



European Space Surveillance and Tracking

Dr. Pascal Faucher, Chairman EU SST Consortium
Marc Becker, Chairman EU SST Security Committee

15th Military Space Situational Awareness Conference, 4 September 2020

Overview and refresher

Decision of the European Parliament and of the Council of 16 April 2014 establishing a Support Framework for Space Surveillance and Tracking (Dec. 541)



Our goals:

- Ensure **resilience** of European space infrastructures
- Higher level of **strategic autonomy**
- Global SSA burden-sharing

We are **operational**: sensor network, database, services, users

We perform **research and innovation** activities to improve the level of performance: upgrades of sensors, architecture studies, etc.

We are **security** relevant: security and data sharing

We mature and expand: upcoming EU Space Programme

We are the “precursor of a European Space Traffic Management system”

Governance: Consortium



EU SST Consortium:

8 EU Member States (since 2015, France, Germany, Italy, Spain, United Kingdom, and since 2019, Poland, Portugal, Romania)

Cooperation with **EU SatCen** as Frontdesk

Overseen by **European Commission**

Operations: Sensors

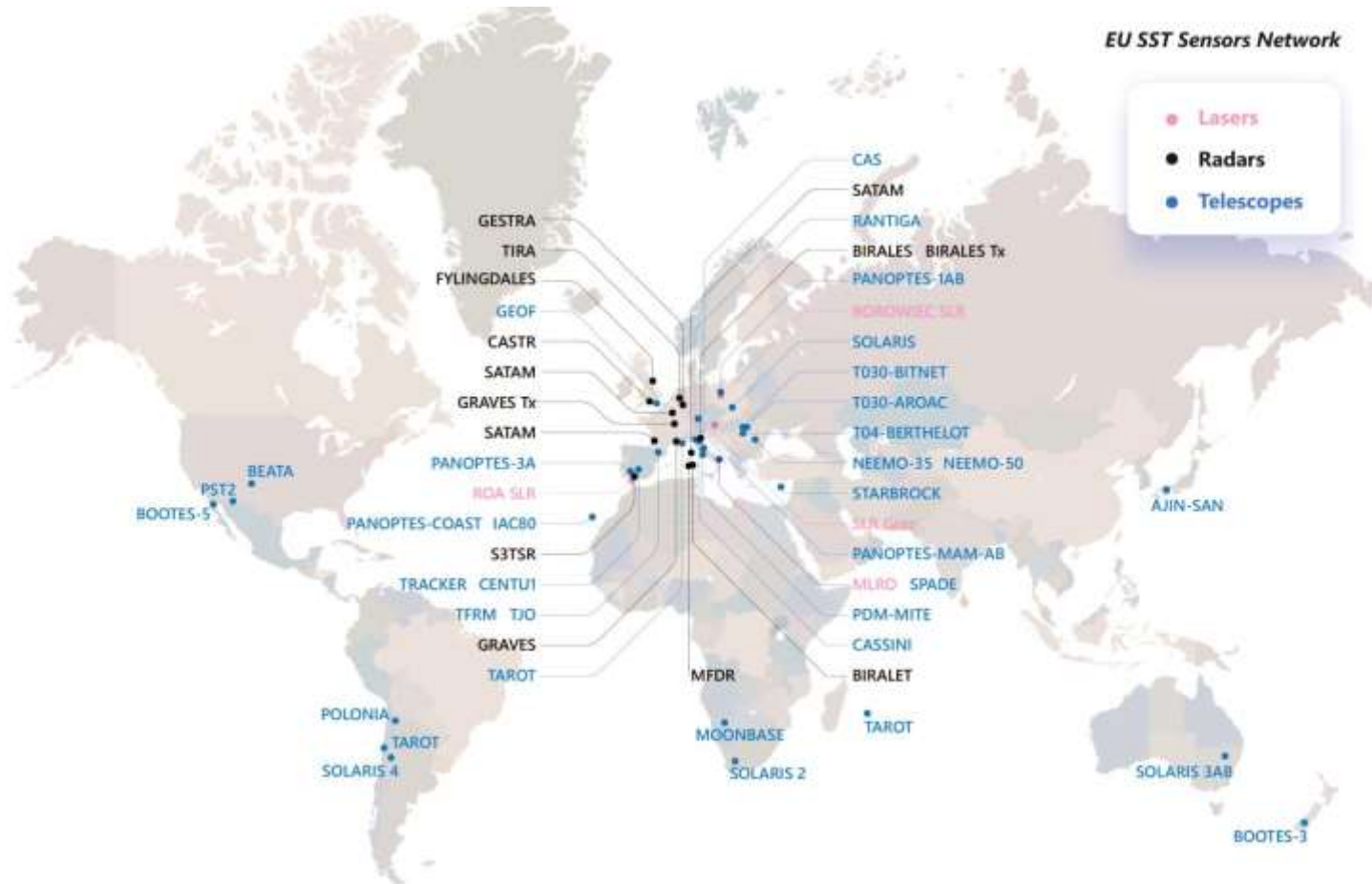


12 Radars
(4 surveillance, 8 tracking)

34 Telescopes (18 surveillance,
16 tracking)

4 Lasers

Operations: Sensors



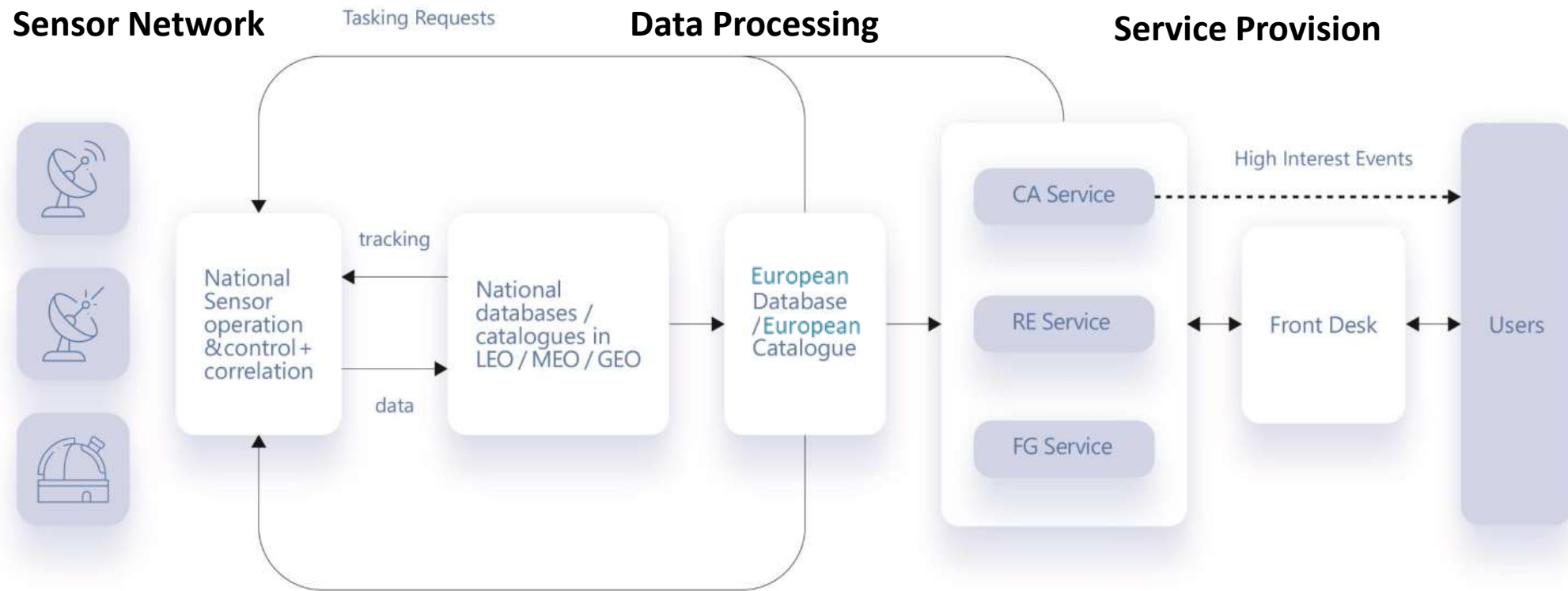
12 Radars

(4 surveillance, 8 tracking)

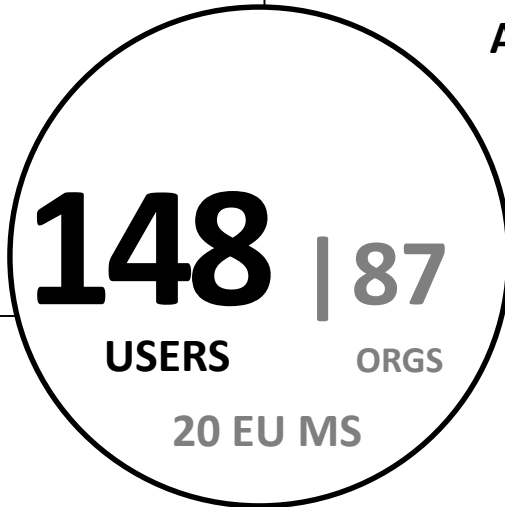
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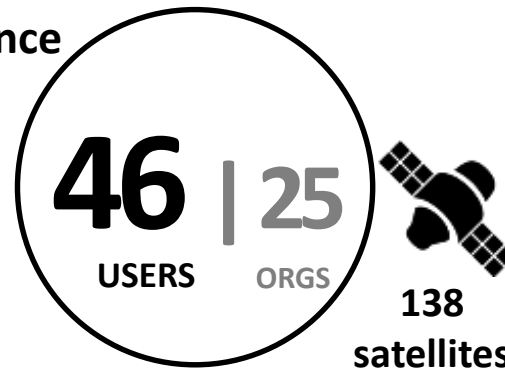
Operations: Service Provision



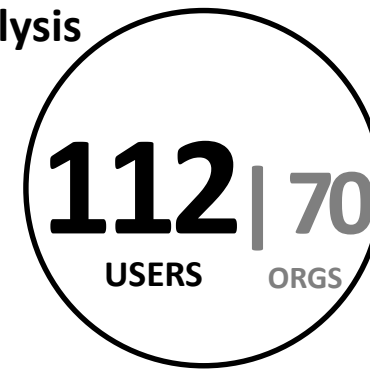
Services and Users



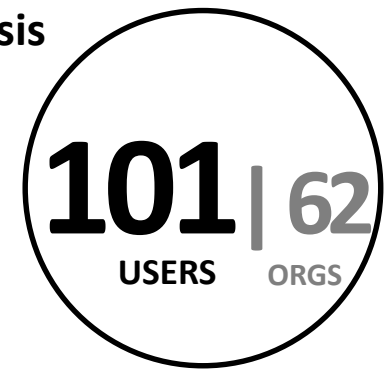
Collision
Avoidance



Re-entry
Analysis



Fragmentation
Analysis



Users: Satellites registered for CA



138
SATELLITES

LEO

45

BIROS
SAR-LUPE 1, 2, 3, 4, 5
TET-1
TANDEM-X
TERRASAR-X

REAKTOR HW
DEIMOS 1, 2
METOP A, B, C
SENTINEL 1A, 1B, 2A,
2B, 3A, 3B, 5P
PAZ
UPMSat-2
ION-mk01 Lucas

CALIPSO
ELISA E12, E24, W11,
W23
HELIOS 2A, 2B
JASON 3
PLEIADES 1A, 1B
SMOS
VENμS
BRITE PL-1, PL-2
CSO-1
ENTRYSAT
EYESAT
ANGELS
FALCON EYE 2
ELO3

MEO

30

GSAT / Galileo
0101, 0102,
0103, 0104, 0201,
0202, 0203, 0204,
0205, 0206, 0208,
0209, 0210, 0211,
0207, 0212, 0213,
0214, 0215, 0216,
0217, 0218, 0219,
0220, 0221, 0222

O3B FM 15, 16, 14, 13

GEO

63

COMSATBW-1, 2

SICRAL 1, 1B, 2

XTAR-EUR
METEOSAT-8, 9, 10, 11
SPAINSAT
SES 4, 5
HYLAS 1, 2, 4

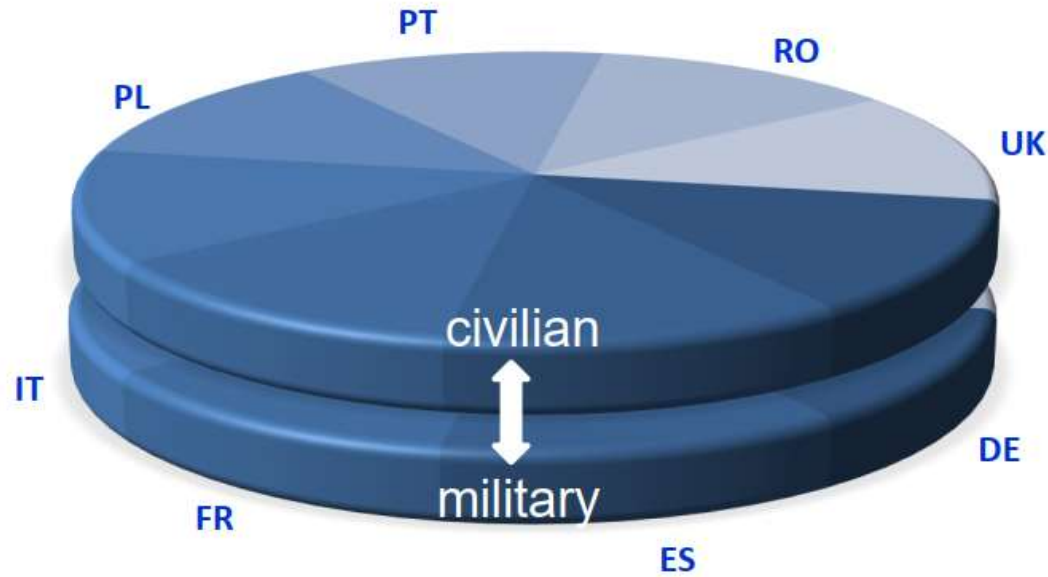
ATHENA-FIDUS
SYRACUSE 3A, 3B
HELLAS-SAT 2, 3, 4

INMARSAT 3F1, 3F2,
3F3, 3F5, 4F1, 4F2,
4F3, AF1, 5F1, 5F2,
5F3, 5F4, GX5

EUTELSAT 10A, 16A,
172A, 21B, 25B, 28A,
28B, 36A, 36B, 3B,
5WA, 65W, 7WA,
70B, 7A, 7B, 8WB, 9A
9B, HB 13B, 13C, 13D,
KASAT 9A, 12WB, 172B,
7C, 5 WEST B

ANASIS II

Governance: Security



Dual dimension of SSA

Collaboration between civilian, military and security actors

Contributing sensors remain under control of Member States

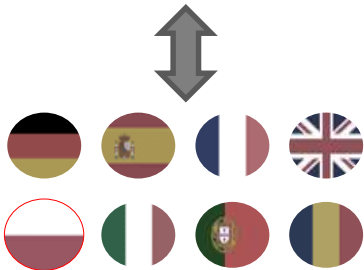
Precise information on the nature, specifications and location of certain space objects may affect the security of the EU, its Member States, or Third Countries

Data sharing: Towards a European Catalogue

European Database
(measurement data)



Operational
since 1st
April 2019



Measurements from MS sensors

Database as starting point for
catalogue building and maintenance

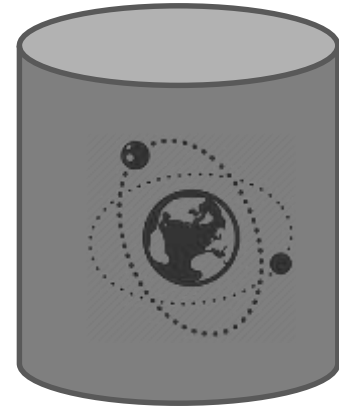
Database: joint platform for efficient data
sharing and sensor tasking

Catalogue:

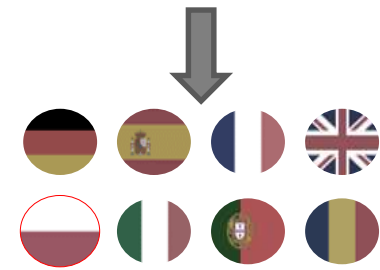
Measurement data from the Database will
be pre-processed, analysed, and correlated

Correlated measurements will be used to
determine and refine the orbit of objects

European Catalogue
(orbit data)



Initial
development
& operation
from 2019 to
Dec. 2021



MS Operations Centres will
use the European Catalogue

Security and Data Policy



Need to consider the existing architecture of bilateral SSA sharing agreements in Europe:

All 8 Consortium MS concluded bilateral SSA sharing agreements with the US, covering the bilateral exchange of unclassified SSA and SST data;

DE, FR, and UK have bilateral SSA sharing agreements with the US that additionally cover the bilateral exchange of classified SSA and SST data;

DE and FR concluded a bilateral SSA sharing agreement with each other, covering the exchange of both unclassified and classified SSA and SST data;

IT is working on the MoD-DoD channel to update the current SSA data sharing agreement at classified level.

Security and Data Policy

Unrestricted / (ART) (Classification)
2-35ST2016-17 – D3.2 – Data Policy



Approved by SSC on 2018-07-01
Reviewed by SSC on 2018-07-01

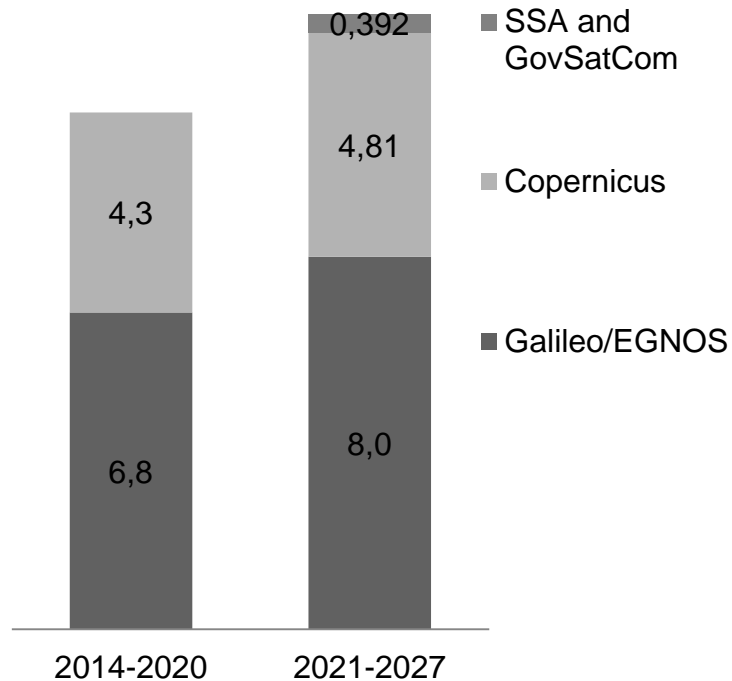
The Member States of the Consortium created a Security Committee that oversees all matters relating to data security and operational risk, and includes, inter alia, representatives from the ministries of defense and national security agencies

In the absence of a comprehensive set of SSA data sharing agreements in Europe, EU SST deals with the security interests of the respective partners and their allies through an internal Data Policy

The EU SST Security Committee provides classification guidance and develops security requirements that cover for instance how EU SST protects sensitive information such as data on allied space objects

Perspective: EU Space Programme

EU Space Programme



EU Council budget proposal (in Billion EUR)

EU Space Programme: 13,202 B€

European Defence Fund: 7,014 B€

Following EU Space Strategy (2016), legislative proposal for an EU space programme 2021-2027 (2018), agreed by Council and European Parliament (2019)

All EU activities in one programme:

Galileo/EGNOS

Copernicus

SSA (SST plus SWE, NEO)

GovSatCom

*“...precursor of a European **Space Traffic Management** system”*
—Commissioner Thierry Breton

Perspective: EU Space Programme



EU SST as...

Working example of **multilateral cooperation** at the intersection of space safety and space security

Important **R&D** activity to improve performance and strategic autonomy at European level

New possible **services** to ensure the safety and sustainability of space operations

Fundamental **operational capability** in Europe, precursor of a European STM system



Thank you

User Registration

<https://sst.satcen.europa.eu>

General Information

www.eusst.eu