N O V E

SUMMARY:
THE SPACE PACKAGE

FEBRUARY 2022

OVERVIEW

On 15 February 2022, the European Commission announced two initiatives as part of its Space Package, consisting of the following:

- Proposal for a Regulation establishing the Union Secure Connectivity Programme for the period 2023-2027
- Joint Communication of European Commission and High Representative to the European Parliament and the Council: An EU Approach for Space Traffic Management; An EU contribution addressing a global challenge

The Commission's Space Package aims to develop and deploy a third EU satellite constellation to provide **quantum-encrypted, future-proof, connectivity in Europe and strategic geographic areas** while also laying the groundwork for a forthcoming legislation on **Space Traffic Management** in the face of the New Space industry's commercialisation of Space.

1. **Union Secure Connectivity Programme:** An estimated **€6 billion**, set out through a Public-Private Partnership (PPP), will be required to achieve the connectivity demands, comprised of **€2.4 billion in EU funding** with a proposed contribution of roughly **€2 billion from the Member States (MSs) and the private sector, respectively**.

2. The space-based connectivity infrastructure would be **multi-orbital** in order to provide services to **military and public sector critical infrastructure** as well as the citizens across the EU and ensure the future-proofing of satellite connectivity through quantum encryption that uses Quantum Key Distribution (QKD) developed in the EU's **European Quantum Communication Infrastructure (EuroQCI)** initiative.

3. **Space Traffic Management**: Building on the European Space Surveillance and Tracking (SST) Support Framework, the EU aims to establish clear guidelines and standards to operationalise the management of objects in space.

The proposed regulation will still need approval from the European Parliament and the Council of the EU. European Commission VP Maroš Šefčovič deemed the **political importance and urgency of the action sufficient to proceed with the Programme**, albeit two rejections of Draft Impact Assessments (DIAs). In so far as the DIAs were declined, an **Annex is included** to specify Indicators for the Evaluation of the Programme.

Timeline: Development of the proposed connectivity infrastructure would begin in **Q1 2023**, with initial services testing and deployment beginning in **Q4 2025** and full deployment in **Q3 2027**.

The note is structured as follows:

CHAPTER III + FINANCIAL STATEMENT

Where is the money coming from?

The Regulation does not propose new funding outside the Multiannual Financial Framework (MFF) but nevertheless amounts to €6 billion from the PPP. The sources of EU funding stem from reallocations of actions within existing programmes to the new initiative, in addition to reductions in budgets from other existing programmes.

The proposal describes that the Union Secure Connectivity Programme will make available **€2.4 billion between 2023-2027**, of which **€800 million** will come from three other existing Programmes:

- €430 million under Horizon Europe Cluster 'Digital, Industry and Space',
- €220 million under the Union Space Programme (98% stems from Govsatcom[1]//SSA[2]),
- €150 million under the Neighbourhood, Development and International Cooperation Instrument (NDICI).

In order to fund the remaining **€1.6 billion**, the financial statement describes those contributions, or rather reductions, will be made from existing Programmes:

- €257 million from the Space Programme's Galileo[3]/EGNOS[4]
- €200 million from the Connecting Europe Facility – Digital Strand (CEF2)
- €440 million from the Digital Europe Programme (DEP)
- €400 million from the European Defence Fund (EDF)
- €150 million from the NDICI – Global Europe emerging challenges and priorities cushion
- €150 million will derive from the use of the margins in the Multiannual Financial Framework (MFF) 2021-2027.

The remaining **€4 billion** would be put forward by the Member States and the Private Sector as part of the Public Private Partnership.

- Roughly **€2 billion from the Member States** through in-kind contributions and/or contributions from National Space Agencies themselves.
- Roughly **€2 billion from the private sector** to leverage the mass-market component and take advantage of the InvestEU strategic window.

Why did the Commission choose a Public Private Partnership model?

A Public-Private Partnership (PPP) was concluded to be the most effective implementation model to ensure the objectives of the Programme could be achieved. From the EU-side, it would allow to expand on the existing satellite communication technological and infrastructural base and provide robust and innovative governmental services. Simultaneously, private patterns complement the Programme with additional capabilities to offer commercial services. This would optimise the deployment and operation costs by sharing development and deployment costs on components common to both governmental and commercial infrastructures. The PPP would stimulate innovation in particular for small and medium-sized enterprises and start-ups that deploy novel space technologies and applications (New Space).

1 The Governmental Satellite Communication (Govsatcom) initiative provides secure satellite communication for EU security actors. Strong support is provided by Member States through investment and national space programmes using Low-Earth Orbit Satellites.
2 The ESA's Space Situational Awareness initiative will provide Europe and its citizens with complete and accurate information on objects orbiting Earth, on the space environment and on threats coming from space.
3 Galileo is a global satellite navigation and positioning system. 10% of EU GDP is enabled by satellite navigation. EU Space Programme Fact Sheet.
4 As part of the Union Space Programme, the European Geostationary Navigation Overlay Service (EGNOS), provides reliable navigation signals for safety of life use.

BACKGROUND:

The first component of the Space Package is the **Union Secure Connectivity Programme**, often referred to as the **secure space-based connectivity Programme**, which tackles several fundamental challenges of geopolitical, commercial, technical and a security nature, that the EU and its Member States face today.

On a **geopolitical** level, there is concern within the EU that Chinese infrastructure investments in strategic areas such as Africa could create an undesirable sphere of influence in a growing economy. The emergence of the New Space industry, which involves the **commercialisation of space** by SMEs as well as large companies, has also reinforced the need to avoid strategic dependencies on third countries for critical technologies. One such area would be the ensuring critical infrastructure can receive secure an uninterrupted connectivity. This is especially concerning in the face of increasing cyber threats, both to **on-land broadband infrastructure**, but also notably to looming **quantum computing** concerns and their capacity to decrypt the highest levels of known encryption today. On a more structural note, the current Low-Earth Orbit satellites (LEOs) used in the GOVSATCOM programme, which started in 2017 and began implementation in 2021, have a 15-year lifecycle. Currently, there is no operational or in-the making EU assets in LEO or Medium-Earth orbit (MEO) that can meet the evolving governmental user needs. Satellite communication capacities providing governmental services at for MSs are all based on a reduced number of geosynchronous (GEO) spacecraft assets covering mainly Europe.

As such, the primary aim of the Commission's proposal for regulation is to **develop a secure space-based connectivity system that provides resilient and guaranteed satellite communication services across the EU**, negating so-called dead zones. Envisioned as a PPP, the Programme will draw on the current capacities within the Space Programme in addition support from MSs, including their National Space Agencies, and the agility and innovative capacity of the Private Sector.

The Regulation outlines the objectives, the rules on the activities, the infrastructure and services, the participants, the budget for the period 2023-2027, the forms of EU funding and the rules for implementation of the Programme.

CHAPTER I: GENERAL PROVISIONS

General and Specific Objectives (*Article 3*):

General Objectives:

1. **Global, Secure, Satellite Communication Services for the Public Sector**
   The Programme shall ensure the long-term availability of worldwide uninterrupted access to secure and cost-effective satellite communication services to governmental users, which supports the protection of critical infrastructures, surveillance, external actions, crisis management and applications that are critical for the economy, environment, security and defence, thereby increasing the resilience of Member States.

2. **Availability of High-Speed Broadband and Seamless Connectivity throughout Europe**
   The Programme shall allow for the provision of commercial services by the private sector.

   Note: This is one of the targets of the proposed 2030 Digital Decade. The system will also provide connectivity over geographical areas of strategic interest, for instance Africa and the Arctic, as part of the EU Global Gateway strategy.

Specific Objectives:

1. **Developing, Building and Operating a Multi-orbital Connectivity Infrastructure**
   Improve the resilience of the EU communication services by developing, building and operating a multi-orbital connectivity infrastructure, continuously adapted to evolution of demand for satellite communications, while taking into account the existing and future assets of the Member States used in the frame of the GOVSATCOM component of the Union Space Programme

2. **Cyber resilience - European Quantum Communication Infrastructure (EuroQCI)**
   Contribute to cyber resilience by proactive and reactive defence against cyber and electromagnetic threats and operational cybersecurity, and integrate the space and related ground segment of the European Quantum Communication Infrastructure to enable secure transmission of cryptographic keys;

3. **Improve and expand the capabilities and services of other components of the Union Space Programme**

4. **European New Space industry**
   Incentivise the deployment of innovative and disruptive technologies, in particular by leveraging the New Space industry

5. **High-speed broadband and seamless connectivity across strategic areas**
   Allow further development of high-speed broadband and seamless connectivity throughout the Union, removing communication dead zones and increasing cohesion across Member State territories, and allow connectivity over geographical areas of strategic interest outside of the Union

Implementation Activities (*Article 4*):

The Proposal outlines the activities which will ensure the governmental services:

- Firstly, the development and validation activities, will include the **construction and launch of initial space and ground infrastructure**.
- Secondly, activities would include the development and integration of the space and related ground segment of the **European Quantum Communication Infrastructure (EuroQCI) into the space and ground infrastructure**.
- Furthermore, deployment activities would be needed to complete the space and ground infrastructure.
- Additionally, exploitation activities would include the **operation, maintenance, continuous improvement and protection of the space and ground infrastructure, including replenishment and obsolescence management**.
- Lastly, activities for the **development of future generations of the space and ground infrastructure** and the evolution of governmental services would be needed.

Features of the Infrastructure (*Article 5*):

The infrastructure of the secure connectivity system will consist of governmental and commercial infrastructure.

Governmental: The governmental infrastructure of the secure connectivity system will include **all the related ground and space assets** which are **required for the provision of governmental services** including, satellites or subcomponents, space and ground subcomponents ensuring the distribution of cryptographic keys, infrastructure for monitoring the security of the infrastructure and services, infrastructure for the provision of services, and the Govsatcom ground segment infrastructure including Govsatcom Hubs.

Commercial: The commercial infrastructure will include all space and ground assets other than those being part of the governmental infrastructure. The commercial infrastructure would be entirely financed by the contractor.

- **Territoriality**: The Commission will lay down measures required to determine the location of centres belonging to the ground governmental infrastructure, except the Govsatcom Hubs, in line with security requirements and following an open and transparent process.
    - The **centres would be, "where possible" located in the territory of the Member States** and governed by a hosting agreement taking the form of an administrative agreement between the Union and the Member State.
    - If the centre cannot be inside the territory of the EU, **the Commission would determine the location of such a centre in the territory of a third country**, subject to a hosting agreement between the Union and the third country in consideration.

Missions and use cases could include:

Mass-market Service: The Commission provides examples of uses cases which could allow Mass-market service which include: mobile broadband, fixed broadband, satellite trunking for B2B services, satellite access

for transportation (ships, airplanes, drones, connected cars), reinforcement of terrestrial networks (as an alternative in cases of disruptive events).

Encryption Capability: The Regulation would provide the capacity for ultra-secure encryption on connectivity infrastructure for governmental and institutional users, in data centres, satellite communication networks, terrestrial communication networks and several industries, including banking.

CHAPTER II – SERVICES

Programme Participants – (*Article 9*):

- **Member States, the Council, the Commission, the European External Action Service (EEAS)**
- **Union Agencies and bodies** may become Programme participants if it is deemed necessary to fulfil their tasks.
- **Third countries and international organisations** may become Programme participants.

Each Programme participant shall designate one Secure Connectivity Competent authority, which would also be a Govsatcom participant and would have been designated by a competent authority. This Competent authority would ensure the use of services comply with security requirements, that access rights to governmental services are managed, that equipment is used and managed with applicable security requirements and that a central point of contact is established to assist as necessary in the reporting of security risks and threats (electromagnetic interference affecting services).

Ownership and use of assets – (*Article 16*):

The EU would become the owner of all tangible and intangible assets laid down in *Article 5* (mentioned above), which form part of the governmental infrastructure. The Commission would ensure that all contracts, agreements and other agreements concerning activities that result in the creation or development of those assets would fall under the ownership of the EU.

Eligibility Conditions – (*Article 19*):

Eligibility and participation conditions would apply, where necessary, to preserve the security and integrity and resilience of the operational Union systems, with consideration for the EU's objective to **promote strategic autonomy**, particularly in terms of key technologies and value chains, while preserving an open economy.

Indicators for Success of Specific Objectives (Annex):

Specific Objective 1: Multi-Orbital Connectivity Infrastructure

i. Member States governments and EU institutions can access initial set of governmental services in 2025, with full capacity in 2027
ii. Service availability
iii. Full integration of existing capacity from the Union pool via the integration of GOVSATCOM ground infrastructure
iv. Annual number of major outages of the telecommunication networks in the Member States mitigated by the secure connectivity system
v. User's satisfaction with the performance of the secure connectivity system

Specific Objective 2: Cyber Resilience

vi. System obtains security accreditation allowing the services to transmit EU Classified Information (EUCI) up to a certain classification level and the national classified information of EU Member States of equivalent classification level, following the principles set in Council Decision (2013/488/EU) on the security rules for protecting EUCI
vii. Integration of EuroQCI space infrastructure based on the most suitable technical solution

Specific Objective 3: Union Space Programme

viii. Number of payloads serving other components of the Union Space Programme

Specific Objective 4: European New Space Industry:

ix. Number of start-up, SME and midcap companies participating in the development of the infrastructure

Specific Objective 5: High-speed, Seamless Connectivity in strategic areas

x. Speed of the commercial satellite broadband
xi. Number of new commercial satellite communication potential users in EU rural areas and in geographical areas of strategic interest

EU SECURE CONNECTIVITY PROGRAMME - IMPLEMENTATION SCHEDULE:

Given that the Commission delivered its Proposal for Regulation, the European Parliament and the Council will need to approve the legislation before it can enter into force. However, this is expected to be done within the next year given the urgency stressed by the Commission. If the legislation does indeed pass, the timeline would be as follows:

Q1 2023 – Q3 2024: Development and deployment of initial services

Q4 2024 – Q2/3 2027: Initial Service begins, which would include quantum cryptography testing

Q3 2027 – Onwards: Full Deployment

CHAPTER V: GOVERNANCE OF THE PROGRAMME

Role of Member States – (*Article 22*): Member States shall contribute with their technical competence, know-how and assistance, in particular in the field of safety and security, or, where appropriate and possible, by making available to the Union the data, information, services and infrastructure in their possession or located on their territory

Role of the European Commission – (*Article 23*): The Commission shall have overall responsibility for the implementation of the Programme, including in the field of security, without prejudice to Member States' prerogatives in the area of national security. **Contracts will be concluded by the Commission with a contractor**.

- **On contracts**: The contracts will be awarded in accordance with the procurement principles, as well as the relevant provisions of the Financial Regulation, and may take the form of a concession contract or a mixed contract. If the conclusion of the concession contract or mixed contract proves unviable, the Commission would have the power to implement the Programme by means of a supply/services or works contract.

Role of the European Union Agency for the Space Programme (EUSPA) – (*Article 24*): The EUSPA is responsible for the operation of the governmental infrastructure of the Programme, the operational security of the governmental infrastructure, including risk and threat analysis, security monitoring, provision of governmental services, the management of the concession or mixed contract including overarching coordination of user-related aspects of the governmental services in close collaboration with Member States, relevant Union agencies, EEAS and other entities, and - undertaking activities related to user uptake of services offered by the Programme

Role of the European Space Agency (ESA) – (*Article 25*): The ESA would be entrusted with the development and validation activities within the frame of implementation contracts, the provision of technical expertise to the Commission, including for the preparation of the technical aspects of the programme, and the evaluation of the implementation contracts.

BACKGROUND:

The second component of the Space Package is a Joint-Communication of the European Commission and High Representative of the Union for Foreign Affairs and Security Policy referred to as **an EU Approach for Space Traffic Management**. The Joint-Communication sets a foundational basis to **the Commission's planned delivery of a Proposal for Regulation on Space Traffic Management in Q4 2024**.

Since 2016 the EU already has a Space Surveillance and Tracking (SST) capability, implemented by the EU SST Consortium which includes +130 European organisations from 23 Member States. Today, more than 260 EU satellites, including the Galileo and Copernicus fleets, benefit from the collision avoidance service. Most recently, the EU SST fragmentation service confirmed the detection of space debris from destruction of a satellite in low orbit (COSMOS 1408) following an anti-satellite test conducted by Russia on 15th November 2021.

As the cost of sending satellites to space is decreasing, there is a strong increase of satellites in orbit (there is estimation of 20,000 more satellites in 10 years). Space traffic increases the volume of debris generated and the risk of collisions which in turn threatens the security and resilience of the EU's space assets and highlights the need for international discussion about norms in outer space, as there currently exist only very limited global "rules on the road".

OBJECTIVES

The communication defines STM as "the means and rules to access, conduct activities in, and return from outer space safely, sustainably and securely". The goal is to develop concrete initiatives, including operations and legislation, to engage with key players to ensure the safe, secure and sustainable use of space while preserving the EU's strategic autonomy and industry's competitiveness. In particular, the communication aims at providing the working definition of Space Traffic Management; developing STM civil and military requirements; fostering the development of the capabilities to provide Space Surveillance and Tracking services (operational pillar of STM), Implementing framework of standards and rules; promoting the EU STM approach globally.

STM definition relates then to the following elements:

- Space Situational Awareness (SSA) activities, including Space Surveillance and Tracking[5] (SST);
- Orbital debris mitigation and remediation;
- Management of space orbits and radio spectrum;
- The entire life-cycle of space operations, incl. Launch phase, in-orbit operations of spacecraft, and end-of-life de-orbit operations;
- Re-entry phase of spacecraft into the airspace (both controlled and uncontrolled)

The Communication underlines that as the discussion on STM on EU level and international level evolve, the working **definition** and **the phases** of above activities might **change**.

5 Space Surveillance and Tracking is the operational pillar of STM. SST is operated by EU SST Consortium (France, Germany, Italy, Poland, Portugal, Romania, Spain) since 2014. The Consortium delivers SST services for management of space traffic to more than 135 organizations in 25 Member States of EU. SST is funded from EU programs – Horizon 2020, Galileo and Copernicus. EU companies are participating in calls for tenders and currently 75 % of funds go to EU industry.

ACTIONS:

The EU approach for Space Traffic Management proposes ten concrete actions to be carried out between 2022 – 2024 by the Commission and the High Representative in cooperation with the Member States. Actions are built on four avenues developed in parallel:

1. **Assessing the STM requirements and impacts for the EU**

Within next four months, the first action is to set up a consultation process with relevant stakeholders to assess the civilian needs and impact of STM on various policy areas of the EU. The European Defence Agency will consolidate the specific military needs in cooperation with Member States. This process will aggregate by early 2023 and maintain as a regular dialogue on STM-related developments covering both civilian and military needs.

2. **Enhancing EU operational capabilities to support STM**

To perform STM activities, it is necessary to observe space traffic continuously. Therefore, the EU Space Surveillance and Tracking (SST) constitutes the operational pillar for the EU STM approach. The second action will **improve the performance of existing services**: the analysis of the future STM by mid-2023, the launch of the deployment of additional assets by 2025. Further **new services will be developed**; a proposal of new services by mid-2023, validation of new services by 2025. In addition, **foster technology**: launch of forum on technological forum by end of 2023, detailed research plan targeting new technologies by end of 2023, assessment of the implementation process by 2025.

In the **third action**, specific actions in the framework of CASSINI enable, Space Entrepreneurship Initiative supporting space-related businesses across the EU, to **reap the full innovation potential of start-up**. As the Space Regulation foresees the development of an EU SST Catalogue (record and history of traceable data from unique platform), the Communication ensures to share layers of the catalogue and the related data-sharing platform to EU companies for research by 2025.

3. **Fostering the STM regulatory aspects**

EU Approach to STM will also comprise non-binding measures (standards and guidelines) and binding obligations (legislation) on EU level. **Action 5** will establish a form to **develop new European and international standards, promote selected standards and guidelines at the EU level, and create a toolbox to assist Member States in licensing request by satellite operators.** In **Action 6**, incentive measures and a certification mechanism of the implementation of STM standards and guidelines will be identified by end of 2023 and both will be implemented by end of 2024. **Action 7** - Initial obligations will be proposed by end of 2023, possible areas for an EU STM will be identified and the legislation proposal for EU STM will be made by end of 2024.

4. **Promoting the EU STM approach at the international level**

The EU STM approach aims to contribute to global rules in outer space; therefore, the last set of actions concentrates on promoting the EU STM approach at the international level. **Action 8** - EU will **engage with UN** to identify or to create specific bodies to implement concrete **STM solutions at global level**. By mid-2022, the Commission explores **EU participation in UN Rescue Agreement** while safeguarding the EU interests. As last action, EU will **promote approach on STM with third countries**, and will further **engage with US** to ensure closer cooperation and mutual interoperability. Finally, EU will **address STM in the space dialogues with third countries**.

- Margrethe Vestager, Executive Vice-President of European Commission: “These initiatives will ensure secure, efficient connectivity at all times. It is benefitting both citizens and governments. It will play a key role in Europe's digital transformation. And make us more competitive.”

- Josep Borell, High Representative of the Union: “We will develop concrete capabilities, set norms and engage with key partners and in multilateral fora to ensure a safe, secure and sustainable use of space. While STM is a civilian endeavour, European security and defence depend on a safe, secure and autonomous access to space.”

- Thierry Breton, Commissioner for Internal Market, European Commission: “Our new connectivity infrastructure will deliver high-speed internet access, serve as a back-up to our current internet infrastructure, increase our resilience and cyber security, and provide connectivity to the whole of Europe and Africa. It will be a truly pan-European project allowing our many start-ups and Europe as a whole to be at the forefront of technological innovation.”

- Emmanuel Macron, President of France: Stressed that space is an essential component of Europe’s sovereignty, in communications, Earth observation, climate change monitoring and navigation. He praised the EU's many strengths, as exemplified by the Galileo and Copernicus programmes. President Macron has called on Europe to define its space ambitions and announced the creation of an expert group tasked with analysing attainable options and putting forward recommendations to Member States.

- Bruno Le Maire, Minister for the Economy, Finance and the Recovery: Praised the agreement within Member States to provide Europe with resources to create autonomous connectivity. “This is a great step forward and a major act of sovereignty. Governments, engineers, astronauts, industrialists: all of us are united in maintaining Europe's status as a space power.”

- Conclusion of Council meeting of ESA: EU Member States welcomed the proposal and affirmed Europe’s political objective of equipping Europe with connectivity capabilities through autonomous satellites. Emphasis was put on the need to do more work on objectives, requirements, governance and financing. The Council proposed to create an EU expert group advising with space exploration and human spaceflight.

- MEP Niklas Nienaß (Greens, DE): Focusing on space issues, the MEP complained that [the Programme] focuses too heavily on applications for spy agencies and governments, rather than providing reliable high-quality internet for all. “The selling point is not that [French President] Macron and [German Chancellor] Scholz can have a private conversation over satellite phone …it’s that we all get a benefit.”