# European Union Industry and Start-ups Forum

Vincent Morand, System Evolution WP EU SST
Space Surveillance Department, CNES
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# What is EU SST?

## EU SST is:

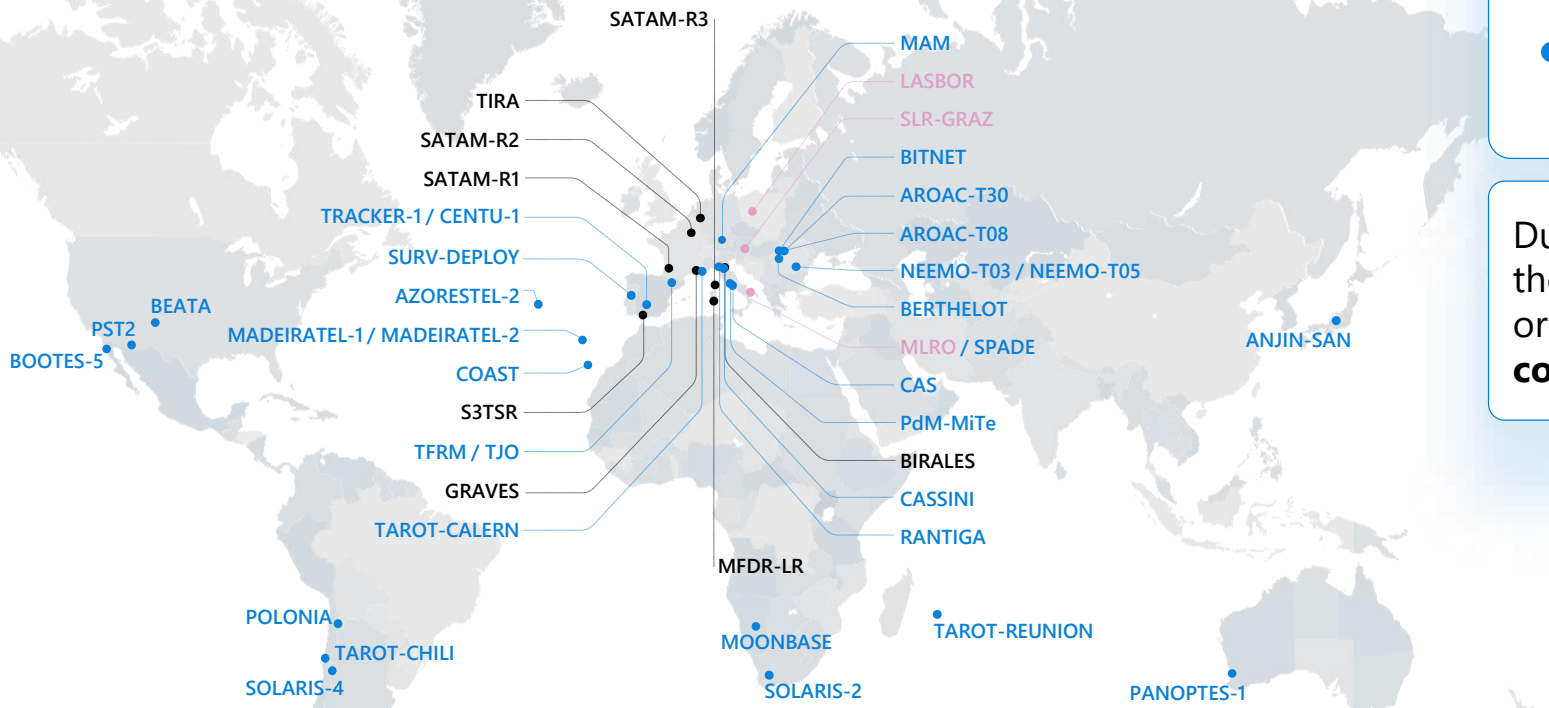
- A working example of multilateral cooperation at the intersection of space safety and space security
- A consortium of 7 Member States* expanding towards a new SST partnership composed of up to 15 Member States of the European Union

## 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 SST, 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

# Sensors for space surveillance and tracking



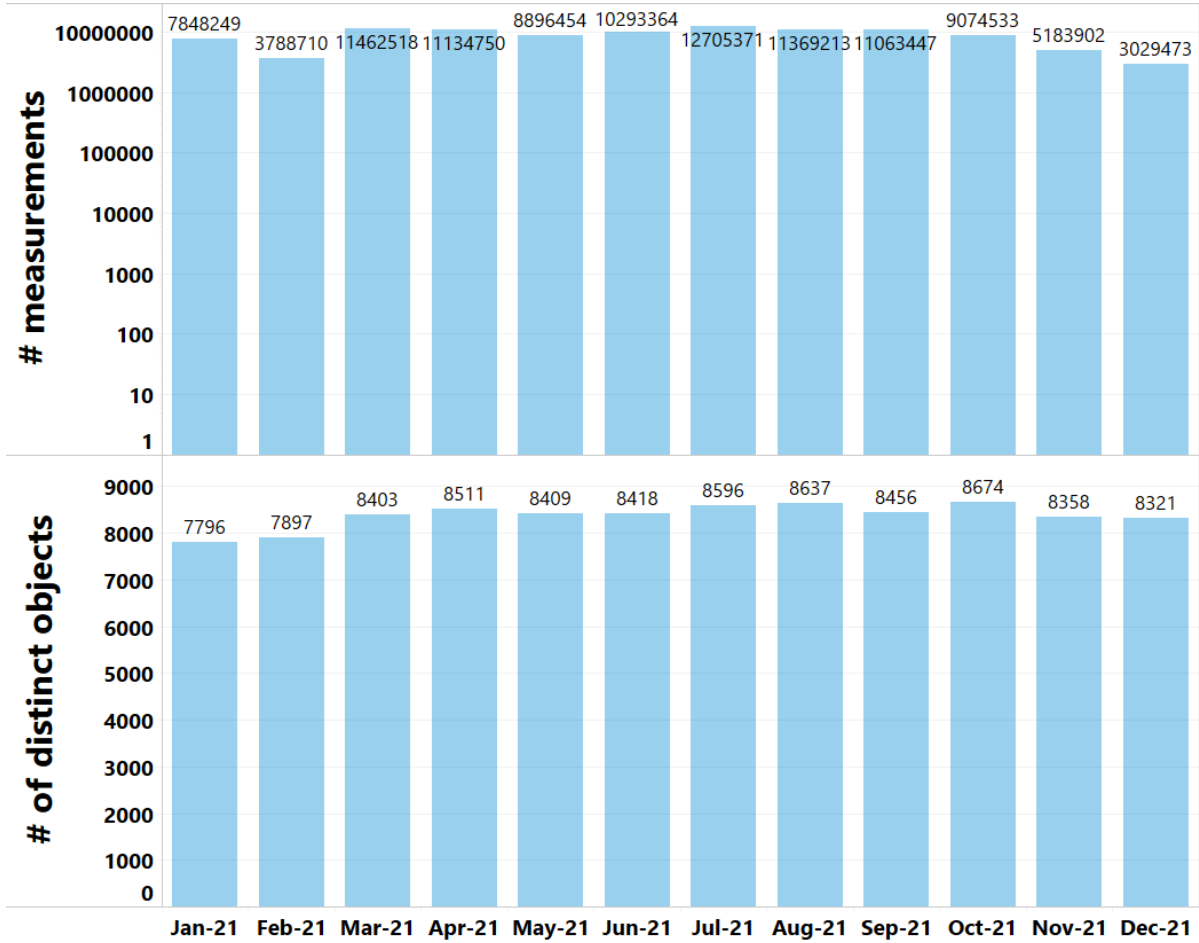

- 3 Lasers
- **8 Radars** (2 surveillance, 6 tracking)
- **33 Telescopes** (17 surveillance, 16 tracking)

Dual approach which enables the use of sensors of different origins: **scientific, military and commercial**

EU SST network is regularly evolving, see https://www.eusst.eu/about-us/

# 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/day
    - 3 595 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 catalogued or even well observed

# Service provision ▪ Users

**>140 ORGS**
22 EU MS

**Collision Avoidance**
**39 ORGS**

**>270 Satellites**

**Fragmentation Analysis**
**>100 ORGS**

**Re-entry Analysis**
**>100 ORGS**

These three EU SST services will be open also to non-EU users by end of 2022/beginning of 2023

Updated as of 23/03/2022

# Satellites registered to Collision Avoidance (CA)

**278**
**Satellites**

## LEO

**112**

BIROS
SAR-LUPE 1, 2, 3, 4, 5
TET-1
TANDEM-X
TERRASAR-X
REAKTOR HW, Sunstorm, W-CUBE
DEIMOS 1, 2
METOP B, C
SENTINEL 1A, 1B, 2A, 2B, 3A, 3B, 5P, 6A
PAZ
UPMSat-2
ION-SCV 1, 2, 3
CHEOPS
TRISAT
Brik-II
NEPT-1
FossaSat 2E1, 2E2, 2E3, 2E4, 2E5, 2E6
Suomi-100
HELIOS 2A, 2B
VENµS
SARAL
CSO-1, 2
CALIPSO
JASON 3
PLEIADES 1A, 1B
SMOS
BRITE PL-1,PL-2
EYESAT
ANGELS
CERES 1,2,3
ELO3
XR-1, ICEYE-X9, X8, X7, X6, X5 , X4, X2, X1, X11, X12, X13, X14, X15, X16
GMS-T, Odin
NETSAT-1,2,3,4
GomX-4A. 4B
Globalstar M065, M066, M069, M070, M071, M072, M073, M074, M075, M076, M077, M078, M079, M080, M081, M082, M083, M084, M085, M086, M088, M089, M090, M091, M092, M093, M094, M095, M096, M097

## MEO

**48**

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, 0223, 0224
O3B PFM, O3B FM 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20

## GEO

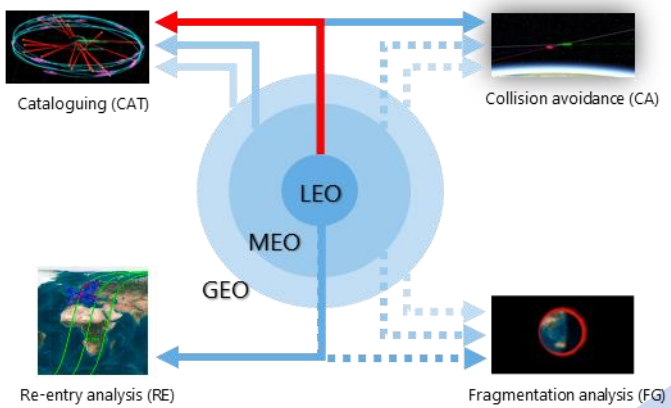
**118**

COMSATBW-1, 2
XTAR-EUR
SPAINSAT
METEOSAT-8, 9, 10, 11
HYLAS 1, 2, 4
ASTRA 1KR, 1L, 1M, 1N, 1G, 2A, 2C, 2D, 2E, 2F, 2G, 3A,,3B, 5B
AMC 1, 3, 4, 6, 8, 11, 15, 18, 21
SES 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11,12, 14, 15 , 16/Govsat-1, 17
NSS 6, 7, 9, 10, 11, 12
SIRIUS 4, QUETZSAT 1, CIEL 2
EDRS-C
ATHENA-FIDUS
SYRACUSE 3A, 3B, 4A
HELLAS-SAT 2, 3, 4
INMARSAT 3F1, 3F2, 3F3, 3F5, 4F1, 4F2, 4F3, AF1, 5F1, 5F2, 5F3, 5F4, GX5, 6F1
EUTELSAT 10A, 16A, 172A, 21B, 25B, 28A, 28B, 36B, 3B, 5WA, 65W, 7WA, 70B, 7A, 7B, 8WB, 9A, 9B, HB 13B, 13C, 13D, KASAT 9A, 12WB, 172B, 7C, 5 WEST B, Konnect, Quantum
BULGARIASAT-1
AMAZONAS 2, 3, 5, HISPASAT 30W-5, 30W-6, 36W-1, 74W-1, 143W-1
Turksat 5B

**Commercial** 187 **Govern./IGOs** 62 **Military** 22 **Universities / Research** 7

Updated as of 23/03/2022

# Strategic autonomy in Europe: Global performance evolution for cataloguing




## 2023 Timeframe

### LEO Cataloguing performance

- **25% of the objects above 10 cm** (around 4600 objects)

| < 10cm | > 10cm | > 50cm | > 1m |
|---|---|---|---|
| None | **~25%** | ~85% | ~100% |

### MEO Cataloguing performance

- **Around 50% of the objects above 35 cm**

### GEO Cataloguing performance

- **All objects above 35 cm**

## 2028 Timeframe

### Higher autonomy in cataloguing

### LEO Cataloguing performance

- **50% of the objects above 7 cm**
- **65% above 10 cm** (catalogue 12 000 objects)

### MEO Cataloguing performance

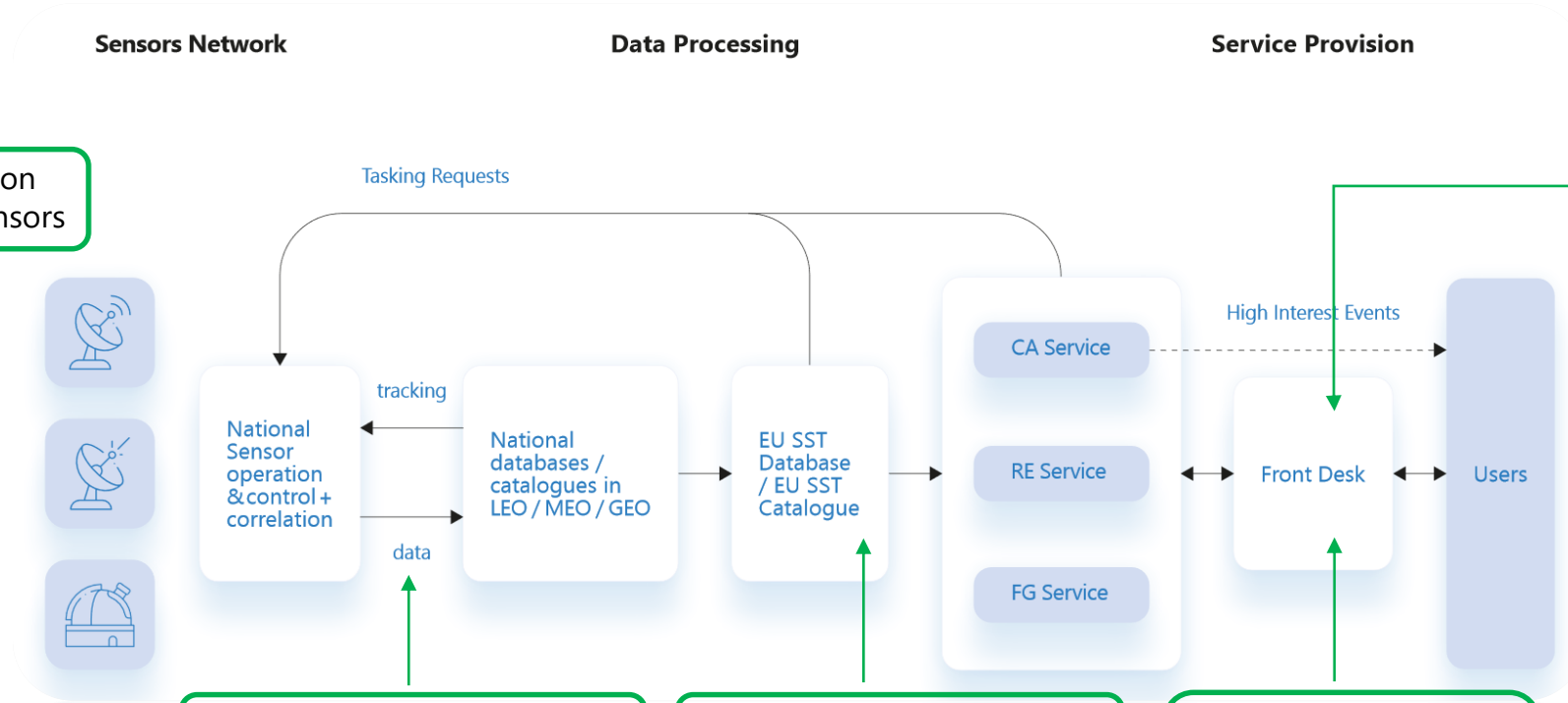
- Not yet evaluated, expectations are all objects above 35 cm

### GEO Cataloguing performance

- **All objects above 35 cm**

# 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 SST domain




Proposal 3. Support R&D on innovative commercial sensors

Proposal 5. Provide a European platform for commercial use (data provision and commercial services)

Establish a European Industry and Start-ups Forum (EISF)

**1st meeting of EISF on 26 April 2022 in Brussels (DG DEFIS)**

Proposal 1. Increase acquisition of commercial data

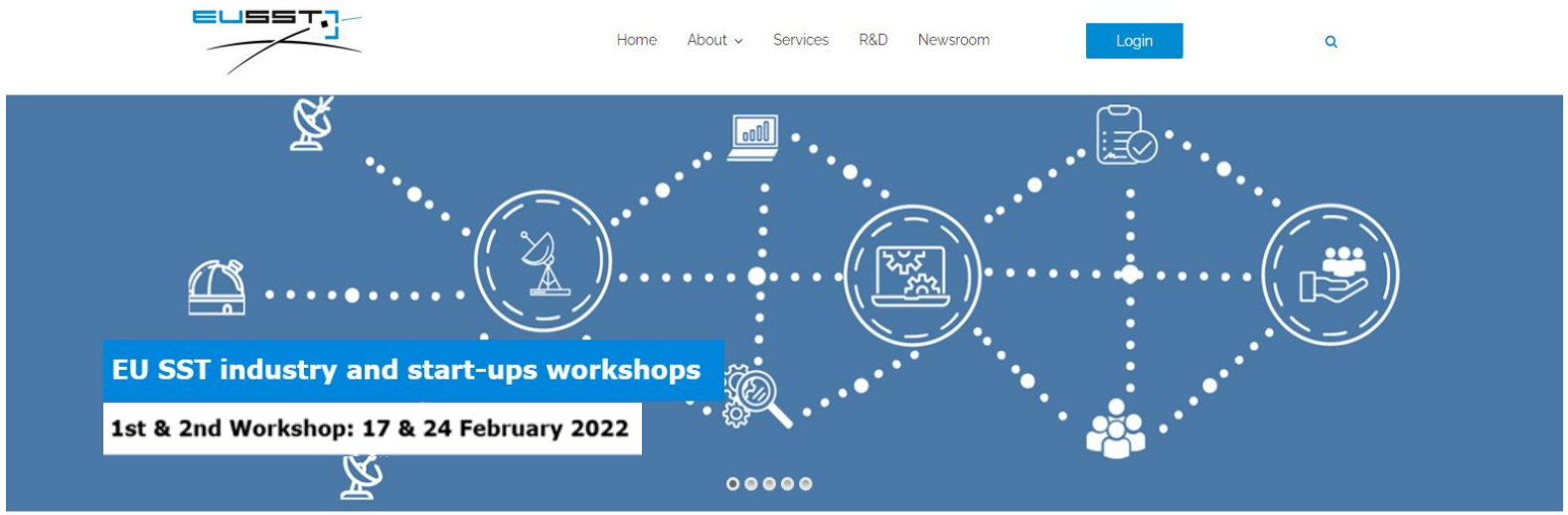
Proposal 4. Access to a public catalogue of space objects

Proposal 2. Provide new public services relying on European industry and start-ups

# New strategy to foster European competitiveness

- Five 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

Initial "Proposals to foster European industry and start-up competitiveness", December 14th meeting




Two workshops with industry in February 2022:
- 152 participants
- 1st workshop on operations
- 2nd workshop on R&D

# Proposal 1.
# EU SST to increase acquisition of SST commercial data

- Initial proposals discussed during preparatory workshops:
  - "We already use commercial data in EU SST, in addition to scientific and military data"
  - "We strive to support the competitiveness of European industry and start-ups while increasing the strategic autonomy in the SST domain"
  - "We propose to accelerate the acquisition of European commercial data to enlarge the European operational database, grow a future autonomous catalogue of space objects and increase the quality of service provision"
- First outcomes after preparatory workshops consultation still to be discussed:

EU SST intends to act as a public anchor customer for SST commercial data

Commercial data is expected to fill the system gaps

Data would be acquired via a transparent open European calls for tender process, following a best value for money approach (legal instrument still to be defined)

Sensors providing commercial data will be regularly evaluated following the same criteria as the other sensors of the network non-commercial sensors : calibration campaigns, operational performance, added value analysis. This evaluation is a mandatory requirement to ensure data quality..

# Proposal 2. EU SST to provide new public services relying on European industry and start-ups

- Initial proposals discussed during preparatory workshops:
  - "We consider to rely on the European industry and start-ups to provide some new EU SST services, defined by the EU SST Partnership, in addition to existing CA, RE, FG public services"
  - "Future services under consideration are RFI and support to mitigation, remediation (as per space regulation for these last two)"
- First outcomes after preparatory workshops consultation still to be discussed:

EU SST intends to act as a public catalyzer and anchor customer

As per space regulation, the three existing (CA, RE, FG) are public services provided by EU SST partnership, involving the industry for the service provision as it is done today within the EU SST consortium

Potential new EU SST public services, such as RFI and support to mitigation and remediation, are under consideration and may be provided by the industry and start-ups on behalf of EU SST

Efficient services provisions rely on the access to the most complete database/catalogue

# Proposal 3.
# EU SST to support R&D on innovative commercial sensors

- Initial proposals discussed during preparatory workshops:
  - "We consider to issue European calls for tenders for research and development of innovative commercial sensors (up to TRL 6) owned by the industry and start-ups, under specific criteria of co-funding (i.e. 55% private – 45 % public EU funding)"
  - "Virtuous circle : as a public investor in the development phase, we expect EU SST to acquire future data coming from those newly built commercial sensors at best conditions for the first years"
- First outcomes after preparatory workshops consultation still to be discussed:

EU SST intends to act as a public investor for innovative commercial technologies in order to acquire future data coming from those newly built commercial sensors at best conditions for the first years (e.g. 3 years)

Innovative commercial sensors are expected to provide high quality SST data to target best value for money

Innovative commercial sensors are expected to fill the system gaps, as in Proposal 1, and increase the overall system performance

In line with action 2 c) of the joint STM communication, to foster technological and innovation cross-fertilisation on R&D on sensors, to maximize leverage effect, and topics covering all the value chain (data processing, service provision...)

Foster existing synergies with other EU initiatives : Cassini, EDF, …

# Proposal 4.
# EU SST to provide access to a public catalogue of space objects

- Initial proposals discussed during preparatory workshops:
  - "In order to stimulate innovation and the development of downstream applications, we propose to provide to the European industry, start-ups and academia:
    - First, a free of charge filtered European catalogue of space objects
    - Second, a free access to a filtered database of historical SST data (through specific arrangements) for R&D purpose. The use of EU SST data for commercial purpose shall be forbidden (while the software tools developed by the industry and start-ups could of course be used for commercial purpose)"
- First outcomes after preparatory workshops consultation still to be discussed:

EU SST intends to act as a public provider of a catalogue of space objects for European industry, start-ups and academia to stimulate innovation and the development of downstream applications

Efficient public and commercial services rely on the access to the most complete and accurate catalogue

Security restrictions would apply to the public European catalogue of space objects

A free access to a filtered database of SST data is to be discussed to avoid a negative impact on the SSA commercial market

# Proposal 5.
# EU SST to provide a European platform for commercial use

- Initial proposals discussed during preparatory workshops:
  - "We offer the European industry to sell their specific commercial data and services (developed by the industry and start-ups in addition to the public services provided by the EU SST Partnership) through a platform within the EU SST Front Desk environment, in addition to EU SST general public services, in a centralize European hub"
  - "Optionally, on the commercial platform of the hub, we may consider to develop a secured, traceable, immutable and decentralized exchange of data, based on block chain technology, to enable the European industry and start-ups to sell their specific commercial services and data to customers"
- First outcomes after preparatory workshops consultation still to be discussed:

EU SST intends to act as a facilitator and enabler for commercial data and services

Current EU SST Front Desk already interfaces with more than 140 organizations registered to EU SST

In addition to the access to general public services, EU SST will promote access to specific commercial data and services to all users, operators and organizations registered to EU SST

# Conclusions

- Fully **operational capability 24/7**, the “best available SSA service in the world” (UK operator)
- 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

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