#EUSpace

Challenges in Ensuring the Security of EU Space Programmes

Part I.

EU Space Programme

Security Accreditation Board chairperson

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EUSPA
European Union Agency for the Space Programme

Content

Part I : EU Space context

10:00 to 11:20

- **Space introduction**
- **EU Space Programmes**
- **EU space governance**

Break : 11:20 to 11:40

Part II: From past challenges to the future

11:40 to 13:10

- **EU Space security evolutions since 1999**
- **Is Europe a Space power?**
- **Current issues and challenges**

Space introduction

Space systems

Satellites:

- Low earth orbits (LEO, typically less than 2,000 kilometers), used to place observation and telecommunications satellites.
- Medium earth orbits (MEO, between 2,000 and 35,786 kilometers), used to place radio-navigation satellites (GPS, Galileo, GLONASS…);
- Geostationary orbit (GEO at 35,786 kilometers), used to place satellites stationary in relation to the Earth (telecommunications and early warning).

Stations on ground and operators.

And you need **launchers**.

International space law

The first satellite launches in 1957 led governments to introduce specific rules governing the use of space. Five treaties concluded between 1967 and 1979 define international space law:

- the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (known as the **'Space Treaty'**, 27 January 1967);
- the Agreement on the Rescue of Spationauts, the Return of **Spationauts** and the **Return of Objects** Launched into Outer Space (22 April 1968);
- the Convention on International **Liability for Damage Caused by Space Objects** (29 March 1972) ;
- the Convention on **Registration** of Objects Launched into Outer Space (14 January 1975);
- the Agreement Governing the **Activities of States on the Moon and Other Celestial Bodies** (18 December 1979).

In addition to these texts, there are international agreements, as well as general international law (the general principles of the United Nations Charter can be applied in outer space).

Space treaty (1967)

The 1967 Space Treaty and the principle of the use of space for peaceful purposes limit the military use of space.

“States ‘undertake **not to place in orbit around the Earth any object carrying nuclear weapons or any other type of weapons of mass destruction**, not to install such weapons on celestial bodies and not to place such weapons in outer space in any other manner’.

Details are given on the subject of celestial bodies, on which ‘the construction of military bases, installations and fortifications, the testing of weapons of all types and the conduct of military manoeuvres are prohibited’.

Outer space is thus a sanctuary.

However, countries that have historically operated in space have become increasingly dependent on this environment and have developed new vulnerabilities.

Improved space-based surveillance systems, the development of denial-of-access and area-denial postures, jamming capabilities, the proliferation of ballistic and cruise missiles...

Space is now becoming a potential area of confrontation.

EU

Space Programmes

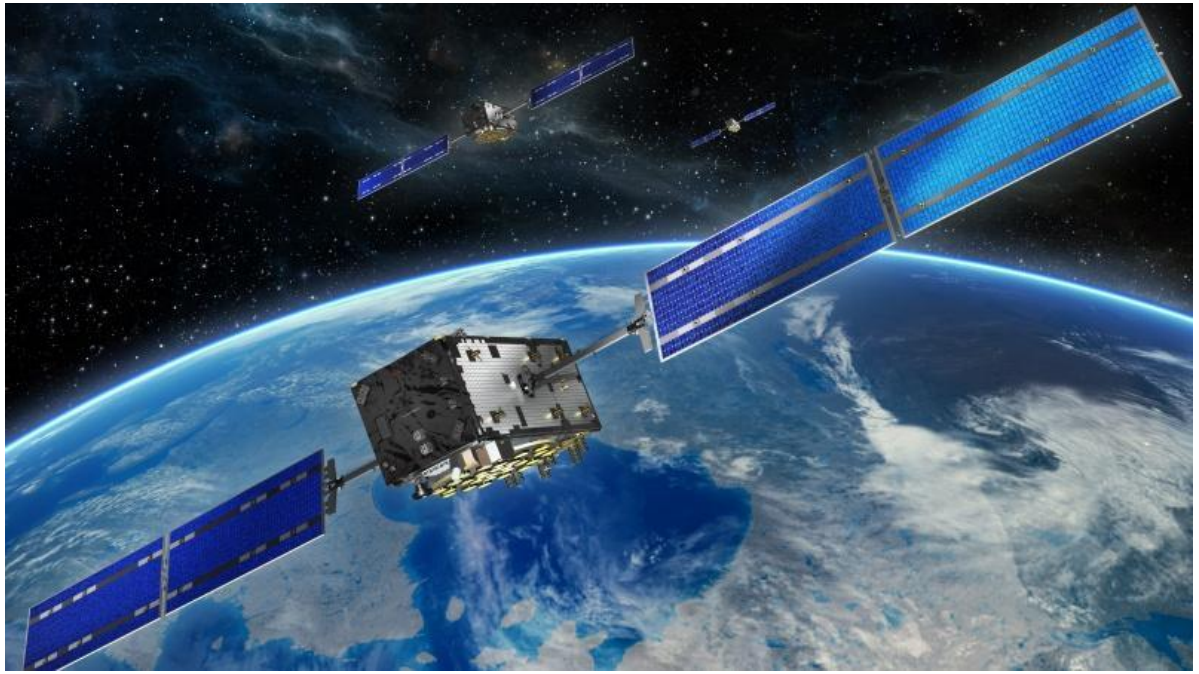
EU space programme objectives

EU Space programme objectives

1. provide or contribute to the provision of […] **data, information and services without interruption** and […] able to support the Union's political priorities and related evidence-based and independent decision making, inter alia for climate change, transport and security;
2. maximise the socio-economic benefits […];
3. enhance the **safety and security of the Union and its Member States** and **reinforce the autonomy of the Union**, in particular in terms of technology;
4. promote the role of the **Union as a global actor in the space sector**, encourage international cooperation, reinforce European space diplomacy […];
5. enhance the safety, security and sustainability of all outer space activities pertaining to space objects and debris proliferation, as well as space environment […]

to support an **autonomous, secure and cost-efficient capability to access space**, taking into account the essential security interests of the Union;

Galileo



Experimental satellites GIOVE-A and -B launched in 2005 and 2008 respectively, serving to test critical Galileo technologies, while also the securing of the Galileo frequencies within the International Telecommunications Union.

Operational Galileo satellites launches began in 2011. Satellites positioned in three circular MEO planes at 23 222 km altitude.

Initial services started in 2016.

Two Control Centres, two Security Monitoring Centres, seven service entities and a worldwide network of uplink and sensor stations.

GPS, GLONASS, BEIDOU and GALILEO 1st then 2nd generation

Galileo

Galileo services:

- **OS**
- **PRS (encrypted)**
- **OSNMA**
- **HAS**
- **Timing service**
- **EWSS**

and **SAR service** as a contribution to COPSAS-SARSAT.

Different services for different applications including a governmental service (PRS)

EGNOS

European Geostationary Navigation Overlay Service (EGNOS) augments the US GPS satellite navigation system and makes it suitable for safety critical applications such as flying aircraft.

Geostationary satellites and a network of ground stations, EGNOS transmits a signal containing information on the reliability and accuracy of the positioning signals sent out by GPS.

The EGNOS Open Service has been available since 1 October 2009.

The EGNOS Safety of Live service has been officially declared available for aviation on 02 March 2011. Space-based navigation signals have become usable for the safety-critical task of **guiding aircraft - vertically as well as horizontally - during landing approaches.**

EGNOS V.2.4.3 (GPS) – EGNOS V.3 (Galileo & GPS)

Copernicus

Copernicus provides the following services:

(a) environmental monitoring :
- Climate change,
- marine,
- atmosphere,
- land

(b) emergency management service

(a) security service

SST

SST services :

- Collision Avoidance
- Re-entry Analysis
- Fragmentation Analysis

EU SST Partnership of 15 EU Member States

GOVSATCOM and IRIS²

GOVSATCOM and IRIS² to:

(a) Provide worldwide uninterrupted access to secure, autonomous, high-quality, reliable and cost-effective satellite governmental communication services to government-authorised users […]

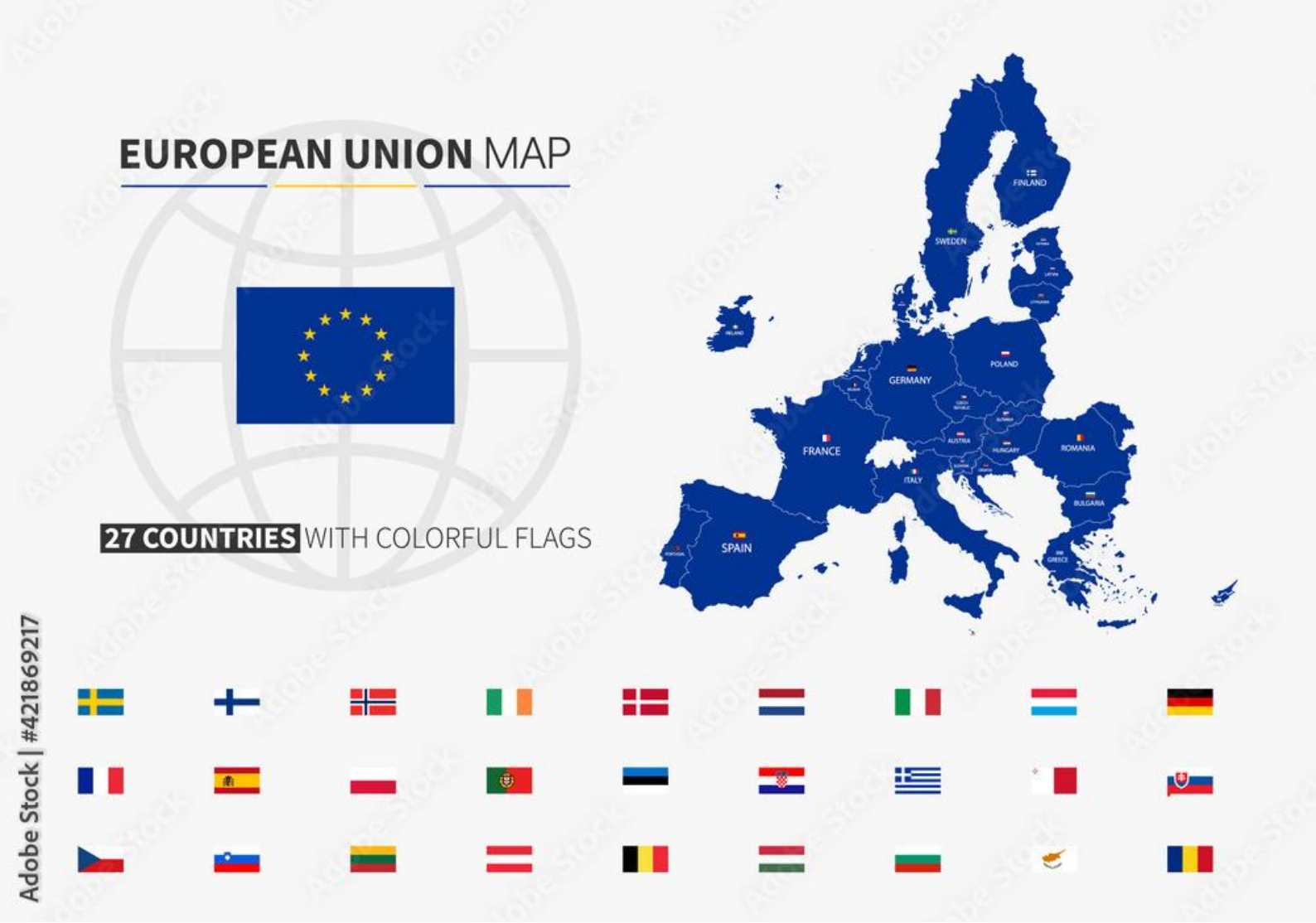
(b) Increase the resilience and the autonomy of the Union and the Member States, and reinforcing their satellite communication technological and industrial base, while **avoiding excessive reliance on non-Union based solutions**, in particular for critical infrastructure and access to space;

(c) enable the provision of commercial services, or services offered to government-authorised users based on commercial infrastructure at market conditions, by the private sector […]

EU space governance

Commission – EEAS
EUSPA – ESA
-
EU Space SAB

Europe in Space: European Union



EC, Council, Parliament

27 Member States

Cooperation Agreement on satellite navigation with the **Kingdom of Norway**

EU Budget (MFF)

Regulations, Decisions, Delegated and Implementing acts

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EU budget for space (MFF)

The current MFF process started with a Commission proposal in May 2018 then a second proposal in May 2020 to integrate Covid-19 impact.

In July 2020, the EU heads of state or government endorsed the next long-term budget.

On 10 November 2020, the agreement was sealed also with the European Parliament.

Final adoption on 17 December 2020 of the 2021-2027 package by the Council of the European Union

A maximum amount of **EUR 13 202 million** (in 2018 prices) **shall be available** from the general budget of the Union for the period 2021 to 2027 **for** large-scale projects under the Regulation of the European Parliament and of the Council establishing **the space programme of the Union and the European Union Agency for the Space Programme**.

IRIS2 is funding with additional budget **EUR 2 300 million** with a different mechanism (PP partnership).

EU Space Programme Governance

Council of the European Union

European Commission

overall responsibility:
Budget
Division of tasks
Legal acts

European Parliament

European Union EXTERNAL ACTION

SATCEN
EUROPEAN UNION SATELLITE CENTRE

Earth observation

Galileo Security Monitoring Centre

EUSPA
European Union Agency for the Space Programme

Galileo operations
EGNOS
SST front Desk
Govsatcom
IRIS2 support

esa

Galileo / EGNOS
Design authority
Copernicus
IRIS2 support

European Space Agency (ESA)

23 Member States.

Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Luxembourg, The Netherlands, **Norway,** Poland, Portugal, Romania, Slovenia, Spain, Sweden, **Switzerland and the United Kingdom**

and associated members:

Latvia, Lithuania, Slovakia and Canada.

ESA budget

International organization

SAB organisation

As defined in EU regulations 2021/696 and 2023/588, the SAB is the Security Accreditation Authority for all of the EU Space Programme's components and of the Union Secure Connectivity Programme (IRIS2).

The SAB members are composed of one representative of :

- **Each Member State (e.g. MoD, NSA, Transport…)**
- **European Commission** and
- **The High Representative (European External Action Service)**

SAB Observers : EUSPA Agency, European Space Agency, Norway…

SAB organisation

- The Commission keeps the SAB continuously informed of the impact of any envisaged decisions.
- After consultation with all relevant parties:

> The SAB makes decisions on security accreditation in a strictly independent manner, including with regards to the Commission and the other bodies.
> **Only the Member States have a voting right**.

- Security accreditation activities are coordinated with Commission.
- SAB decisions are addressed to the Commission.

- SAB and Commission cooperate to define risk mitigation measures

SAB makes accreditation decisions in a strictly independent manner.

SAB Decisions

Security Accreditation Board

Members with voting rights — **EU Member States taking accreditation decisions independently**

Members without voting rights — European Commission and European Union EXTERNAL ACTION

addressed to → European Commission

SAB observers:

EUSPA — EUSPA European Union Agency for the Space Programme

ESA — esa

…

Applicable to EUSPA

Applicable to ESA

SAB advising the Commission

- SAB advices on General Security Requirements:
  - GOVSATCOM — adopted by Commission
  - IRIS^2 — adopted by Commission
  - Copernicus — to be adopted by Commission
  - Galileo G1G / G2G — In progress
  - EGNOS V2 / V3 — In progress
  - SST — In progress

SAB provides advices to the Commission on all EU Space Programme components.

SAB decisions

- Security Accreditation Strategies
- Approval of satellite launches, satellite entry into service, decommissioning
- Authorisation to operate the systems in their different configurations
- Authorisation to operate the ground stations
- Authorisation to declare services

Galileo Falcon 9 – April 2024

Galileo Falcon 9 – September 2024

Galileo Ground Segment Migration – March 2024

Sites
As needed

Major achievements in 2024 !

Questions?