying down the terms and conditions for accessing such SST services.
- Strict compliance with **Article 43** regarding the protection of classified information.
- Non-EU Private Entities are eligible **ONLY** if their host third country concludes an Art. 218 TFEU agreement with the EU granting them access.

Source: Regulation (EU) 2021/696 Articles 8, 55 & 56

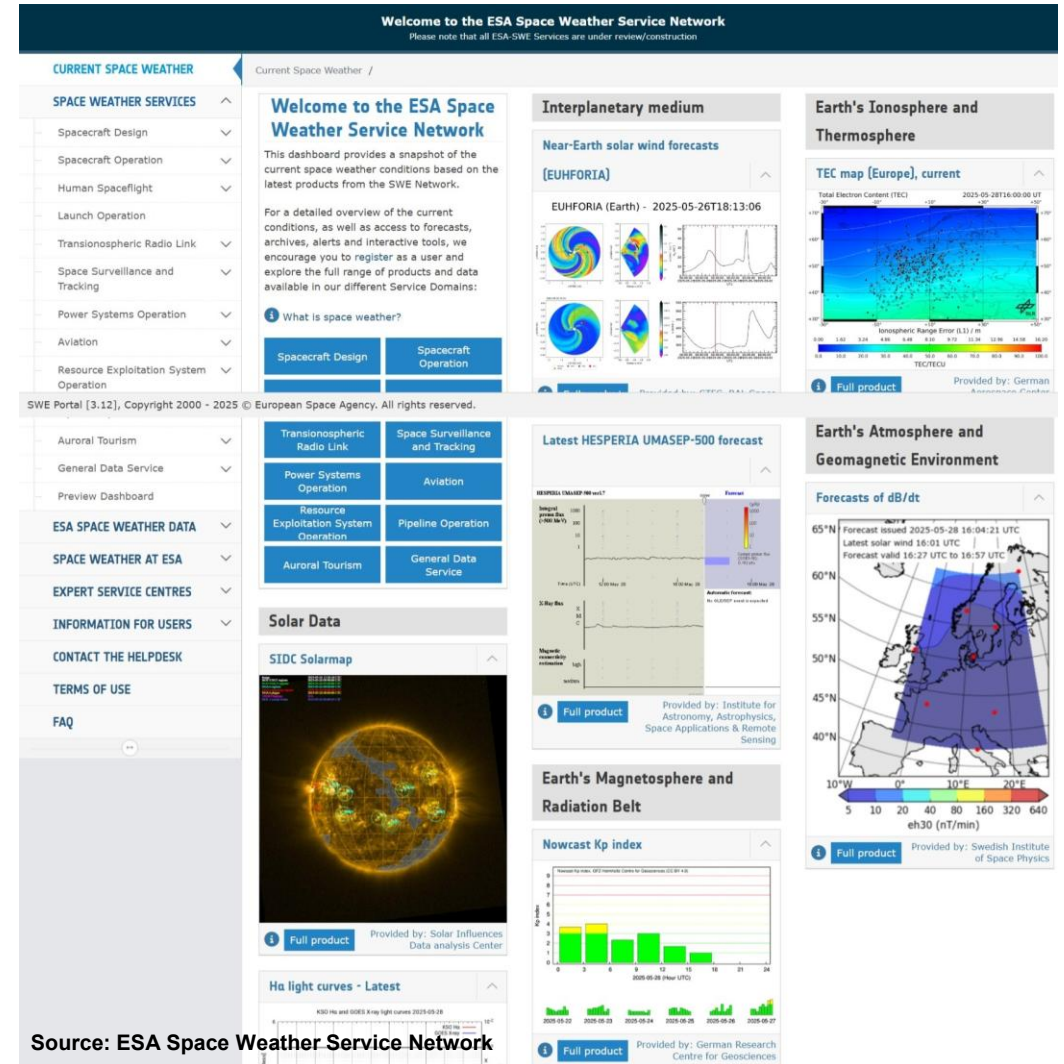


Space Weather Front Desk

Proposed by the European Space Agency
Publicly available pages
Full free access after simple registration



[Current Space Weather](#)



SSA: A critical EU space component

The likelihood of such events is low.

However, when they do occur,
the safety of thousands to millions of people
can be jeopardised.

Thank you for your attention

Any questions?



Now, let's check you were not sleepy ...

**Join us in an interactive quiz to
challenge your knowledge on SSA!**

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Q&A session



*Please use the “**Raise Hand**” function, or write your question directly in the Chat*

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What comes next?

Upcoming Training Opportunities

Simulation Exercises

- ✦ 6th to 7th of October 2026 in Brussels, DG DEFIS
- ✦ Gain **hands-on skills in using EU Space data and services** for disaster management!

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Contacts

Reach out to us for any further questions!

For the SUNSHINE Trainings: Annita Elissaiou
ae@eena.org & sunshine@telespazio.com

For the SUNSHINE Exercises: Simon Taillefer
simon.taillefer@telespazio.com & sunshine@telespazio.com

General questions on SUNSHINE:
ec-sunshine-seminars@ec.europa.eu
sunshine@telespazio.com



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Thank you for joining!

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