

European Space Surveillance and Tracking



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EU SST is:

- A working example of multilateral cooperation at the intersection of space safety and space security
- A consortium of 7 Member States* expanding towards a new SST partnership composed of up to 15 Member States of the European Union

We:

- Are fully **operational 24/7**, we deliver high quality public services to users (CA, RE, FG)
- Perform **research and development** of capabilities to improve the level of performance and autonomy
- Foster innovation and **competitiveness** of the European industry and start-ups, we support the consolidation of a commercial ecosystem around SSA, strengthening strategic autonomy in Europe
- Are **security** relevant (e.g. data sharing) and we take into account the dual dimension
- Mature and expand as a fully-fledge security component of the **EU Space Programme** 2021-2027

*France, Germany, Italy, Poland, Portugal, Romania, Spain



Governance • **Consortium**

EU SST Consortium:

7 EU Member States

France, Germany, Italy, Spain, Poland, Portugal, Romania



Cooperation with **SatCen** as Front Desk Overseen by European Commission







Governance - Security



- **Dual dimension** of SSA
- **Collaboration** between civilian, military and security actors
- Contributing sensors remain under control of Member States
- Precise information on the nature, specifications and location of certain space objects may affect the security of the EU, its Member States, or Third Countries



Operations • **Overview**





Sensors for space surveillance and tracking



https://www.eusst.eu/about-us/

Data sharing • Towards a European Catalogue





European database: data sharing in 2021

Measurements exchanged in year 2021

- TOTAL:
 - 105 849 984 (>100 million)
 11 457 distinct objects**
- Average/day
 - 291 598 measurements/day3 595 distinct objects/day
- Maximum/day

1 832 185 meas. (on 9 Aug)
6 836 distinct objects (on 25 Oct)

** the number of distinct objects observed does not imply they are catalogued or even well observed



Jan-21 Feb-21 Mar-21 Apr-21 May-21 Jun-21 Jul-21 Aug-21 Sep-21 Oct-21 Nov-21 Dec-21



Service provision • 3 Operational Services

| Bu Space Survivaliance and Tracking Burgers Particula | Collision Avoidance (CA) Risk assessment of collision and generation of collision avoidance alerts | Re-entry Analysis (RE) Risk assessment of space objects re-entry into the Earth's atmosphere | Fragmentation Analysis (FG) Detection and characterisation of in-orbit fragmentations, break-ups or collisions |
|--|--|--|--|
| Key features | User-tailored service (SCD) Hot redundancy scheme with a single service provider Enhanced Analysis & Risk Mitigation support (e.g. covariance estimations, HBR estimations, PoC sensitivity analysis, CAM support, support for exceptional operations) | Long-term (within 30 days) re-entry predictions Short-term (a few days) overflight predictions with ground tracks over customisable areas of interest | Short-term notification to confirm quickly an FG event Medium-term FG analysis based on the orbital parameters of the catalogued fragments (e.g. Gabbard diagram) Long-term FG analysis (with simulations with break-up model) |
| Products | Autonomous and enhanced CDMsCA ReportsMonthly reports | 30 days re-entry listRE reports | Short-term notificationMedium-term reportLong-term report |
| Portal | Access, download and upload information (API and web interface) Access documentation and configure notifications alerts View evolution of key parameters e.g. PoC | Access, download and upload information (API and web interface) Configure notifications View evolution of re-entry window | Access, download and upload information (API and web interface) Receive notifications Fragments viewer |



Service provision - SST Front Desk





Service provision • Users



These three EU SST services will be open also to non-EU users beginning of 2023



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Satellites registered to Collision Avoidance (CA)



Service provision • User feedback



"The CA service was really appreciated during LEOP operations"

AIRBUS

"The reports from the Collision Avoidance service are very comprehensive and meet our needs"

SES^{*}

"In our opinion as satellite operator, EUSST is currently the best SSA service on the market – institutional or commercial"



Strategic autonomy in Europe: Global performance evolution for cataloguing



New strategy to foster European competitiveness

Six proposals highly supported by industry and start-ups:

- 1. Accelerate the acquisition of European commercial data for operational purposes
- 2. Provide new public services relying on European Industry and Start-ups
- 3. Support R&D on innovative commercial sensors
- 4. Access to a public catalogue of space objects
- 5. Provide a European platform for commercial use
- 6. Establish a European Industry and Start-ups Forum (EISF)



Two workshops with industry in February 2022:

- 152 participants
- 1st workshop on operations
- 2nd workshop on R&D

European industry intervenes in all the EU SST value chain from R&D activities to operations

80% of the funding is currently subcontracted to the industry, in addition to the important funding of Member States in the SSA domain (e.g. France 2030)



Conclusions

- Fully **operational capability 24/7**, the "best available SSA service in the world" (UK operator)
- Mature and expand as a fully-fledge security component of the EU Space Programme 2021-2027
- Priority is to develop a **European strategic autonomy** in space surveillance and tracking of space objects in all orbit regimes with an incremental approach (e.g. 10 cm in LEO)
- New strategy to foster European **industry and start-ups** competitiveness
- Considered as the operational capability for the EU STM approach, EU SST will implement some actions proposed in the **joint communication on STM** by European Commission and High Representative of the Union for Foreign Affairs and Security Policy





Thank you

User Registration https://portal.eusst.eu/

General Information www.eusst.eu











