Council of the European Union

Brussels, 26 June 2025
(OR. en)

10942/25

ESPACE 52
IND 236
RECH 308
COMPET 636
TRANS 268
TELECOM 217
AGRI 317
MI 487
ENER 304
PROCIV 82
POLMIL 185
INDEF 68
CLIMA 234
CIVCOM 174

COVER NOTE

From:	Secretary-General of the European Commission, signed by Ms Martine DEPREZ, Director
date of receipt:	26 June 2025
To:	Ms Thérèse BLANCHET, Secretary-General of the Council of the European Union
No. Cion doc.:	COM(2025) 336 final
Subject:	COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS A vision for the European Space Economy

Delegations will find attached document COM(2025) 336 final.

Encl.: COM(2025) 336 final

EUROPEAN
COMMISSION

Brussels, 25.6.2025
COM(2025) 336 final

COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS

A vision for the European Space Economy

A VISION FOR THE EUROPEAN SPACE ECONOMY

1. INTRODUCTION

The space economy encompasses all economic activities, both on Earth and in space, that are enabled by space technologies, services, and infrastructure. This includes the design and manufacturing of space infrastructure; in-space operations and services; access to space; resource exploration and use; and space data applications and services in other sectors of the economy.

The global space economy is rapidly evolving, driven by international competition, technological innovation, and geopolitical tensions. Its economic value is projected to reach USD 1.8 trillion by 2035[1]. In 2024, public investment in space amounted to EUR 122 billion globally, while in Europe it amounted to EUR 12.6 billion, i.e. 10%. Global private investment in space totalled EUR 7 billion, whereas in Europe it totalled EUR 1.5 billion, i.e. 22%. In terms of market value, Europe's share of the global upstream non-captive market was 33%, whereas in the downstream market it stood at 19%[2].

In the Communication 'A Competitiveness Compass for the EU'[3], the European Commission recognises the importance of closing the innovation gap by supporting new sectors such as space. In the May 2024 Council conclusions on the contribution of space to Europe's competitiveness[4], it is underlined that a more competitive European space sector can contribute to the economic and social challenges of the Union and reinforce its role at global level. The EU should therefore enable its Member States, companies and citizens to reap the benefits of the global space economy, by continuing to invest in space and ground infrastructure and by integrating space-based services into all sectors of the economy.

Leading space powers such as the Unites States and China are leveraging space to achieve strategic objectives serving military, economic, scientific and political interests, with ambitious space programmes to the Moon and Mars. This is triggering a wave of investment and driving innovation in space across a range of areas from space transportation to robotics, in-space manufacturing and in-orbit servicing. Apart from exploration goals, ever-increasing competition is also unfolding in Earth's orbit, where a growing number of established and emerging space-faring nations are bringing innovative technologies to space, serving industries on Earth including defence, navigation, communication, agriculture, banking and insurance.

Europe has long been a leader in satellite and space technology despite much lower levels of funding. It is renowned for its high-quality products, expertise in space science and technology, unique talent, industry and capacities. The EU owns and continues to invest in world-class infrastructure for positioning, navigation and timing; observation; and secure connectivity (with Galileo, EGNOS, Copernicus and IRIS[2] respectively).

In the context of the Global Gateway strategy, the EU and its Member States and the EU private sector are developing international partnerships and investments in secure connectivity, satellite navigation and Earth observation that reflect the mutual interests of the EU and its partners for security, prosperity and competitiveness.

---

[1] 'Space: The $1.8 Trillion Opportunity for Global Economic Growth', *Insight Report* World Economic Forum, April 2024.
[2] 'ESA Report on the Space Economy 2025', European Space Agency, March 2025
[3] COM(2025)30
[4] Council conclusions on 'Strengthening Europe's competitiveness through space', May 2024.

The development of reusable and heavy-lift launch vehicles, along with the mass production of thousands of satellites grouped in mega-constellations, are revolutionising access to space. Satellites in lower Earth orbit generally have shorter lifespans and therefore require more frequent replacement.

These needs highlight the importance of adopting sustainable technologies and in-space services to ensure long-term viability in space operations. Similarly, the adoption of cloud computing, artificial intelligence and data analytics is reshaping data applications and services, enabling more efficient processing, interpretation and delivery of satellite data tailored to specific industry needs.

While these rapid developments are reshaping the global space economy, the EU has seen its market share erode in key areas[5]. Increasing global competition and changing market dynamics have placed significant pressure on the EU's space industrial sector. Europe has lost its leading market position in commercial rockets and satellite communications.In addition, the European space sector would benefit from updated governance and investment rules, and greater coordination of public spending in a true Single Market for space.

The EU nevertheless possesses all the ingredients required in order to be a leader: world-class research institutions, strong industrial capabilities and, an educated workforce. The Letta[6], Draghi[7] and Niinistö[8] reports have identified space as a key sector for future growth, competitiveness, resilience and preparedness. As reliance on space-based technologies deepens, the EU needs to reaffirm its place in this global space race. In the current geopolitical environment, losing this position will have far reaching consequences for Europe's economic security, strategic autonomy, and competitiveness. A comprehensive approach would help to maximise the impact of the EU's space economy objectives.

The objective of this Communication is, therefore, to provide a vision allowing to position the EU as a leader in the global space economy by 2050, leveraging space technologies and services on Earth and in space to strengthen the EU's competitiveness, resilience, security and autonomy by also building upon the European Union Space Strategy for Security and Defence[9] and the Preparedeness Union Strategy[10], while accelerating economic growth, creating business opportunities and quality jobs.

This will require the full leveraging of public and private investment at EU and national levels. Based on the existing EU legal framework, it is essential to apply innovative and dynamic procurement, including anchor tenancy arrangements[11], since space infrastructures and ensuing services very much rely on investment predictability coupled with flexibility.

This Communication focuses on the comprehensive development of the European space economy. First, it addresses space as a market sector targeting its effective and robust growth, highlighting the building blocks needed to boost economic growth within Europe. Subsequently, it deals with the thematic aspects of the space economy in the different space domains, beginning with Earth-based activities and transitioning into the 'in-space' economy, from orbital to beyond Earth activities. In particular, it will highlight the importance of continuity and evolution of space infrastructure and services, acknowledging that such capital expenditure is a sine qua non condition for jobs growth in the overall European economy.

[5] Draghi, M., 'The future of European competitiveness', September 2024, page 62.
[6] Letta, E., 'Much more than a market', April 2024.
[7] Draghi, M., 'The future of European competitiveness', September 2024.
[8] Niinistö, S., 'Safer Together Strengthening Europe's Civilian and Military Preparedness and Readiness', October 2024.
[9] JOIN(2023) 9.
[10] JOIN(2025) 130.
[11] Ensuring a substantial part of a contract allowing to keep the business active and attract other customers.

2. A MARKET SECTOR ENABLING EUROPEAN COMPETITIVENESS

Despite having world class capacities, the EU has yet to fully harness the potential of its space economy. Limited investment and growth funding, complex procurement models, a need for better coordination at EU level, slow time to market, and a siloed approach between space and defence, are hindering the sector's potential for further growth.

Foreign government expenditure outpaces the EU. The EU's investment has ranged between 15% and 20% of US levels. In 2023, public expenditure in Europe on space stood at USD 15 billion, compared with USD 73 billion in the US[12]. Civil space expenditure accounted for around 85% of total space expenditure in the EU in 2023, in striking contrast with the approach of other major space powers[13]. China is expected to overtake Europe in the next few years, reaching some USD 20 billion by 2030. This, in turn, shifts market dynamics and broader contract distribution to commercial players (startups, scaleups, small and medium-sized enterprises (SMEs), mid-caps, including smaller ones, legacy).

The EU needs to make faster progress in strategic areas such as access to space, satellite communications, Earth observation, positioning, navigation and timing, space safety, artificial intelligence, quantum technologies, synergies with defence, and in-space operations and services. Other spacefaring nations are advancing rapidly in these areas or already have proven technology.

The EU should rely on its space sector (manufacturing and services) to ensure continuity and evolution of its capacities. It should also maximise economic value from space services in other market sectors, by offering more tailored solutions and tackling technological challenges to meet user needs. Accordingly, other market sectors benefiting from space services are expected to plan interoperability and standards with solutions coming from EU systems in the upgrade of their respective infrastructures or user terminals.

Taking a broader stance to space as a market sector, and mirroring the Competitiveness Compass approach, the EU will support it around six building blocks:

I. create an EU single market for space, complementing the EU Space Act[14] as an overall foundation, allowing companies to operate seamlessly and more efficiently across borders;
II. accelerate space research and innovation by advancing innovative technologies and strengthening global competitiveness;
III. reinforce industrial readiness and technological non-dependence by strengthening the EU's industrial base, ensuring technological sovereignty and reducing reliance on external supply chains;
IV. encourage space commercialisation within the EU and support through agile procurement, anchor customer contracts, and increased investment in order to foster a more dynamic EU space economy;
V. keep strong international cooperation as a priority in order to ensure a connected and future-ready space ecosystem;
VI. reinforce the highly skilled workforce in line with the Union of Skills[15], while leveraging digitisation and automation to enhance productivity and efficiency.

[12] Draghi, M., 'The future of European competitiveness', September 2024, page 60.
[13] European Space Agency, 'Report on the Space Economy 2024', December 2024.
[14] COM(2025) 335.
[15] COM(2025) 90.

Building Block I: A Single Market for Space

The EU space single market will be reinforced by the EU Space Act, which will simplify the regulatory framework and, provide clarity for businesses to operate within the EU's single market. This will stimulate growth in relation to space safety, resilience and sustainability, which in turn will stimulate the space economy. The EU space sector currently has to deal with a complex and fragmented regulatory landscape, with multiple national requirements to navigate in the different EU Member States. Building on the horizontal actions to remove barriers included in the recent Single Market Strategy, the EU Space Act will establish a common set of rules, reduce administrative burdens and facilitate cross-border operations. This will enable space operators to innovate and compete more effectively both in the single market and in export markets.

Given the strategic importance of EU enlargement in the evolving geopolitical landscape, the EU should actively encourage the gradual integration of candidate countries into relevant EU policies. Their alignment with EU digital, industrial, and security standards makes them valuable partners in extending the EU's market reach and innovation base. Enabling their participation in EU programmes, and enhancing cooperation in standardisation and procurement, will strengthen interoperability and regional resilience while also boosting EU competitiveness and security by making the European space ecosystem wider and more integrated.

Spectrum is a critical, finite resource for space. Access to sufficient spectrum is needed for satellites to operate in different regions, including EU and non-EU territories The EU space single market will be supported by the upcoming Digital Network Act (DNA), which is expected to ensure common requirements for accessing the EU single market.

To further strengthen the EU's global influence, active engagement in and monitoring of pre-standardisation and standardisation activities is essential, particularly at the international (International Standardisation Organisation / International Electrotechnical Commission) and global levels (private consortia, such as 3GPP[16]). Major non-EU economies, (particularly the US and China), have long seen an intrinsic link between technical standardisation on the one hand and their economic development and geopolitical ambitions[17] on the other hand.

The EU has also taken this approach through the renewed Standardisation Strategy[18], with a revision announced in the Single Market Strategy. Engaging research-performing organisations and strengthening the link between research, innovation and standardisation will be beneficial to the EU space sector[19]. The essence of the work in this area should focus on simplification of requirements and standardisation: integration of standardisation, interoperability, regulations and safety protocols providing clarity, legal certainty and predictability for businesses to operate within.

The EU's active role in setting standards (in coordination with EU Member States and their national standardisation bodies), is helping to project EU norms globally, thereby promoting EU interests and values, and by extension boosting the EU's competitiveness at the global level.

---

[16] The 3rd Generation Partnership Project (3GPP) unites seven telecommunications standard development organizations (ARIB, ATIS, CCSA, ETSI, TSDSI, TTA, TTC), providing their members with a stable environment to produce the Reports and Specifications that define 3GPP technologies.

[17] With the 'Standards 2035' strategy, China aims to dominate the international standardisation landscape on emerging technologies. In recent years, Chinese proposals to the International Organization for Standardization (ISO) and to the International Electrotechnical Commission (IEC) have increased by 20% annually.

[18] COM(2022) 31.

[19] Commission Recommendation (EU) 2023/498.

Linked to the EU's commitment to sustainable and resilient production in Europe, as laid out in the Clean Industrial Deal[20], sustainability and reusability will be central to this long-term approach, promoting a circular space economy and the development of eco-efficient systems that reduce costs, lower environmental impact, and enhance productivity.

The EU should implement a coordinated approach to public spending, aggregating demand and investment to achieve economies of scale and enhance its autonomy, security and resilience in space. This would allow the EU single market for space to effectively reduce fragmentation, foster a culture of innovation and ensure that the most competitive and cutting-edge solutions are developed and brought to market, thus ultimately delivering very tangible benefits to EU citizens and society.

The Commission will work with the Member States at expert level and with the market actors present on the supply and demand sides of space infrastructure and services on how best to encourage joint investment in EU space technologies, reduce duplication of projects and spending, and encourage more impactful technological developments delivering benefits to all EU citizens. This should be complemented by a significant increase in demand and anchor customer contracts (including for small and larger companies), supporting developments upstream and downstream while avoiding competition distortions.

The emergence of a business- and innovation-friendly model should be supported at European, regional and national levels by initiatives such as space hubs that bring together the space, digital and other sectors, as well as users. Those space hubs should aim to foster entrepreneurship and skills while pursuing synergies with the digital innovation hubs. To foster public demand and public sector innovation, the EU should promote the use of data, information and services from the EU space systems to support the development of customised solutions by industry and SMEs at regional and local levels through space-related innovation partnerships.

Action box 1
The Commission, relying on the existing European and national standardisation processes, will promote the development of technical specifications addressing the various dimensions of the space economy and their adoption as EU standards by the relevant bodies.
To reinforce the space economy the Commission, through the EU Space Act, will: - task the EU Space Programme Agency (EUSPA) and agree with the European Space Agency (ESA) on a plan to ensure seamless internal market procedures; - propose support measures to assist space operators in complying with EU rules and to facilitate capacity building for technologies; - support the development and the market uptake of new space traffic management services within the EU and in export markets; - pursue mutual recognition and equivalence of rules and technical assessments with third countries.

Building Block II: Accelerating Research and Innovation

Accelerating research and innovation (R&I) is essential to drive the development of new space technologies, services and applications in order to ensure the EU's competitiveness and autonomy in the space sector. Fast paced developments in the US and China have resulted in significant losses of market share in key areas such as space transportation, telecommunications and satellite cloud

[20] COM(2025) 85.

solutions[21]. Furthermore, the rapid progress of global space powers in emerging domains such as in-orbit servicing, advanced use of robotics, artificial intelligence, and quantum technologies could result in the EU falling behind.

The EU should therefore tap into its vast pool of innovative technologies in its Member States and promote greater synergies between space on the one hand and defence and other industries on the other hand. A more ambitious approach to R&I is needed in order to convert innovations into next-generation capabilities and boost the EU's industrial competitiveness in global commercial markets. This approach should combine targeted, top-down initiatives with open, bottom-up instruments, using a range of funding tools and models, such as grants, investment, procurements and prizes. Partnership mechanisms with private and public actors should also be explored, in line with competition law principles.

The primary goal is to ensure autonomy in the next generation of space capabilities and services. This will focus on stimulating the market introduction of disruptive technologies, including but not limited to, quantum technologies, artificial intelligence, machine learning, blockchain, 5G and 6G, Internet of Things, direct to device, in-space operations and services, and launch capabilities.

Moreover, a strengthened collaborative framework, including pooling of resources, is essential to facilitate seamless interaction and knowledge sharing among the EU space sector's diverse stakeholders. This framework should foster closer cooperation between public authorities, agencies, industry, academia and research institutions, enabling them to pool their expertise, resources, and capabilities[22].

Action box 2
In the context of the next EU R&I framework programme, the Commission will propose: - to reinforce support to Space R&I in the different parts, based, inter alia, on an updated Strategic Research and Innovation Agenda (SRIA); - to reinforce the dedicated Space R&I Partnership to support the development, procurement and deployment of innovative space technologies across the space value chain.
The Commission will rely on roadmaps and an updated Strategic Research and Innovation Agenda (SRIA) to: - include space-defence R&I synergies with a view to strengthening the security and resilience of EU satellite and space infrastructure, systems and services and reducing excessive dependence on non-EU nations' space capabilities; - plan research and innovation actions.

Building Block III: Industrial Readiness and Technological Non-Dependence

In industrial terms, a thriving EU space economy relies on a sustainable and strong industrial base whose main goal is to preserve, secure and further strengthen Europe's world-class capacity to conceive, develop, launch, operate and exploit the space systems the EU needs for the implementation of its public policies, its security and its economic growth. It is therefore imperative that such industrial base reaches critical size to be able to compete with international competitors who enjoy a vastly larger amount of public investment.

[21] Draghi, M., 'The future of European competitiveness', September 2024.
[22] An example is the Knowledge Centre on Earth Observation, enabling the uptake of state-of-the-art knowledge from Earth Observation for EU policies and better regulation.

In technology terms, the EU needs to ensure an adequate level of access to critical space technologies such as Electrical, Electronic, and Electromechanical (EEE) components, equipment and systems[23].

This is a pre-condition both for the dynamic functioning of the sector as well as for the successful implementation of EU space missions, particularly those with a security dimension. Hence the EU should take measures in the framework of the envisaged EU preference in public procurement for strategic sectors and technologies[24] to ensure its strategic autonomy and security through a competitive technological industrial base driven by innovation.

The intensifying geopolitical landscape underscores the need to enhance the resilience of EU space value chains, which are vulnerable to a range of risks, including reliance on other non-EU countries for critical raw materials, advanced materials, components, and equipment technologies. The Commission's Observatory for Critical Technologies, established in 2021, monitors these risks and provides, in consultation and coordination with EU industry and EU Member States, technology roadmaps to address identified gaps.

The Strategic Technologies for Europe Platform (STEP), implemented under 11 different Union programmes, provides a framework to channel investment into critical space technologies, reinforcing industrial resilience and innovation. However, European investment in this area is substantially lower than the estimated needs to reduce dependencies on critical space technologies according to technology roadmaps.

Member States could make use of available Cohesion and NextGenerationEU funding. As proposed in the mid-term review of Cohesion policy[25], managing authorities could use the opportunity, supported with incentives and flexibilities, to reallocate funds towards investments in, among other priorities, STEP objectives or resilient defence or dual use capabilities and infrastructure. When Member States cannot implement investments in their current recovery and resilience plans, they can consider, among others, options outlined in the Commission Communication 'NextGenerationEU – The road to 2026'[26], making voluntary contributions to the development of components of the Union Space Programme or of the Union Secure Connectivity Programme, for the benefit of the Member State concerned. These programmes underpin EU satellite systems such as Galileo (satellite navigation), Copernicus (Earth observation), GOVSATCOM or IRIS² (satellite communications and connectivity). Under the Recovery and Resilience Facility (RRF), Member States can make voluntary contributions to such programmes, where the contribution agreement between the Commission and the Member State would warrant that the Member State's contribution will be used under these programmes for the benefit of the Member State concerned.

As of 2024, the EU faces restricted access or single source responses from non-EU countries with geopolitical risks for 47 critical space technologies identified by the Joint Task Force between the Commission, the European Space Agency and the European Defence Agency, including EEE components, microelectronics, and advanced materials.

Particular attention should be paid to identifying safe levels and limiting dependencies to such levels, avoiding reliance on non-like-minded countries and ensuring sufficient supply of critical space technologies.

[23] 'European Economic Security Strategy', JOIN(2023) 20.
[24] 'A Competitiveness Compass for the EU', COM(2025)30.
[25] 'A modernised Cohesion policy: The mid-term review', COM(2025) 163
[26] COM(2025) 310

Action box 3
The Commission will develop a long-term plan to ensure multi-source supply of critical space technologies: this will build on the Commission-ESA-EDA joint task force action list, including support to R&I technology maturation, deployment of multi-sourcing value chains and necessary adaptations (for instance upgrades).
The Commission will further support the EU Observatory for Critical Technologies in: - ensuring continuous monitoring and evolution of technology trends and supply chains; - identifying dependencies and gaps; - updating and monitoring the implementation of technology roadmaps.

Building Block IV: Supporting Space Commercialisation

The EU must support the commercialisation of its space industry, because its competitiveness is increasingly falling behind that of global players. A key opportunity lies in tapping the vital role that space startups, scaleups, SMEs, and mid-caps including small mid-caps can play.

These smaller actors are often highly dynamic, bringing innovative and competitive products to market while also driving down costs. They are thus a critical complement to larger, established space companies and thereby help to strengthen the overall ecosystem. The EU's space ecosystem can thus become more vibrant and efficient, with adequate framework conditions for creating business incentives to design, manufacture and operate space infrastructures and services. Better collaboration, aligned with EU competition rules, between established and new players must result from such business incentives. The EU Space Entrepreneurship initiative CASSINI has created such framework for startups in 2021-2025 through a combination of investment capital, raising business skills and reforming procurement. However, a CASSINI 2.0 that caters for next-level business support needs to be engineered.
The EU did not have any private investment funds focused on space investment before 2019, but CASSINI and InvestEU have enabled the creation of 5 venture capital (VC) funds that are fully focused on space investment and have contributed capital to another 11 VC funds with a broad investment scope. These funds mostly invest in the Seed and Series A stages, but the EU lacks investors capable of leading growth-size investment rounds.
A clear funding gap persists when it comes to the scaleup financing of high-risk, capital intensive technologies requiring investments above EUR 100 million. The demand for startup financing also remains high. Even though the European Innovation Council (EIC) Fund has become one of Europe's main deep tech investors in only four years, the demand from excellent startups for EIC support cannot currently be met. As of 2024, the EIC has supported nearly 50 projects in the space sector spanning all stages of technology maturity.

Despite a strong talent base, EU startups receive 8 to 10 times less VC than those in the US and China. The EU captures only 5% of global VC funding (compared with 52% for the US and 40% for China)[27]. Reinforcing support for a better functioning capital market during growth phases is therefore key to the EU space industry's competitiveness. This will help to counter the trend of EU space companies being acquired by US firms.

[27] Draghi, M., 'The future of European competitiveness', September 2024, page 29.

The EU Startup and Scaleup Strategy[28], which was adopted in May 2025, and the broader "Choose Europe" initiative focus on helping innovators, founders and investors by improving the conditions for startups and scaleups, enabling them to capitalise on new geopolitical opportunities and reducing the reasons to relocate outside the EU. It sets out legislative, policy and financial support measures to address the regulatory and financing barriers faced by European startups and scaleups, at both EU and Member States level, and to address the needs of innovative companies throughout their development.

Public authorities play an important role in providing contracts to private companies as suppliers of goods and services. Ensuring contracts are awarded to a diverse range of service providers, including well established companies, startups, scaleups, SMEs and mid-caps, can help the EU achieve its space objectives, to push down costs but also to drive value, innovation, and sustainability, while mitigating risks and promoting its priorities.

Action box 4
The Commission will accelerate and expand access to finance by: - ensuring private investment capital becomes available through a (CASSINI) Seed Investment Facility, a Growth Investment Facility, and a Debt/ non-dilutive Financing Facility, by conducting a pilot test to select VC funds using the existing capacity of CASSINI Investment Facility.
The **Commission** will implement all related actions in the EU Startup and Scaleup Strategy, including actions related to the European Innovation Council, the Scaleup Europe Fund and the European Innovation Act in support of the space sector.
The Commission will adopt innovative and business friendly procurement methods to encourage more competition and enable the most cost effective and innovative products to scale up on the market. For this to work, procurement procedures need to ensure a level playing field for all economic operators, including new entrants, scaleups, mid-caps, in particular small mid-caps, and small and medium sized enterprises.
The Commission will stimulate market growth by fostering public demand through the strategic use of public e-procurement, allowing for less risk averse tendering, with a combination of Onboarding Schemes, Marketplace, Advance Purchase, and Anchor Customer Contracts to enable rapid scaling up and gain market credibility for upstream and downstream activities. The creation of Central Purchasing Body contracts and Dynamic Purchasing Systems are two ways to achieve this.
The Commission will stimulate local eco-systems linking together space, digital and other sectors to promote space innovation, involving incubators, accelerators, fostering entrepreneurship and skills.

Building Block V: Promoting International Cooperation and Economic Diplomacy

The main scope of international activities is promoting, establishing, and maintaining cooperation on space with non-EU countries and international organisations including through (i) regular bilateral contacts (at technical level and in space dialogue format); (ii) cooperation arrangements and international agreements on participation in EU systems and programmes with countries of strategic importance for the EU interests and priorities.

The Global Gateway strategy offers the opportunity to advance partnerships, policy dialogues, and investments with countries around the world. Under the Global Gateway, the EU will work to increase

[28] COM(2025) 270

EU investments in partner countries including in satellite connectivity and space-based services, linking the EU with centres of digital growth and contributing to the EU's economic security.

Access to markets in the EU's partner countries is a priority to counter both hostile foreign influence and to promote growth and prosperity in those regions – both key to safeguarding Europe's security. A strong industrial base, secure supply chains and appropriate rules that allow EU companies to favourably compete against uneven or unfair competition practices are both elements that underpin the EU's resilience and autonomy.

International cooperation may thus facilitate and leverage actions that are needed to support the competitiveness of the EU's space sector. Functional cooperation on space also creates as a spillover effect, an opportunity to extend lasting business relations to other economic sectors and forge more strategic political affinities in global affairs.

A crucial first step would be to map needs and possible gaps. Building on the existing acquis of agreements and arrangements with third countries, a mapping would help to gather intelligence enhancing EU businesses' competitiveness and global reach. In close cooperation with the EU Delegations in strategic markets, an information-sharing platform can bring together intelligence on upcoming procurement opportunities to support the EU space ecosystem. This would benefit EU companies which could secure new contracts, establish a strong presence in international markets, and drive growth and innovation. Similarly, the platform will also help third country organisations identify investment opportunities in Europe.

Action box 5
The Commission, through its bilateral summits and space dialogues, will propose: - capacity building measures to emerging space nations projecting the EU's technical standards; - interoperability of its systems globally.
The Commission, involving EU Delegations, will create a platform on procurement opportunities in non-EU countries.

Building Block VI: Skilled Workforce

A skilled workforce is a transversal enabler of the five building blocks and is the backbone of a thriving space economy, driving innovation and progress in a fast-evolving and technically demanding field. The EU faces the threat of a brain drain, however, because many talented EU space professionals are finding better opportunities for professional development and migrating to regions like North America, the Middle East, and Asia, thus jeopardising the EU's technological and economic security.

As announced in the EU Union of Skills Communication[29], the EU will develop sector-specific skills and intelligence, and prioritise creating, attracting and retaining top talent by offering attractive career paths and opportunities for growth within the EU, as well as supporting reskilling schemes. The space-specific skills intelligence methodology will, inter alia, rely on ongoing Erasmus Blueprints & Pact partnerships and will feed into the new European Skills Intelligence Observatory.

The Union of Skills was accompanied by the launch of the STEM Education Strategic Plan, outlining various measures for advancing STEM education and training to increase talent across the EU. The Plan includes ambitious targets to boost enrolment in STEM fields in vocational education and training

[29] COM(2025) 90.

(VET) and higher education by 2030, with a particular focus on attracting more girls and women to those areas.

Advanced STEM skills are crucial for defence and aerospace capabilities. However, the EU's STEM workforce growth lags behind demand, notably in key sectors such as cybersecurity, defence and aerospace. Nearly four out of five SMEs in the EU struggle to find workers with the necessary skillsets, with startups and scaleups severely impacted, particularly in breakthrough technologies such as AI, semi-conductors, and quantum computing. These shortages also impact the space sector, limiting the economic growth and stifling innovation.

Addressing this challenge requires not only initiatives in higher education but also a proactive role from Vocational Education and Training (VET) providers, who are pivotal in driving applied research and equipping the workforce with practical skills. Additionally, a key focus of the Plan is thus on strengthening cooperation between education, research, and businesses to improve STEM learning and raise awareness of career opportunities. By building closer links among these sectors, the Plan seeks to create synergies and facilitate knowledge transfer that can inspire and prepare students for future STEM careers.

It is imperative that there be adequate higher education curricula and training. This necessitates cooperation among all relevant actors. Work can benefit from the Pact for Skills partnerships, the associated Erasmus Blueprints and the successful Copernicus Academy. In the domain of cyber, the EU space companies and academia could join the Industry-Academia Network of the Cybersecurity Skills Academy.

Furthermore, diversity, equality and inclusion initiatives need to be promoted, tackling equity, talent and gender gaps[30]. It is also essential to tackle demographic challenges by responding to the evolving needs of the space economy. This requires close collaborations between academia, industry, education and training institutions to ensure that education and training programmes are tailored to meet the demands of the sector. One example of a current priority area for the workforce is the need for cybersecurity professionals to enhance the security of EU satellite and space systems.

However, as the space sector evolves rapidly, these priority areas are continuously evolving to keep pace with industry developments. High schools, universities, and VET providers must therefore be equipped to react quickly to industry needs, providing students with the specialised and transversal skills required to succeed. A broad range of stakeholders needs to be brought together in skills eco-systems, as it is already done for example in the Centres of Vocational Excellence model (CoVE) and European Universities alliances when it comes to advanced skills.

Action box 6

The Commission will develop a space sector-specific methodology:
- to support the Union's skills intelligence, including contribution to the European Skills Intelligence Observatory;
- to support the EU space skills classification, including adequate coverage of the space sector in the European Skills and occupation classification (ESCO).

[30] Despite comprising 53.7% of tertiary students enrolled in 2022, women accounted for only 30.9% in STEM tertiary fields. In VET, the gap is even bigger, with women representing only 16.1% of enrolment in medium-level VET STEM fields.

The Commission will promote cooperation between stakeholders, academia including European Univeristies alliances, VET, training providers-and businesses, focusing on the development of space curricula, exchanges, partnerships and fellowships.
The Commission, in cooperation with academia, VET centres and secondary education institutions, will: - support lifelong learning, upskilling and reskilling for professionals, including a Skills Guarantee pilot to support the reconversion of workers in sectors undergoing restructuring or at risk of unemployment, to develop further their careers in the space sector; - help to equip secondary education pupils, VET and tertiary education with STEM skills crucial for the space sector through the STEM Tech Talent Induction initiative.
The Commission will support the mobility of researchers for space through EU instruments such as Marie Skłodowska-Curie Actions (MSCA), Erasmus+, Europass and Euraxess online platforms, as well as through exchange programmes for spaces studies across Member States.
The Commission will advance gender equality in STEM by contributing to the STEM Education Strategic Plan through the introduction of a space-themed learning module in the Girls Go STEM initiative and the launch of a "Back to School" campaign under STEM Futures to inspire and engage girls from the start of the academic year.

3. UNDERPINNING SPACE SOLUTIONS IN SUPPORT OF EUROPE'S ECONOMY

The rapid expansion of the global space economy makes it crucial to foster a resilient and competitive environment for EU space infrastructure and services is crucial. This is particularly the case given the EU's current 6% share of the upstream global market and 19% share of the downstream global market[31]. The proliferation of satellite and space manufacturing facilities worldwide underscores the industry's rapid commercialisation.

Alongside this growth, satellite technologies are evolving with innovations such as software-defined satellites; direct satellite-to-device connectivity; quantum communications; and on-board artificial intelligence and machine learning. These developments not only enhance flexibility and operational efficiency (both in space and on the ground), but also place new demands on the supporting ground infrastructure.

Several nations and private operators are creating reusable or heavy lift launch capabilities, which can deploy massive cargo payloads or hundreds of satellites in a single mission. As other space powers continue to refine the reliability of their next generation launch vehicles, launch prices will probably decline further, thus intensifying competition for EU launch service providers. Without significant support to diversify and strengthen its own launch sector, the EU's strategic autonomy in access to space could be compromised.

Geopolitical tensions are reshaping investment in space capabilities[32]. Russia's war of aggression against Ukraine highlights the strategic importance of space capabilities for security and defence and of the importance of protection of space assets including counter measures for Radio Frequency Interference. Governments and private enterprises are investing heavily in secure communications, surveillance, and resilient space infrastructure in order to ensure operational continuity in times of crisis. Private organisations have played a vital role in maintaining communication and operational coordination on the ground in Ukraine. This reinforces the need for the EU to enhance its own space

[31] European Space Agency, 'Report on the Space Economy 2025', March 2025.
[32] 'Global Counterspace Capabilities', *Secure World Foundation*, April 2025.

capabilities in support of its strategic autonomy and security, including the defence and resilience of Ukraine, and to ensure the safety of its satellite and space infrastructure.

The EU will also strengthen its space derived products and services, improving the widespread uptake of space-based solutions by users across various sectors (including government, commercial industries and research organisations). The EU can thus maximise the economic benefits of space-based technologies, creating a ripple effect of growth and innovation that spans multiple industries.

3.1. INFRASTRUCTURE & MANUFACTURING

Having manufacturing facilities and EU-based supply chains is critical for EU strategic autonomy, as they enable the production of space infrastructure, including access to space, spacecraft or ground-based systems, in accordance with EU standards, ensuring reliability, security, and an adequate degree of self-reliance in the global space economy.

With projections estimating around 100 000 satellite launches this decade, the EU's space sector must rapidly expand its satellite manufacturing capabilities. Building modern space infrastructure and scalable constellations, requires -spacecraft production in series which can facilitate commercialisation and access to export markets while ensuring rapid deployment of new capacities.

In the current geopolitical and competitiveness context, it is important for the EU to ensure leadership in secure connectivity (IRIS^2), positioning, navigation and timing (Galileo, EGNOS and Low Earth Orbit PNT system), space situational awareness, in-space operations and services, very high resolution and high revisit Earth observation, intelligence, surveillance, reconnaissance, missile early warning systems, and robotics.

While public investment is necessary in such a highly strategic and sovereign sector, the EU, in cooperation with Member States, will have to reinforce and intensify the single market framework conditions to enable more private investment in new manufacturing facilities and EU supply chains at strategic locations, ensuring closer collaboration between EU Member States for the development of secure satellites, launch vehicles, robotics, and ground hardware (including antennas, user terminals, and other critical technologies).

Achieving this will require the widespread adoption of advanced manufacturing, making use of robotics, artificial intelligence, and automation to ensure smart, efficient production and to maintain global competitiveness ensuring non-dependence. Additionally, the integration of digital twins, simulation and modelling, are key factors in the design, testing, and optimisation of satellite and spacecraft construction, as well as the planning of complex space missions. This approach is essential to avoid the challenges experienced by the automotive industry, which, despite high production volumes, has struggled due to less competitive manufacturing practices, elevated labour costs, and prolonged development cycles.

To capitalise on these emerging opportunities, the EU's commercial space sector must drive innovation[33] and economic growth while safeguarding autonomy through the development of sovereign, competitive, and independent satellite and launch capabilities that respond effectively to current and future market demands.

Action box 7

[33] 'Towards a European policy for technology infrastructures – Building bridges to competitiveness', European Commission (2025), and 'EU Startup and Scaleup Strategy', COM(2025) 270.

The Commission, together with Member States, will facilitate the expansion and modernisation of manufacturing and test facilities across the EU, in line with State aid rules.
The Commission, together with Member States and ESA, will continue and intensify investments in next generation satellite technology (for example, but not limited to, software defined satellites, quantum satellites, commercial navigation satellites and satellite cybersecurity), through a combination of R&D grants, public contracts and private investment.
The Commission will set-up a CASSINI Manufacturing Accelerator offering space industry advisory services for optimising manufacturing processes, logistics and sourcing strategies.

Access to Space

European access to space is a strategic and critical element of Europe's freedom of action in space. It enables the autonomous and secure deployment of space-based assets that support a wide range of economic, social, environmental and security activities, to the benefit of society. Securing an autonomous, reliable and cost-effective European access to space is therefore the collective responsibility of all European public actors, alongside private efforts to reinforce the competitiveness and resilience of European space transportation services.

The operational launchers developed within ESA, Ariane 6 and Vega C, will continue playing a key role in the coming years. New space transportation solutions under development by private actors will reinforce the European access to space. They bear the potential to reduce launch costs and pave the way towards new and more flexible services. All are needed to address an evolving commercial and institutional demand, foreseen to increase in the coming years, including for security and defence.

The EU plays a key role in ensuring this access, by supporting the aggregation of public sector launch services needs and enabling a strong, competitive and resilient launch industry that can deliver sustainable and future-ready services. The Commission will support consolidation of demand for launch services from various public actors, to provide industry with institutional market perspective and encourage emergence of new solutions addressing current and future needs. However, access to space presupposes sustainable economic activity in orbit and beyond to serve its inherent purpose.

Fierce global competition coupled with captive demand and geopolitical uncertainties have demonstrated the acute need to reinforce Europe's autonomous, resilient and competitive space transportation capabilities. The European public sector is progressively moving away from the publicly developed launch systems model, towards a service-led and anchor-customer procurement approach.

Europe must urgently address the growing gap in launch services for commercial satellite operators. European capabilities should serve a wider range of missions, lower launch costs and strengthen its position in the global market, while also unlocking opportunities in emerging markets.

Access to space and the development of launch solutions from concept to commercialisation require the deployment of a full set of instruments, including prizes, grants and innovation procurement mechanisms.

The Commission and ESA are exploring options towards a long-term vision for access to space, facilitating collaboration, identifying opportunities for cooperation and defining concrete actions in a coordinated and complementary manner.

Action box 8
The Commission, together with Member States and ESA, will propose a long-term vision for **European** space transportation.
In the framework on the ongoing revision of the Public Procurement Directives and in line with the Competitive Compass, the Commission will set conditions for promoting EU preference for access to space while ensuring a competitive process for the procurement of EU institutional launch services, including through aggregation and joint procurement.
The Commission, together with Member States and ESA, will contribute to maintaining, securing and expanding capacities of ground-based infrastructure (including test and launch facilities), in order to enhance the overall autonomy, resilience and competitiveness of EU access to space.
The Commission, together with Member States and ESA, will contribute to accelerating future access to space solutions, for instance reusability.

Digital Infrastructure for Space

As space systems evolve, technological innovations from digital industries such as artificial intelligence (AI), machine learning (ML), quantum technologies, cloud and edge computing, connectivity and interoperability, are increasingly being adopted in the space sector. A shift towards digitisation is revolutionising the way that space missions are designed, operated and optimised. The EU must prioritise the development of a robust digital infrastructure to support these advances.

The growing volume of satellite data further amplifies this need. It will require significantly more storage capacity; access to high-performance computing (HPC); faster processing capabilities; and more efficient application programming interface (API) access for data distribution and analysis. Some of this data is managed through traditional data centres, but an increasing share is already moving to cloud-based platforms, thus making possible the greater scalability, flexibility and real-time accessibility required by modern space applications. A notable effort in that regard is the Copernicus Data Space Ecosystem (CDSE), a European cloud platform offering storing and processing capacities for a wide range of applications, used by more than 380 000 registered users across the world.

Digitising ground segment infrastructure is critical to supporting the next generation of satellites, including software-defined satellites (SDS) and large-scale constellations. These modern satellites are highly dynamic and reprogrammable and require flexible real-time communication with ground systems. Only digital, cloud-enabled and virtualised infrastructures can deliver these capabilities. A fully digital ground segment enables automation, rapid scalability and real-time responsiveness, which are all vital for managing frequent software updates, in-orbit reconfigurations and increasingly complex mission tasks. It also allows seamless integration with AI-driven analytics, strengthens cybersecurity measures, and ensures interoperability across a diverse range of satellite platforms. In this context, digitising the ground segment is not merely an upgrade but a fundamental enabler for future space systems and for meeting the demands of an evolving, data-intensive space economy.

In addition, thanks to powerful on-board processors, signal processing can now take place directly on the satellite (regenerative transponder). Satellites are thus increasingly becoming nodes of the global information infrastructure and can become a space-based data processing network capable of computing vast amounts of information directly in orbit, without relying on any Earth-based infrastructure.

To ensure efficient storage, access, and protection of the growing volume of space data, secure, sovereign and scalable cloud and edge capacity is indispensable. Much of this data is currently stored

and processed on non-EU cloud platforms. The forthcoming Cloud and AI Development Act[34] should at least triple the EU's data centre capacity within the next five to seven years; strengthen the availability and use of highly secure EU-based cloud services; and reduce external dependencies. These platforms should provide real-time access, scalability, and be optimised for the demands of modern space systems, including large-scale constellations and software-defined satellites.

The Cloud and AI Development Act will be accompanied by a single EU-wide cloud policy for public administrations and public procurement, which will guide public authorities in their procurement decisions and empower them to leverage their purchasing power more strategically. These ongoing developments must be leveraged in order to improve the competitiveness of EU approaches to storing, processing and analysing data from global space data providers.

Beyond cloud and edge computing, EU data spaces are essential to enabling trusted and sovereign sharing of satellite data between governments, research institutions, and commercial actors within clear governance frameworks. In parallel, data labs will play an important role by offering secure, collaborative environments where researchers, developers and businesses can experiment with space data, train AI models and develop new applications.

Action box 9
The Commission, through its Cloud and AI Act and the ensuing cloud policy, will incentivise sovereign EU cloud solutions for space data to reduce reliance on non-EU platforms for storing, processing, and distributing satellite data and enhance the competitiveness of EU solutions.
In its digitisation policies and related action plans, the Commission will support the modernisation of the ground segments with the continuation of the transitioning to digital, cloud-enabled, and virtualised infrastructures, including antennas, radio transmitters and receivers, signal processing equipment, mission control systems, network links, control rooms and monitoring interfaces.
Through its digitisation policies and related action plan and notably building upon EU AI factories, the Commission will establish space data spaces and labs to: - facilitate secure sharing of satellite data among governments, research institutions and commercial actors; - support the creation of space data labs to provide a collaborative environment for researchers, developers and businesses to experiment with data, train AI models and develop new applications.

3.2. SPACE SERVICES

A significant share of growth in the global space economy will be driven by downstream space-based data, products and services. Beyond its economic impact, space technologies and services are essential for national and EU security, resilience and the safety of citizens. Building on a robust physical and digital infrastructure, this section explores how to optimise the utilisation of space services including Earth Observation, Navigation, Communications, and Space Situational Awareness, to effectively meet the evolving needs of public and private end users across multiple economic sectors.

Satellite connectivity, to be further augmented through IRIS^2, continues to play an increasingly important role in the convergence of non-terrestrial networks with terrestrial infrastructure. The provision of broadband internet and backhaul services are essential to connect remote areas, as well as for the EU to respond effectively to emergencies, protect its digital sovereignty, and support autonomy,

[34] 'AI Continent Action Plan', COM(2025) 165.

competitiveness and economic growth. Satellite connectivity is included in part of the 5G standards, and will become natively supported in 6G, which is expected to be standardised by 2030.

The EU Space systems Copernicus, Galileo and EGNOS are already embedded in the operations of nearly every key sector: security and defence, transport, energy, agriculture, emergency management and humanitarian aid, environmental and climate monitoring, urban planning, among others. However, the full economic potential of their data and services remains untapped due to fragmented access, inconsistent standards, intensifying competition from outside Europe and regulatory barriers. Furthermore, resilience of these systems is essential to guarantee the continuity of the services for the critical key sectors. In the context of the satellite navigation, the reinforcement of the Galileo system with a Low Earth Orbit (LEO) PNT component will allow the full exploitation of the PNT services for those key sectors. By the same token, Earth observation resilience will be augmented by a future Earth observation governmental service providing geo-intelligence data. Finally, the IRIS² secure connectivity system will underpin the resilience of other space systems by offering a secure data link over multiple satellites. Most importantly, the uninterrupted operations and continuous evolution and upgrade of Copernicus and Galileo/EGNOS remains a top priority within the subsequent legal framework governing these systems.

To address these challenges and fully leverage the benefits of space-based services, the EU must adopt a strategic, user-centric approach that aligns infrastructure, innovation and policy with the specific needs of end users. Particular attention must first be given to the area of security and defence, before expanding into other key areas such as energy, preparedness and crisis management, transport, critical infrastructure, climate and agriculture.

Space for Security and Defence

The strategic importance of the space sector for the broader economy is one of the primary reasons why many nations are investing billions in space infrastructure, integrating military, security, socio-economic, and technological objectives. Historically, space investments have been driven by government and military demand. Recent trends indicate that this dynamic is not only continuing, but also intensifying, with notable increases in military space investment. Furthermore, the distinction between commercial, civil and military spending space programmes is blurred.

In response to rising geopolitical tensions, space powers are increasingly developing government and military satellite constellations to support communication, missile tracking, and real-time situational awareness for military operations. The commercial space sector is playing an increasingly central role in delivering these capabilities. In the EU, however, the lack of a unified approach to public spending on space and defence has led to ongoing industrial fragmentation[35]. This, coupled with limited public demand, has contributed to a capability gap in key areas such as intelligence, surveillance and reconnaissance (ISR), leaving the EU dependent on non-EU providers for some critical defence services. Addressing these gaps will require a coordinated strategic effort between EU Member States, defence actors and space industry stakeholders. Mapping existing and missing capabilities is a necessary stage in building a more autonomous and resilient EU space and defence ecosystem.

The growing involvement of commercial space actors in geopolitical conflicts has provoked strong reactions from spacefaring nations. Some have threatened to target and take down satellites. This highlights the growing vulnerability of space infrastructure to kinetic and cyber-attacks, which can have devastating long-term impacts on the economy[36] and civilians. Recent surges in cyber-attacks on

[35] Draghi, M., 'The future of European competitiveness', September 2024, part A, page 60.
[36] World Economic Forum, 'Global Cybersecurity Outlook 2025', January 2025.

satellite systems increase the urgent need to strengthen the resilience and security of EU space assets against any form of attacks, including hybrid, missile & cyber-attacks by moving towards a zero-trust architecture for satellite and space cybersecurity and ensuring the capability of rapid replacements of (back-up) assets. Additionally, Radio Frequency Interference (natural, for instance solar flares, or man-made such as jamming and spoofing) puts at risk the safety of European transport services, notably of aviation and maritime, and can undermine the proper and safe functioning of European critical infrastructures. Interference to the detriment of EU Member States is growing since the start of Russia's war in Ukraine. Actions by adverse regimes pose risk of damage to various sectors: aviation, sea and land transport, telecommunications, agriculture and others. EU countermeasures and investments are needed to protect infrastructure and numerous economic actors.

Under the current geopolitical context and considering the military capabilities available, defence readiness is impossible without space readiness. Hence, the development of resilience systems to augment both the safety and security of existing EU space systems and the uninterrupted provision of essential space services across civil sectors, such as transport, energy, and emergency response, will be a critical measure. Enhanced space capacities, crucial for the defence readiness in modern warfare, would therefore comprise:

- geo-intelligence data from space with all-weather, very-high resolution imaging capabilities with a high-revisit time, ideally 30 minutes;
- highly secure and resilient satellite connectivity;
- secure high-precision navigation positioning and timing services, which are able to withstand jamming and spoofing.

Some of these space services, crucial for defence readiness, exist at national level. Some services and data can be provided by commercial providers. However, first they lack the scale to address the collective European needs; second, they are not necessarily interoperable, meaning less effective in scope in respect of European-level threat situations.

It has therefore become obvious that, for our resilience, we need to augment defence for space but equally space for defence capacities, both through existing systems and through developing new systems which will provide the most advanced space capabilities at the EU level.

Action box 10
The Commission, together with Member States, will provide a mapping of gaps in space commercial capabilities for defence in line with broader approach taken for defence readiness.
The Commission, together with Member States, will foster public demand in dual-use services and relevant technologies by aggregation, joint procurement and anchor tenancy arrangements.
The Commission will continue and strengthen its security-by-design policy in the development of its space systems and the ensuing provision of services, incorporating dual-use principles.
The Commission, together with Member States and ESA, will explore options for augmented dual-use space systems, i.e. the Earth Observation Governmental Service, the Low Earth Orbit Positioning, Navigation and Timing, IRIS², Radio Frequency Interference monitoring and the Space Situational Awareness.

Space for Energy

Satellite data is playing an increasingly vital role in the energy transition. It supports renewable energy planning by forecasting solar and wind production, optimising site selection, and monitoring

infrastructure performance. For instance, Copernicus data is used by operators across the EU to anticipate supply disruptions and manage grid balancing in the face of climate-related risks. Connectivity solutions based on IRIS² will be assessed for energy infrastructures (e.g. smart grids) and other critical infrastructure. The International Energy Agency advises that satellite data can reduce planning costs for renewable infrastructure by up to 50%[37]. As Europe accelerates its shift towards clean energy, harnessing the full potential of satellite services will be critical to ensuring resilience, efficiency and sustainability in the energy sector.

Space for Preparedness and Crisis Management

Space-based technologies are fundamental to strengthening the EU's crisis preparedness and response capabilities. The EU Preparedness Union Strategy emphasises that services such as Copernicus Emergency Management Service and Galileo provide real-time situational awareness, early warnings and reliable communication when terrestrial networks fail. These capabilities are indispensable when coordinating emergency operations, supporting civil protection, including by ensuring timely access to space-based early warning information to disseminate directly alert messages to the population, and mitigating the impacts of natural and man-made disasters.

For instance, the deployment of IRIS² will support the establishment of the European Critical Communication System (EUCCS) to deliver mission critical communication for public authorities in charge of security and safety across the EU and Schengen area. IRIS² will be crucial in expanding EUCCS coverage in areas without terrestrial mobile network and in enhancing its resilience in case of disruption caused by natural hazards or malign interference. To further strengthen this initiative, the Cybersecurity Blueprint will address preparedness and management of cyber crises across sectors including where the Space Threat Response Architecture applies, such as the need for enhancing shared situational awareness between Member States and EU entities.

Space for Transport

The EU is leading in the coupling of transport and space. Operational meteorology, positioning, navigation, and timing, and secure connectivity, are essential systems for all transport modes from civil aviation (e.g. approaches and choice of routes) to maritime (connected/automated vessels), road (autonomous vehicles) and rail (European Rail Traffic Management System, ERTMS). The Industrial Action Plan for the European Automotive Sector calls for automotive software and equipment to be designed to use space-based data and services for navigation, high-precision positioning, Earth observation and secure connectivity (as provided by the EU systems Galileo/EGNOS, Copernicus and, soon IRIS² respectively). IRIS² will be included in the transport domain master plans for aviation, maritime, and railway.

The critical role of space services in transport requires such systems to be protected from natural risks and other threats. The EU will therefore develop solutions for Radio Frequency Interference monitoring that will generate reports and maps by processing data from various sources, including open data, on-ground sensors and satellites (commercial and EU-owned) to timely warn user communities of the impact on PNT signals. In addition, the EU will reinforce the resilience and robustness of its space systems and services with the introduction of a complementary component operating in Low Earth Orbit (LEO-PNT) capable to providing PNT services with much better resistance against interference and therefore of direct benefit to transport. By the same token, the data relay by the secure connectivity IRIS² system will increase the resilience of the various modes of transport and infrastructures (including

[37] International Energy Agency, 'Renewables 2024 – Analysis and forecast to 2030", October 2024.

rail, maritime, civil aviation, ports) and will support their seamless and secure functioning as critical infrastructures.

Space for Critical Infrastructure

Space systems provide crucial support for the EU's critical infrastructure. Earth observation helps monitor transport corridors, energy pipelines, and ports by detecting anomalies and early signs of degradation. For satellite navigation, the Galileo Greenlane application enabled efficient cross-border movement of essential goods during the COVID-19 pandemic. Galileo and EGNOS also enhance safety and efficiency in transport. Satellite communications provide continuity when ground-based systems are compromised.

Operators across different sectors increasingly rely on satellite services for critical infrastructure (such as energy or nuclear facilities). In urban areas, satellite based Earth observation services support climate adaptation strategies by tracking heat islands, land-use changes, and water management challenges. The deployment of IRIS² will further strengthen EU's critical infrastructure by offering resilient and secure connectivity, especially in disconnected or disaster-affected regions. Moreover, the deployment of IRIS² needs to be compatible with the integration of 5G and 6G networks (TN-NTN integration), by coordinating standardisation with 3GPP, which is fundamental for ensuring the interoperability, scalability, and security of integrated terrestrial and non-terrestrial networks. The portfolio of projects of the Smart Networks and Services Joint Undertaking (SNS JU), the EU initiative for 6G R&I, already includes a number of TN-NTN projects.

Space for the Environment and Climate

Earth Observation satellites are indispensable for environmental protection, climate science, resilience strategies and climate adaptation. They provide policymakers with accurate, real-time data on deforestation, air and water quality, pollution levels, methane leaks, land-use patterns, as well as parameters relevant for climate modelling and trend assessments. A concrete application set out in the Water Resilience Strategy[38], will be the establishment of "one-stop-shop" for Earth observation products relevant to water management, to bring together Copernicus water-related data, products, and tools, and facilitate access and use of these data. Combined with other existing services such as the European Marine Observation and Data Network, Destination Earth and the Digital Twin Ocean, Copernicus provides global and high-quality services to assess the state of the ocean, supporting a healthy ocean for a sustainable blue economy. Additionally, Copernicus reduces the impact of transport on climate, for instance investigating contrails formation in aviation. These insights support the development of evidence-based legislation for environmental governance, decarbonisation and climate change mitigation. Galileo and EGNOS enhance survey accuracy, thus enabling more efficient maritime shipping or aviation routes, more accurate weather prediction, biodiversity monitoring, and early warning for climate disasters. In all, these systems are helping the EU meet its Green Deal and Clean Industrial Deal objectives to support our industry to decarbonise, and to maintain global leadership in climate action offering adaptation solutions (for instance, broader European climate Risk Assessment on more granular level, modelling of adaptation scenarios) and additional capacities (for instance for the detection of Solar Radiation Modification).

Space for Agriculture

[38] COM(2025) 280

The increasing use of space in agriculture supports different services that enable resource efficiency and sustainability. Space-based precision agriculture optimises farm efficiency. Smart data will enable a 'less is more' approach, as agriculture could use less fuel, water and chemicals. Food and crops forecasts using Earth observation are promoting food security and investment. Space-borne information on different environmental parameters is underpinning sustainable rural development.

The Vision for Agriculture and Food recognises that the integration of satellite technology leads to better resource use, reduced input costs, and improved sustainability. Continuity and evolution of EU space assets such as Copernicus and Galileo will thus further foster simplification and competitiveness. The introduction of a LEO-PNT component on Galileo will also improve the performances of navigation high accuracy services, which are key for agriculture. Furthermore, data-sharing technologies could cut red tape by providing more streamlined and automated reporting opportunities.

Boosting Space Services and Simplification

Further to the use cases of space in the aforementioned domains, it is imperative to promote generic enablers to further support the uptake of space solutions in the market in a horizontal manner. Such enablers range from innovation procurement systems up to quality labels. The use of satellite data and space applications can also contribute to ongoing simplification efforts in the area of reporting in particular. The Commission will continue exploring how to deploy all available tools to this end.

Action box 11
The Commission will apply innovation procurement for space, in particular **innovation** procurement strategies for public authorities to buy space services and data, using a Dynamic Purchasing System (DPS) that groups the demands of public authorities and offloads heavy procurement processes from a local and regional level via one simple centralised approach. This will facilitate and accelerate the purchase of downstream space solutions that address public sector challenges while helping to create a larger and more significant EU demand for space data and services.
The Commission will launch the 'Make it with Space' programme to help (i) the users purchasing space data and service, and (ii) EU downstream space companies in the final stage of commercialisation. This initiative will focus on boosting demand for space data and downstream services in non-space sectors via a dedicated EU funding scheme that allows new users to test, evaluate and implement space-based solutions in their business processes, thus making them more efficient, sustainable and resilient, while avoiding competition distortions.
The Commission will foster the integrity and quality of downstream space data and services: it will explore potential standardisation and the development of a quality label to ensure the reliability, security and accuracy of space-based data and services, with the aim of reinforcing demand for space services in more sensitive areas. The integrity of space data and services for end users will take into account the increase in cyber threats due to changes in the geopolitical context.
The Commission will explore **solutions** for the protection and safety of space systems including a **Radio Frequency Interference monitoring** system **generat**ing **timely** information on **the impact on space systems** in support of competent authorities**.**
The Commission will mainstream space solutions in EU sectoral policies: building on successful solutions such as e-Call[39] and 112, the EU will strive to mainstream space solutions in various policies, including manufacturing aspects (e.g. standards, interoperability and user terminals) and services aspects (e.g. demonstrations and pilot projects involving user communities).

[39] eCall is a system used in vehicles across the EU which automatically makes a free emergency call to the single European emergency number 112 if a vehicle is involved in a serious road accident.

The Commission will increase user uptake by facilitating collaboration with national administrations via National Collaboration Programmes and promoting the integration of Copernicus data into decision-making processes to maximise the benefits of Copernicus services for national policies and to reduce administrative burden, particularly in areas such as climate change, atmosphere, marine and land environments.

3.3. CAPTURING THE IN-SPACE ECONOMY

By virtue of Article 189 TFEU, the EU can develop policies and strategies in the field of space to promote cooperation, technological advancement and the peaceful use of outer space. Space activities often require multinational and multi-stakeholder cooperation. The EU can thus (i) encourage and support the collaborative approach inherent in space economy activities, including orbital activities and beyond, and (ii) integrate and coordinate space activities between Member States, thereby reducing duplication of effort and enhancing overall efficiency and effectiveness in space-related endeavours.

The in-space economy can broadly be divided into two key segments: the orbital economy and activities beyond Earth's orbit, notably the cislunar and lunar economies. The orbital economy is currently driven primarily by the satellite industry promoting more sustainable practices by moving manufacturing from Earth to the orbital environment. The cislunar and lunar economy is dedicated to actvities such as exploration; mining; resource extraction and use; infrastructure development; and the establishment of logistic and supply chains that are critical for future commercial and scientific missions.

The scientific, strategic, military, economic, and political interests in lunar exploration have led major space-faring nations, particularly the US and China to invest signficantly in robotics, heavy-lift launch capabilities, cargo and crew, and lunar infrastructure. Both nations have consolidated their leadership positions by securing international partnerships and advancing their lunar research station programmes. Among the 55 global partners that have signed the US-led Artemis Accords there are 21 EU Member States, which demonstrates the growing EU and global commitment to lunar exploration.

These international developments are reshaping the technological landscape within Earth's orbit. Many technological advancements (e.g. robotic platforms, propellant depots, in-space manufacturing and recycling) originated as measures to reduce launch costs and increase mission efficiency with a view to cislunar and planetary exploration. As sustainability has become a central concern, there has also been a growing drive to ensure satellite safety and move energy-consuming activities (e.g. data storage and processing) off Earth and into orbit. These trends are underpinned by major public investment. Exploration and lunar programmes account for a substantial share of space agency budgets. Developments in satellite communications, interoperability, in-space manufacturing, launch capabilities and on-ground operations are interconnected.

In Space Operations and Services

The ability to act in Space is an indispensable and strategic capability for the EU as a space power**.** In Space Operations and Services (ISOS) capabilities involve many areas of satellite servicing and logistics, which enable, for example, satellite life-extension, maintenance, repair and upgrade. ISOS also entails a range of emerging in-space activities, including active debris removal; in-space assembly and manufacturing; robotic and automated service platforms; propellant depots and larger space infrastructure for specific applications (e.g., data centres, energy harvesting), thus connecting activities from low Earth orbit to cislunar space.

These services not only have vast commercial potential but are of critical strategic value for governments, particularly in areas such as defence and the maintenance of EU military satellite and space assets. These capabilities form the foundations of the future in-space economy, enhancing the sustainability, interoperability, resilience and safety of next-generation satellites and infrastructure. To safeguard its autonomy and secure its space assets, the EU must avoid dependence on non-EU space-faring nations and invest decisively in developing its own ISOS capabilities.

In the future, ISOS is expected to focus on key applications that have both commercial and strategic relevance: satellite inspection, life extension, refuelling, in-orbit logistics, maintenance, repair, and upgrades. Additional capabilities include end-of-life operations; debris removal; in-space assembly and manufacturing; reuse and recycling of orbital assets; and warehousing and cargo handling.

To accelerate the development and demonstration of these services, the Commission has launched the ISOS4I mission in conjunction with the Member States, the EEA countries, and the European Space Agency. This pilot aims to demonstrate critical in-space services; stimulate new commercial opportunities; and lay the groundwork for an adaptive service infrastructure in orbit. It is designed to remain operational beyond its demonstration phase so that, by 2030, ISOS4I will serve as a precursor to a permanent in-space servicing architecture that is fully integrated into the EU Space ecosystem and capable of delivering on-demand services to both commercial and institutional customers including EU flagship missions.

Mastering ISOS will ultimately make it possible to deploy large, unmanned space platforms that are driven by robotics, automation, and AI. These modular structures could be assembled in orbit and support a wide array of services, such as solar energy generation, in-space data processing (the space cloud), warehousing, and propellant depots, thus laying the foundation for a truly autonomous EU presence in space.

In-Space Digital Infrastructures

The transmission, storage and processing of vast amounts of space data presents significant technological and environmental challenges. Advancing in-space digitalisation in the transformation of the next generation space infrastructure and services will contribute to data sovereignty and increase the resilience and adaptivity of the EU flagships. At the same time, it will increase the scale and predictability of demand (EU anchor customer) and stimulate new market generation as paving the way towards a more flexible and sustainable in-space ecosystem. This will in turn create new commercial opportunities for European actors, reinforcing the EU's position as a sustainable space power.

On-board satellite processing enables the automatic processing and analysis of raw data, reducing the downlink volume and increasing the efficiency and speed of operations. Disruptive concepts (e.g. distributed in-space computing, which leverages the resources of multiple satellites and enables data fusion via inter-satellite links) are enhancing computational capacity and system redundancy in orbit. Space-based data centres can become a reality in the future, but they rely on the maturation of enabling technologies and include cybersecurity considerations. These centres would capitalise on abundant solar energy and the natural advantages of the space environment, such as reduced cooling demands. Supported by advances in in-orbit assembly, maintenance and in-space processing, such facilities could handle the intensive computational demands of both commercial and institutional applications. This will depend upon maturation of enabling technology (e.g., thermal management concepts, advanced computing built on robust low power chips like GPUs, optical links, secure communications, quantum

technologies, cybersecurity etc), and the elaboration of operational concepts, including possible prototype demonstrations.

Mining and Resources Utilisation

As orbital activities continue to evolve and intertwine with broader space ambitions, they mark a clear pivot point in the global space economy that extends beyond Earth's orbital economy. Traditionally, EU Member States have primarily engaged with deep space through the European Space Agency (ESA), focusing mainly on scientific missions to expand our understanding of the universe. However, space mining and resource use is now attracting significant interest as global space powers race to the Moon and deep space.

The economic potential of space resource use is projected to generate market revenues of EUR 73-170 billion between 2018 and 2045. End users could save an estimated EUR 54- 135 billion through reduced exploration costs. Technology and knowledge spillovers are valued at around EUR 2.5 billion over 50 years.

The Commission will support R&I preparatory activities (for instance concept studies, the development of scientific instruments, mechanism actuators, cooperative robotics, and sample extraction for resource extraction and use). It will also analyse the most appropriate legal framework means for resource extraction and use.

Action box 12
The Commission will enhance collaboration on in-space economy with EU Member States in coordination with ESA, focusing on orbital, cislunar and lunar space activities, supporting EU industry, research and academia.
The Commission, in coordination with Member States and ESA, will: - explore options for an ISOS4I pilot mission by 2030; - prepare the ground for a new strategic flagship by 2035 that provides on-demand in-space services for maintenance, upgrade, assembly, manufacturing, repair, removal, recycling and logistics tasks for satellites and other objects in space; and - support the transformation of space infrastructure towards greater sustainability, adaptability and resilience.
The Commission will contribute to the development of the next generation of space infrastructure for in-space services, in collaboration with like-minded partners.
The Commission will prepare the ground for and support maturation of enabling technology for demonstrators of space data centres and distributed computation in space.
The Commission will coordinate with Member States and ESA research activities for resource extraction and utilisation studies, the development of scientific instruments, cooperative and interoperable robotics, building on relevant initiatives such as the Public Private Partnerships on AI, Data and Robotics.

OUTLOOK

The EU has a collection of strong assets in space science, research and technologies, systems, data and services, as well as state-of-the-art industrial capacities and a highly skilled workforce. Given the new landscape in the space economy involving rapid and disruptive innovation, increased roles of governmental, military actors and new space companies, these assets must now be realigned within dynamic public and private partnerships that favour agility, flexibility, proactivity and adaptability.

Already the experience provided by NextGenerationEU as applied in the space sector, calling for synergies and combining resources at EU and national level, has been instrumental in further valorising inclusive engagement of all space ecosystem stakeholders agreeing and implementing policies and programmes serving common objectives. Hence, this new paradigm of inclusive engagement and cooperation should be institutionalised through a Space Team Europe, a high-level forum bringing together all European space ecosystem stakeholders: Member States, the Commission, the EU Space Programme Agency (EUSPA), the European Space Agency (ESA), space industry, SMEs and research organisations. Through this mechanism, the EU will lead efforts to federate European space-related excellence and capacities in a coherent and efficient manner.

In that vein, the EU Competitiveness Compass Coordination Tool, which ensures coordination of EU and national policies, will include space in the selected key areas that are deemed of strategic importance and of interest to the EU as a whole. The Coordination Tool will aim to align industrial and research policies and investments at the EU and national levels with a view to promoting structural economic transformation, productivity, long-term growth and quality jobs as well as benefiting the Single Market. Space has a high inherent potential for innovation, decarbonisation and economic security. Space is a major enabler for the economy that generates significant public and private investment. It is therefore a key vector for EU competitiveness and, in turn, a valid pilot case sector for the Competitiveness Coordination Tool.

The Commission, upon advice of the Space Team Europe, will therefore propose a specific methodology dedicated to space that will monitor its contribution to the EU's competitiveness as well as the EU's share of the global space economy. This will be based on the ongoing cooperation with ESA on the first-ever official statistics on the European space economy. Such statistics, as part of national accounts, can provide the necessary scientific evidence to support more targeted policies on the EU space sector.

The EU must decisively support commercialisation, innovation, and industrialisation of its space sector. This involves enhancing manufacturing autonomy, expanding anchor contracts, and adopting innovation procurement models that attract private investment. Such measures will accelerate progress in space capabilities (including scientific missions, launch systems, satellite constellations, and space robotics). To transpose the above vision into tangible results the Commission will involve the Space Team Europe in preparing a European Space Master Plan, a roadmap towards implementation of the actions listed in this Communication.

By aligning industrial development with these priorities, Europe can build a more resilient, sustainable, and competitive space economy on a global scale.

Action box 13
The Commission will establish a Space Team Europe providing advisory contributions to the EU decision-making process in the space sector, notably towards preparing an EU Space Master Plan.
The Commission will develop, as from 2025, a dedicated methodology to monitor the EU space sector and its share of the global space economy as part of the EU Competitiveness Compass Coordination Tool.