EU Space Strategy for Security and Defence

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Summary

Summary *1*
Introduction *1*
1. Securing Europe in Space: The Strategy *5*
2. IRIS2: the new EU Secure satellite constellation *9*
3. Europe's Space Strategy Under Pressure: Strategic Autonomy at Risk *12*
4. EU Competence and Legal Framework in the Fields of Defence and Space *15*
4.1 EU Competences in the fields of Space and Defence **16**
4.1.1. Space 16
4.1.2 Defence 17
4.2 Adoption and approval of EU acts in the aims of defence and space **19**
Conclusions *21*

Introduction

Once a secondary concern in the European Union's policymaking, space has now become central to Europe's resilience and technological leadership, as a driver of innovation and economic growth but also as a critical component of its security and defence policy. The functioning of economies and public policies all rely on space-related services and data, which play a key role in several fields, such as: telecommunications and internet access - by providing broadband access and enabling digital inclusion in remote or underserved regions, aiding monitor urban expansion, air quality and traffic patterns, helping supervising crop health, soil moisture, and land use changes, maritime and transportation monitoring.

Space also contributes to achieving the EU's political agenda, enabling the digital and green transitions, and enhancing its resilience[1]: space- based assets are vital for national defence, empowering missile detection, secure communications and intelligence gathering.

Space's crucial nature has been globally recognized since the Cold War, when, in 1957, the Soviet Union successfully launched and operated Sputnik, the first artificial satellite, into Earth's orbit. This

[1] Joint Communication to the European Parliament and the Council on European Union Space Strategy for Security and Defence, Brussels 10.03.2023.

event marked a technological turning point in space exploration as well as a political watershed at the time. With the advancing of space technology, anti-satellite weapons (ASAT) and in general offensive capabilities emerged in space. During the Cold War, both Washington and Moscow systematically tested ASAT technologies, while terrestrial tensions and escalations moved into the space domain.

The competition was not only about technological sovereignty but also national security and ideological dominance, leading to key achievements like artificial satellites and manned space missions. Since then, space and defence have continued to benefit from each other's technological breakthroughs and know-how, the connection between the two being constantly growing.

Space quickly became a critical and competitive arena marked by military and technological supremacy[2] and, recently, it has also attracted great interest from those who wish to - or are already starting to - commercialize it.

Space activities face two different kinds of menaces. For instance, unintentional ones, like space debris - a threat that is becoming increasingly concrete due to the ongoing hyper-congestion of outer space.

Space debris refers to non-functional satellites, spent rocket stages, and other fragments resulting from collisions or explosions in space. As space activities grow, the accumulation of debris presents a rising risk to both operational satellites and crewed spacecraft. Both private and public actors are accountable for this.

The increasing volume of space debris poses a significant threat to the safety and sustainability of the EU's space operations. Many military and dual-use satellites rely on precise orbital positions to ensure effective operations. A collision with debris could disrupt these services, particularly in sensitive defence and intelligence-gathering applications. Additionally, debris poses risks to the long-term sustainability of space activities, threatening not only the EU's space assets but also the global space environment.

Both private and public actors are responsible for contributing to this problem.

Among private actors, a notable example is SpaceX, a private aerospace company that currently manages about 4,000 Starlink satellites and plans to launch many more to provide global internet connectivity. However, national space agencies have also played a significant role. In 2007, for instance, a Chinese anti-satellite missile test created thousands of pieces of long-lasting debris, and

[2] **N. Bonsegna,** *The evolving strategic importance of space in modern military operations,* in Iari Istituto Analisi Relazioni Internazionali, 2024.

older defunct satellites from both the United States and Russia still orbit the Earth, posing serious risks of collision.

As a result, the danger of satellite collisions and space debris is steadily increasing. By 2030, it is estimated that around 50,000 satellites will be active in Earth orbits, structurally transforming the characteristics of this operational domain. This makes space surveillance and tracking a strategic global issue — relevant not only to North and South America and Europe but also to Asian nations, notably China and Japan[3]. Additionally, debris poses risks to the long-term sustainability of space activities, threatening not only the EU's space assets but also the global space environment.

The other significant category is formed by intentional threats, which means hostile deployment of counterspace measures, intended to interfere with rivals' use of space. These are used to intimidate opponents, deny them access to their space systems, or gain informational advantages. They target orbiting space assets, the ground infrastructure that supports them, and the data linkages that connect them.

Over the past decades several major powers, such as China, India, Russia, USA and some EU member States like Italy, Germany, France and Spain, started developing space technologies for offensive or defensive (or both) purposes. Space's potential has encouraged not only the States with a long space tradition, but also newcomers Middle East and North Africa countries to launch their own satellites. As a critical infrastructure, space assets have become a target of hybrid warfare. This type of warfare combines conventional and unconventional means, including cyberattacks and sabotage, and can be carried out by rival countries in a context of growing competition between major powers. In practice, space is increasingly seen as a potential arena for strategic conflict.

Satellites have now become a core asset for the societies and economies of most countries on Earth. Their communications often provide access to the Internet for most of the devices used by ordinary citizens, businesses and institutions, and could be further exploited for much more. Satellites can be hit in a variety of ways, despite existing treaties prohibit the transformation of space into a battlefield[4].

[3] **A. Marrone, M. Nones**, *"Spazio e difesa: un legame crescente"*. Executive summary published by Istituto Affari Internazionali (IAI) in February 2022.
[4] Primarily the 1967 Outer Space Treaty, which prohibits the placement of WMDs in orbit and mandates the peaceful use of outer space.

First, space assets can be targeted by actions designed to block or disrupt signals and communications, as electronic warfare offers effective, non-destructive methods to interrupt critical operations without generating space debris.

Because of their connectivity function, space assets are vulnerable to cyber-attacks and, lastly, access to space can be endangered by kinetic, cyber or force attacks. A primary concern is the disruption of satellite communications, which can have severe consequences on military, governmental, and commercial operations. For example, GPS jamming or signal spoofing can mislead navigation systems, while cyber intrusions can compromise the integrity of transmitted data. Such disruptions can affect everything from military logistics to civilian infrastructure.

Additionally, cyber espionage targeting sensitive data from military or commercial satellites represents a significant threat. Adversaries may seek to steal classified information or manipulate satellite operations to gain a strategic advantage. It is noteworthy that, in 2022 alone, there were over 150 reported incidents of satellite interference worldwide, ranging from signal jamming to hacking attempts[5].

Space communication and remote sensing technology also played and are playing a fundamental role in the Russian - Ukrainian conflict, with Russia trying to disable space-based assets used by Ukraine prior to its invasion with a flood of cyber-attacks, to weaken Ukraine's command and control capabilities as the satellite network was being used by its government, army, and security services[6].

In such an era of escalating tensions, the European Union, concerned about the safety, security, and sustainability of the domain, has recognized the urgent need to reinforce its approach to space defence. Commissioner for the Internal Market Thierry Breton remarked at the 2022 EU Space Conference that «Space is a strategic area where big powers are now competing. ... Europe must defend its interests and freedom to operate in space»[7].

In response to both internal and external challenges, in March 2023, the European Commission and the High Representative of the Union for Foreign Affairs and Security Policy jointly released the EU

[5] In: Explainer, Council of the European Union, 31 January 2025 (more here: https://www.consilium.europa.eu/en/policies/space-security-and-defence/

[6] **Theodora Ogden, Anna Knack, Mélusine Lebret, James Black and Vasilios Mavroudis**, The Role of the Space Domain in the Russia-Ukraine War**.** The impact of converging space and AI technologies, February 2024.

[7] **Sebastian Clapp and Clément Evroux**, Briefing – European Parliament, Eu Space Strategy for Security and Defence, November 2023

Space Strategy for Security and Defence[8], the first initiative of its kind, aimed at developing a cohesive European vision for space in the context of defence.

The EU Space Strategy aims to establish a comprehensive approach to strengthen space security, with a focus on improving situational awareness, increasing the resilience of space infrastructure, supporting technological advancement, and encouraging responsible behaviour in outer space.

Following this, during the State of the Union address on 13 September 2023, President Ursula von der Leyen outlined the Commission's priorities for 2024, including the proposal for a European Space Law (EUSL). This initiative seeks to introduce harmonized EU-level rules to ensure the safety, resilience, and sustainability of space operations, reduce legal fragmentation among member states, and support the competitiveness of Europe's space industry on the global stage.

This paper aims to analyse the evolution of the EU's Space Strategy within the context of security and defence, focusing on recent developments and their broader international consequences. It examines the integration of space into EU defence policies, highlighting the increasing strategic competition in the domain, external threats, and internal challenges. Additionally, it will consider the opportunities presented by the EU's new secure satellite constellation, IRIS², in ensuring connectivity and resilience of critical infrastructures It also compares IRIS² with non-European satellite constellations, such as Starlink, to highlight differences in strategic objectives, regulatory control, and operational models. Finally, it will explore the institutional, legal, and policy frameworks that shape EU action in space and defence, assessing the challenges of autonomy, dual-use regulation, and international cooperation in the face of both intentional and unintentional threats.

1. Securing Europe in Space: The Strategy

Despite the increasingly contested nature of space, the proliferation of counterspace capabilities and the threat this poses to the vital protection and defence interests of the EU, most of its Member States did not make security or military uses of space a high priority for most of the post-Cold War era[9].

However, over the past 10 years this has changed: the pace of development and use of space assets for defensive measures has increased in EU Member States, with the Union encouraging coordination and standardization of these efforts. In addition to that, many EU Member States have space assets that were created and are operated together with other members, such as the French-Italian secure

[8] European Commission and the High Representative of the Union for Foreign Affairs and Security Policy, *Joint Communication to the European Parliament and the Council: European Union Space Strategy for Security and Defence*, JOIN(2023)9, 10 March 2023. Available at: https://www.eeas.europa.eu/eeas/eu-space-strategy-security-and-defence-0_en

[9] **Sebastian Clapp and Clément Evroux**, Briefing – European Parliament, Eu Space Strategy for Security and Defence, November 2023

communications satellite Athena-Fidus[10]. As of now, 19 of the 27 Member States already have national space strategies[11].

The EU Space Strategy is only the most recent in a growing sequence of policy initiatives in the security field adopted by the European Union. In the previous years, there have been other relevant EU interventions addressing the issue.

First, in 2003, the publishing of a European Security Strategy represented the first time that the EU identified perceived threats to its stability in a single document and outlined how it intended to use the tools at its disposal to respond to them[12].

Furthermore, the 2016 EU Global strategy (EUGS), guided by the ambition to make Europe «stronger, more united, and more influential»[13]on the global stage, provided a comprehensive framework for the EU's foreign and surveillance policy. It promoted a rules-based global order centered on multilateralism closely tied to the United Nations, the strengthening of the Union's strategic autonomy in foreign, shielding, and defence policy and the balancing of principles - democracy, human rights- with interests - stability, security, prosperity.

Additionally, in the same year, the EU released a Space Strategy for Europe, which aimed to enhance its role in space by fostering a competitive and innovative space sector while ensuring autonomy in accessing and using it. The strategy focused on expanding the use of programs like Galileo, Copernicus, and EGNOS[14], while also emphasizing supporting research, innovation, and the development of commercial space markets to address emerging challenges and opportunities in the sector.

A significant step has then been taken by the Strategic Compass for Security and Defence, released in 2022 and updated with an official note in 2024, a practical plan of action to strengthen the EU by 2030, that acknowledges space as an increasingly competitive domain, recognizing its strategic importance and highlighting the need to boost the Europe's security and defence in space. The

[10] Athena-Fidus is a French–Italian military and civilian telecommunications satellite launched in 2014. It provides secure broadband communications for armed forces and emergency services via Ka-band and EHF frequencies.

[11] European Parliamentary Research Service (EPRS), *EU Space Strategy for Security and Defence*, Briefing, 1 May 2023, p.4.Available at: https://www.europarl.europa.eu/RegData/etudes/BRIE/2023/754598/EPRS_BRI(2023)754598_EN.pdf

[12] **Council of the European Union,** European Security Strategy: *A Secure Europe in a Better World* (Brussels, 2009), pp. 27-43.

[13] European Union External Action, *A Global Strategy for the European Union's Foreign and Security Policy*, June 2016. Available at: https://www.eeas.europa.eu/sites/default/files/eugs_review_web.pdf

[14] Galileo is an autonomous civilian global navigation satellite system (GNSS). Today, with 22 operational satellites, it is in its final phase of deployment and already offers three services (Open Service, Public Regulated Service, Search and Rescue service). Copernicus is an operational, autonomous, user-driven, civilian Earth observation system. The European Geostationary Navigation Overlay Service (EGNOS) is a civilian regional satellite navigation system.

strategic compass's objective, in particular, consisted in making the EU a stronger and more capable surveillance provider, stating that it needs to be able to protect its citizens and to contribute to international peace and security, aiming to enhance the EU's strategic autonomy and its ability to work with partners to safeguard its values and interests. Specifically addressed was the Russian-Ukrainian conflict, then more particularly tackled in the Compass's update in 2024. The document provided a shared assessment of the strategic environment in which the Union was operating and of the threats and challenges it was facing. The document made concrete and actionable proposals, with a very precise timetable for implementation, being structured around four pillars: act, invest, partner and secure[15].

After that, the Member States premised the intention to continue promoting the preservation of a safe and secure space environment and the peaceful use of outer space on an equitable and mutually acceptable basis, recognizing it as a global common, committing to the mutually reinforcing role of transparency and confidence-building measures, aiming to reduce the risks of misperception, miscalculation, and unintended conflict escalation.

Of late, the EU, agreeing that additional measures are urgently needed to defend its strategic interests and to deter hostile activities in and from space, while privileging international cooperation and promoting responsible behaviors in space, also decided to strengthen its strategic posture and autonomy in the space domain and to make space systems and services more resilient, responding to hostile activities or threats, and further developing space-enabled services for fortification and defence.

This outlook has been concreted in the EU Space Strategy for Security and Defence, released, as previously said, on March 2023. Sharing with prior documents to have detected a lack of operationalization of the identified challenges and required responses, the Strategy aims to reinforce European strategic autonomy in the space domain, with the goal of ensuring that the EU can act independently in important areas.

The strategy is built on fostering a shared understanding of space threats, including the annual production of classified threat analyses at the EU level to promote a common view of the space domain. A central goal is to enhance the resilience and protection of European space systems by proposing initiatives such as the development of an EU Space Law and the establishment of an Information Sharing and Analysis Centre (ISAC)[16] to promote resilience practices. It also focuses on securing long-term autonomous access to space, reducing dependencies, and safeguarding space and

[15] (More here: https://www.eeas.europa.eu/eeas/strategic-compass-security-and-defence-1_en)
[16] Call for Expressions of Interest - EU Space ISAC

defense supply chains.

A key element is the expansion of the space threat response mechanism, initially designed to protect the Galileo satellite navigation system[17], to cover all EU space systems and services. The strategy ensures timely access to Space Domain Awareness information through national space commands and organizes exercises with international partners to test response capabilities and solidarity mechanisms.

Regarding the use of space for security and defense, the strategy promotes the development of dual-use services[18]. Two pilot projects are highlighted: one to provide space situational awareness services leveraging Member States' capabilities, and another to establish a new government Earth observation service as part of the evolution of the Copernicus program, complementing existing assets. The strategy also emphasizes strengthening synergies between space, defense, and security sectors, supporting collaboration with startups, and enhancing skills.

Finally, the strategy advocates for responsible behavior in space through active participation in multilateral forums, fostering space dialogues with third countries—particularly the United States and like-minded partners—and deepening cooperation with NATO.

Operationally, the EU Space Strategy foresees the establishment of short-term roadmaps for specific actions. This entails the identification of key milestones and metrics that can demonstrate progress. The strategy also encourages the development space defence capabilities among EU member states. This plan introduces several innovations, notably a bold shift toward incorporating 'hard power' into outer space activities. This represents a departure from the EU's traditional emphasis on scientific and civilian uses of space, moving instead toward prioritizing defence-related applications. That includes the modernization of Copernicus, the development and use of the IRIS² system[19], and the continued integration of Galileo's Public Regulated Service, which already serves defence purposes.

Additionally, the involvement of the EU's Single Intelligence and Analysis Capacity (SIAC) in producing annual space threat assessments, and the use of Space Domain Awareness (SDA) capabilities by member states, reflect a more structured approach to space awareness. The strategy also calls for aligning major funding programs - such as the European Defence Fund (EDF), Horizon Europe, and the EU Space Program - to strengthen defence capabilities in orbit. Lastly, the plan includes holding space military exercises, though their specific format remains undefined, and aims

[17] As previously said, Galileo is the EU's global navigation satellite system.
[18] A dual-use service in space refers to a space-based service or technology that can be used for both civilian and military purposes.
[19] See below.

to significantly deepen space defence cooperation with the United States and NATO—an unprecedented step.

A critical point that represents a significant risk for the EU is its excessive dependence on non-European space capabilities. This reliance undermines the EU's strategic autonomy, its ability to make independent decisions and take actions without external influence

An example of this issue is the EU's reliance on non-European launch vehicles for putting satellites into orbit. Although the Ariane 6 launcher, developed by the European consortium Ariane Group, resumed operations in 2024, Europe has long depended on launchers from other countries for access to space. This dependence on foreign launch capabilities limits the EU's full control over the deployment and operation of its space assets, representing a vulnerability especially in times of geopolitical tensions. Moreover, this reliance can affect the timing, cost, and security of European missions, thereby impacting strategic autonomy.

2. IRIS2: the new EU Secure satellite constellation

In the current context where cyber and hybrid threats are multiplying and concerns in the matter are growing, the need for both quantitative and qualitative advancements in the EU's governmental satellite communications capabilities is being prompted. This shift is aimed at achieving higher security standards, reduced latency, and greater bandwidth.

In response to growing cyber and hybrid threats, the European Union is developing IRIS², a multi-orbital satellite constellation designed to secure autonomous governmental satellite communications and reduce dependence on non-European providers. With a €10.6 billion budget funded through a public-private partnership[20], IRIS² will consist of 290 satellites operating in both low Earth orbit (LEO) and medium Earth orbit (MEO). This infrastructure aims to deliver highly secure, low-latency, and resilient connectivity services for governmental, security, defense, and commercial applications.

The IRIS² Satellite Constellation is the European Union's third flagship and, as a multi-orbital constellation, it will be capable of creating synergies with the other existing two, Galileo and Copernicus, reinforcing Europe's strategic autonomy in space and digital connectivity. «IRIS2 establishes space as a vector of our European autonomy, a vector of connectivity and resilience. It heightens Europe's role as a true space power», said Thierry Breton, former Commissioner for

[20] The program, has a total cost of €10.6 billion. It is funded through a public-private partnership: €6 billion from the European Union, €550 million from the European Space Agency (ESA), and over €4 billion from private investments via the industrial consortium SpaceRISE, led by SES, Eutelsat, and Hispasat.

Internal Market of the European Union[21]. The program intends to incrementally roll out services starting in 2025, with full operational capability by 2030.

The new multi-orbital constellation will deploy 264 satellites in low Earth orbit (1,200 km altitude) and 18 in medium Earth orbit (8,000 km altitude), offering secure connectivity and high-speed broadband across the EU. It will serve governments, businesses, and citizens, ensuring coverage even in areas without terrestrial networks. By linking satellites across these orbits, the system enables fast, secure, and continuous communication without requiring thousands of satellites. An additional low Earth orbit layer will provide extra services.

As global satellite connectivity is rapidly becoming a strategic asset for stability, safety and resilience, the EU needs to urgently act in order to ensure guaranteed access in an unrestricted manner without third-party dependencies. The implementation of IRIS2 will follow an incremental approach with the initial governmental services provided through existing satellite capacity owned by Member States pooled and shared already in 2025. IRIS² full governmental satellite connectivity services, based on EU-owned infrastructure, will be delivered by 2030.

The system will support a wide range of government applications, including surveillance, crisis management, infrastructure protection, and security and defense. It will also enable various commercial uses like transport, banking, industrial activities, remote healthcare, and rural connectivity. Utilizing disruptive technologies such as 5G, the multi-orbital EU connectivity system aims to provide reliable, secure, and cost-effective satellite services globally. It will enhance high-speed broadband, eliminate connectivity gaps within the EU, strengthen cohesion among Member States, and extend coverage to strategic areas outside the Union, including the Arctic and Africa[22].

IRIS² could encounter some issues: the central one is certainly inviolability, which concerns both the command and control of the satellites and all the communications carried by the network. This will be based in particular on inter-satellite communication using high-speed transmission. Data will be sent to just five points of presence on the ground, all located in Europe. This configuration will avoid dependence on an uncontrolled terrestrial infrastructure.

Moreover, in regard to concerns about the excessive production of space debris, the consortium plans to develop non-emissive satellites so as not to disrupt astronomical observations. The production of

[21] Statement made on November 17, 2022, during the official announcement of the IRIS² project. Breton highlighted the initiative's role in advancing Europe's strategic autonomy by establishing a sovereign satellite constellation that enhances connectivity, resilience, and Europe's standing as a major space power.

[22] European Commission, *IRIS² – Secure Connectivity* (more here: https://defence-industry-space.ec.europa.eu/eu-space/iris2-secure-connectivity_en.)

debris in orbit comes essentially from accidental collisions, which must be avoided at all costs because the presence of debris leads to exponential degradation of objects in orbit. This requires satellite command and control, and Europe has a great deal of experience in this area. On the other hand, there is some concern about the level of control exercised by the new players: as of now, for example, we know that 400 SpaceX satellites are currently out of order, which is quite worrying. Within the same framework, Amazon is about to launch the first satellites of the Kuiper constellation, which is expected to have 3,200 satellites. The Chinese government has also begun deploying Guowang ('national network' in Chinese) at the end of 2024, which will comprise 13,000 satellites, and other projects of this scale, backed by private interests, are being developed in the country. So, IRIS² is not a mega-constellation, and its purpose is not purely commercial[23].

On the other hand, Starlink, the satellite mega-constellation developed by SpaceX, operates under a different model of satellite connectivity. As of June 26, 2025, the network consists of 7,875 satellites in orbit, of which 7,855 are operational[24]. Its stated purpose is to provide high-speed, low-latency internet access globally, including to remote and underserved regions[25].

The Starlink constellation is privately owned and managed under the jurisdiction of the United States. The infrastructure operates within the U.S. regulatory framework[26]. In previous instances, access to its services has been subject to national security decisions, such as temporary access restrictions in conflict zones[27].

Starlink is deploying a much larger number of satellites than the EU's IRIS² program. While IRIS² plans to operate 290 satellites, Starlink has received authorization from the U.S. Federal Communications Commission to deploy up to 42,000 satellites[28].

SpaceX reported that its satellites conducted over 50,000 collision-avoidance maneuvers between December 2023 and May 2024. Additionally, more than 1,200 satellites in the Starlink constellation have been decommissioned or failed. SpaceX has stated it follows active deorbiting procedures for satellites no longer in operation.

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[23] Interview to Jean-Pierre Diris by Anne Orliac: IRIS²: Everything You Need to Know About This New European Constellation," *Polytechnique Insights*, March 11, 2025.
[24] Space.com: "Starlink satellites: Facts, tracking and impact on astronomy." June 2025.
[25] TS2 Space. "Starlink and the satellite internet market 2025 – comprehensive report." 2024. (More here. https://ts2.tech/en/starlink-and-the-satellite-internet-market-2025-comprehensive-report)
[26] Reuters. "EU's SpaceX rival demands more than financial fuel." April 2025.

[27] Reuters. "SpaceX, Starlink and Ukraine: access in conflict scenarios." 2024.
[28] FCC. "SpaceX Gen2 Starlink constellation approval." 2022.

Both IRIS² and Starlink utilize laser-based inter-satellite links and high-throughput communications systems. While IRIS² is structured as a multi-orbital constellation aimed at serving governmental, security, defense, and commercial applications within the EU and neighboring regions[29], Starlink's operations are primarily commercial and offer broadband access to individual users, companies, and institutions in multiple countries.

3. Europe's Space Strategy Under Pressure: Strategic Autonomy at Risk

The implementation of the EU Space Strategy for Security and Defence is confronted by a complex interplay of external and internal challenges. These include intensifying geopolitical tensions, unresolved legal and regulatory issues, persistent technological dependencies, growing cybersecurity threats, and fragmented institutional coordination. Addressing these obstacles is essential for the European Union. Let's move forward on a more precise overview:

One of the primary challenges that the EU Space Strategy is currently facing is the increasing rivalry in space, mainly from major global powers such as the USA, China, and Russia, that have started to treat space as a fundamental part of their national security strategies, making significant investments in their space programs, particularly in military and dual-use technologies.

Let's briefly analyse the profiles of these three countries:

a) **China**: over the past two decades, China has significantly expanded its space capabilities, pursuing a strategy that combines scientific exploration with strategic and military objectives.

   From a scientific standpoint, China has achieved notable milestones through its Chang'e lunar program, which is part of a broader national strategy led by the China National Space Administration (CNSA). The Chang'e 3, 4, and 5 missions marked critical advancements: accomplishing China's first soft landing on the Moon, producing the first spacecraft to land, in 2019, on the far side of the moon (a globally unprecedented achievement) and successfully returning lunar samples to Earth, with upcoming missions aiming to deepen geological understanding and demonstrate key technologies for a sustained human or robotic presence on the Moon21.

[29] European Commission. "IRIS² – EU secure connectivity initiative." (More here: https://defence-industry-space.ec.europa.eu/eu-space-policy/iris2_en)

In the meantime, the country has also invested systematically in developing space capabilities for military use, with a growing focus on space warfare. In 2007, China conducted an anti-satellite (ASAT) missile test, destroying one of its own defunct satellites in low Earth orbit22. This action showcased both technological maturity and a willingness to assert military power in outer space. Beyond this, China's military space infrastructure includes a constellation of satellites for surveillance, encrypted communications, precision positioning and strategic early-warning functions. Additionally, emerging capabilities in electronic warfare and cyber operations are aimed at disrupting adversary satellites through jamming, spoofing, and cyberattacks on ground stations and command networks.

b) **Russia**: The Russian Federation has inherited a long-standing legacy in space exploration and military space operations.
From a scientific and civil perspective, Roscosmos, Russia's federal space agency, maintains a robust program focused on satellite deployment, planetary science, and human spaceflight. Russia has continued its participation in the International Space Station (ISS) since its inception and has contributed significantly to crew transport via the Soyuz spacecraft, especially during the years when NASA lacked independent launch capability. In recent years, however, the country has aimed to reduce reliance on international collaboration.

In parallel, Russia has reaffirmed its role as a military space power, modernizing its space forces and integrating space into broader strategic deterrence. Since 2015, Russia has conducted anti-satellite (ASAT) tests, most notably the November 2021 direct-ascent missile test, which, destroying the Kosmos-1408 satellite, created thousands of pieces of debris. Russia also maintains a fleet of military reconnaissance and communication satellites, many of which serve dual civilian-military roles. There is growing concern in the international community about "co-orbital" systems, which may include satellites designed to manoeuvre near and potentially disrupt or disable other spacecraft—capabilities that blur the line between surveillance and offensive action.

c) **USA**: The United States has long been a dominant actor in space exploration and military operations, position maintained through sustained investment, technological innovation, and a well-integrated civilian-military space strategy. The National Aeronautics and Space Administration (NASA) has led groundbreaking scientific missions, while the Department of

Defense (DoD), through its various agencies has developed military space capabilities. Together, these entities form a robust space architecture that ensures the U.S. remains at the forefront of both peaceful exploration and space-based defense.

On the other side, NASA continues to lead in scientific exploration, with high-profile missions such as the Mars Rover program, and its long-standing commitment to the International Space Station (ISS). The United States also invests heavily in Earth observation and satellite systems. Moreover, the U.S. spearheads the Artemis program, a flagship initiative aiming to return humans to the Moon by the mid-2020s and establish a sustainable human presence on and around the lunar surface. The Artemis program focuses on scientific discovery, lunar resource utilization, and preparing for future missions to Mars. The Artemis Accords, first introduced in 2020, are a set of bilateral agreements between the U.S. and partner countries that establish principles for responsible and peaceful exploration of the Moon and beyond. These principles include transparency, peaceful cooperation, the safe and sustainable use of space resources, interoperability of systems, and the avoidance of harmful interference. Signatory countries commit to sharing scientific data openly, avoiding harmful contamination of celestial bodies, and respecting existing international space law, notably the Outer Space Treaty. To date, over a dozen countries have signed the Artemis Accords, reflecting U.S. efforts to build an international coalition supporting its vision of space exploration as a global endeavour.

Just like China and Russia, the U.S. military also deploys advanced anti-satellite (ASAT) capabilities, missile defence systems, and has focused on space situational awareness (SSA) to track and mitigate potential threats to U.S. space assets. The United States leads the development of space policy through the Space Policy Directive-4, which emphasizes the role of space in national security and sets a framework for the protection of space assets. This policy outlines a vision of space as a domain of military operations, stressing the need for space-based capabilities in combat readiness and deterrence. Moreover, U.S. investments in commercial space ventures like SpaceX, Blue Origin, and other private companies have made significant strides in reducing the cost of access to space while strengthening national capabilities.

4. EU Competence and Legal Framework in the Fields of Defence and Space

While technological development is advancing at a rapid pace, the international legislative framework on space could be defined fragmented and struggling to keep pace with the evolving challenges of the space domain.

The most relevant examples of international space policy frameworks are five binding treaties, dated from the 1960s to the 1980s, unified under the name of *Corpus Juris Spatialis*: the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, commonly known as the Outer Space Treaty (1967), the Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (1968), generally known as the Rescue Agreement, Convention on International Liability for Damage Caused by Space Objects (1972), known as the Liability Convention, the Convention on Registration of Objects Launched into Outer Space (1976), briefly known as the Registration Convention, and the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (1979, but entered into force 1984, also called the Moon Agreement.

Although having been ratified by most countries, these frameworks are often not endorsed by leading spacefaring nations, rendering them ineffective. This has, however, not prevented other nations from advancing their national policy, funding, and procurement frameworks in the space domain.
The main issue is the difficulty of establishing a unified legal framework that effectively addresses space activities. The EU is tasked with ensuring the protection of its space infrastructure while also maintaining international cooperation in areas such as scientific research and space exploration.
Another challenge lies in the dual-use nature of space technologies: the EU must carefully navigate the civilian-military divide, ensuring that security measures for space systems do not infringe upon the rights of Member States in using space for peaceful purposes. Additionally, the application of EU competition law complicates the development of space defence capabilities, as any defence-related projects involving public-private partnerships or procurement may face scrutiny under regulations designed to ensure fair competition and avoid monopolistic behaviour.
Moreover, given that space activities are governed by multilateral treaties, the EU must ensure that its legal framework remains consistent with the principles of international law, particularly the non-weaponization of space and the prevention of space arms races. This alignment is crucial to maintaining the EU's credibility and role as a responsible actor in international space law, while still enabling the development of necessary counterspace capabilities for defence.

Finally, there is a lack of comprehensive regulatory mechanisms to address emerging space issues such as space debris management and space traffic management[30]. While various entities, including the EU itself, are developing strategies to manage the problem, the absence of binding regulations across jurisdictions creates a fragmented regulatory landscape, complicating the EU's ability to implement cohesive security measures that cover all space activities.

4.1 EU Competences in the fields of Space and Defence

Over the last two decades, the European Union has steadily expanded its role in areas traditionally considered the domain of national sovereignty – namely, space and defence. While these remain sensitive fields where Member States retain significant control, the EU has managed to carve out a growing and meaningful presence. This has been possible thanks to a careful balance of treaty-based competences, intergovernmental cooperation, and strategic investment.
In short, the European Union's role in defence and space is shaped by a complex balance between what the EU can do independently and what remains strictly in the hands of its Member States.

Although the European Union is not formally a "defence organisation" in the traditional sense, it has progressively acquired competences in the field of common security and defence policy, as well as in space. These competences have significantly evolved, particularly since the Treaty of Lisbon, with important legal, institutional and operational implications.

4.1.1. Space

Although being relatively recent, the Union's involvement in space has grown rapidly and is now central to Europe's ambitions. Legally speaking, the main foundation for the EU's space powers is Article 189 of the Treaty on the Functioning of the European Union (TFEU)[31], that recites: *"The Union shall draw up a European space policy to promote scientific and technical progress, industrial competitiveness and the implementation of its policies."* Introduced by the Treaty of Lisbon in 2009, it allows the Union to develop a European space policy**.**

[30] While there is no binding international treaty specifically addressing space debris, several soft law instruments provide widely accepted guidelines. These include the *IADC Space Debris Mitigation Guidelines* (2007), the *UN COPUOS Space Debris Mitigation Guidelines* (2010), and the *Guidelines for the Long-Term Sustainability of Outer Space Activities* (2019). These non-binding measures promote responsible behavior, such as post-mission disposal, collision avoidance, and debris prevention. Standards like *ISO 24113* and provisions in the *Artemis Accords* also reinforce best practices.
[31] Article 189 TFEU, Consolidated Version of the Treaty on the Functioning of the European Union (OJ C 202, 7.6.2016, p. 130).

However, the nature of this competence is supporting - meaning that the EU can promote, coordinate, or supplement national efforts, but cannot harmonize national laws in this field[32]. The EU doesn't have full legislative power here, but it can play an important coordinating and financing role. It thus has a shared competence[33] with Member States in space policy.
Despite these limitations, the Union has launched some of the most ambitious space programs in the world. Notable examples are Galileo[34], EU's own satellite navigation system, which serves as an independent alternative to the US GPS and Copernicus[35], an Earth observation program providing vital data for climate research, agriculture, and disaster management, both previously mentioned, but also Space Situational Awareness (SSA)[36] and GovSatCom (governmental satellite communications)[37].
These initiatives are now managed by the EU Agency for the Space Programme (EUSPA), and in 2021, the EU consolidated its efforts through the EU Space Programme Regulation (Regulation EU 2021/696)[38]. This gave the Union a clearer structure and budget of around €14.9 billion for the period 2021–2027 to boost space technology, services, and strategic autonomy. This way, even though the EU cannot legislate directly in space matters, it has become a key player, especially as space's importance increases both for civil and security-related uses.

4.1.2 Defence

Defence remains one of the most sensitive and carefully navigated areas of EU policy, marked by legal and political complexity. Defence policy has always been seen as a matter of national sovereignty, and because of this, the EU's powers in this field are much more limited compared to areas like trade or agriculture

[32] Article 6 TFEU, which defines space as a supporting competence of the EU.
[33] Regulated by TFEU at Article 4, it means that the Union and its Member States may legislate and adopt legally binding acts. Member States exercise their competence where the Union does not exercise it or has decided not to do so
[34] European Commission, *Galileo – What it is and what it offers*, more here https://defence-industry-space.ec.europa.eu.
[35] European Commission, *Copernicus: Europe's eyes on Earth*, more here https://www.copernicus.eu.
[36] Space Situational Awareness (SSA) refers to the comprehensive knowledge and understanding of the space environment and the objects within it, including both natural and human-made objects. It involves tracking objects in orbit, predicting their trajectories, and assessing potential threats like collisions or space weather events. SSA is crucial for ensuring the safety, security, and sustainability of space operations and space-based services.
[37] GovSatCom, or Governmental Satellite Communications, refers to a European Union initiative aimed at providing reliable, secure, and cost-effective satellite communication services to public authorities for security-critical missions and operations.

[38] Regulation (EU) 2021/696 of 28 April 2021 establishing the Union Space Programme, OJ L 170, 12.5.2021.

Still, the EU has been building a framework for cooperation, especially through the Common Security and Defence Policy (CSDP), which is part of the broader Common Foreign and Security Policy (CFSP). This is laid out in Articles 42 to 46 of the Treaty on European Union (TEU)[39]

These articles give the EU the ability to conduct civilian and military missions outside its borders - such as peacekeeping operations, crisis response, and training missions. Importantly, Article 42(2) TEU even talks about the "progressive framing of a common Union defence policy", which may eventually lead to a common defence, but only if the European Council decides unanimously.

One of the most significant steps forward came with Article 42(7) TEU, known as the mutual defence clause. This article, introduced by the Lisbon Treaty, recites that if a Member State is attacked, the others are obliged to offer "aid and assistance by all the means in their power." It's often compared to NATO's Article 5, but with the important difference that the EU clause leaves space for NATO's primacy in collective defence[40].

Another important mechanism is PESCO, or Permanent Structured Cooperation, introduced by Article 46 TEU[41]. PESCO allows willing Member States to cooperate more closely on defence capabilities and joint projects. Since its launch in 2017, 25 Member States have joined, showing strong political support for more integrated European defence efforts - though still on a voluntary basis.

At the same time, the EU has also created the European Defence Fund (EDF), which supports joint research and development in defence technology. Even though the EDF is not directly based on defence articles in the treaty, it fits within the EU's competence in industrial policy (Article 173 TFEU)[42]. With an €8 billion budget for 2021–2027, the EDF is helping to build a more competitive and autonomous European defence industry[43]

The European Union's approach to defence is framed by clear constitutional boundaries designed to respect national sovereignty. Under Article 4(2) of the Treaty on European Union (TEU), national security is explicitly recognised as the sole responsibility of each Member State. This provision ensures that core aspects of national defence remain firmly under national control. Furthermore, the role of the Court of Justice of the European Union (CJEU) in matters of the Common Foreign and

[39] Articles 42–46 TEU, Consolidated Version of the Treaty on European Union (OJ C 202, 7.6.2016).
[40] Ibid., Article 42(7) TEU – The Mutual Defence Clause.
[41] Ibid., Article 46 TEU – Permanent Structured Cooperation (PESCO).
[42] Article 173 TFEU, which gives the EU competence over industrial policy.
[43] European Commission, *European Defence Fund (EDF)*, https://defence-industry-space.ec.europa.eu/eu-defence-industry/european-defence-fund-edf_en.

Security Policy (CFSP) is intentionally limited. According to Article 275 of the Treaty on the Functioning of the European Union (TFEU), the CJEU does not have jurisdiction over CFSP matters, except in specific cases involving the review of restrictive measures[44].

The European Union also collaborates closely with other international organizations: in terms of defence and security, the EU and NATO have developed a complementary relationship. Most EU Member States are also NATO members, and the two organisations have established strategic and operational cooperation agreements to ensure effective coordination[45]. This partnership strengthens the collective defence posture in Europe. In the area of space policy, the EU maintains a close working relationship with the European Space Agency (ESA). Although ESA is not an EU institution, it is an independent international organisation with which the EU coordinates closely on various space-related initiatives[46]. This partnership helps to align Europe's efforts in space exploration and technology development.

4.2 Adoption and approval of EU acts in the aims of defence and space

In the area of the Common Security and Defence Policy (CSDP), which, as just said forms part of the broader Common Foreign and Security Policy (CFSP), the adoption of acts follows a predominantly intergovernmental procedure. Legislative and operational decisions - such as the launching of military or civilian missions abroad - are taken exclusively by the Council of the European Union, acting unanimously. Neither the European Commission nor the European Parliament plays a decisive role in these matters, reflecting the nature of the legal framework established in Articles 42–46 of the Treaty on European Union (TEU)[47].

Executive authority in this field is exercised by the High Representative for Foreign Affairs and Security Policy, supported by the European External Action Service (EEAS). However, all actions remain strictly subject to the consensus of the Member States within the Foreign Affairs Council. The EU does not have exclusive competence in defence matters, and the Court of Justice of the EU

[44] Article 275 TFEU: *"The Court of Justice of the European Union shall not have jurisdiction with respect to the provisions relating to the common foreign and security policy, nor with respect to acts adopted on the basis of those provisions, with the exception of procedures for reviewing the legality of certain restrictive measures."*
[45] See: EU-NATO Joint Declarations (notably those of 2016, 2018, and 2023), which outline frameworks for strategic cooperation in areas such as hybrid threats, cyber defence, and military mobility.
[46] The European Space Agency (ESA) is an intergovernmental organisation established in 1975, independent of the EU. The EU and ESA collaborate through the EU-ESA Framework Agreement and joint programmes such as *Copernicus* and *Galileo*.

[47] Articles 42–46 TEU define the scope and procedures of the CSDP. See: Consolidated Version of the Treaty on European Union (TEU)

(CJEU) lacks jurisdiction over the substance of CFSP decisions, except where procedural legality or fundamental rights are at issue[48].

An important exception to this purely intergovernmental logic is the European Defence Fund (EDF). Though related to defence, the EDF is grounded in the EU's industrial policy, specifically under Article 173 of the Treaty on the Functioning of the European Union (TFEU)[49]. It was adopted via the ordinary legislative procedure—involving a proposal from the Commission and co-decision by the Parliament and Council—and is funded from the EU budget. Nevertheless, it is limited to industrial cooperation and research and does not affect foreign or military decision-making.

As of Space, Article 189 of the TFEU assigns the EU a shared competence to support, coordinate, and complement Member States' activities. The Union may adopt programmes such as Galileo, Copernicus, and EGNOS, but is explicitly barred from harmonising national laws in the field[50].
Legislative acts in this domain are generally adopted through the ordinary legislative procedure. The Commission initiates the proposals, which are then debated and jointly adopted by the European Parliament and the Council. Notable examples include the EU Space Programme 2021–2027, the establishment of the European Union Agency for the Space Programme (EUSPA), and regulatory frameworks for secure satellite communications such as IRIS².

As well as the Eu Space Strategy for Security and Defence, that recognises the growing strategic importance of space infrastructure, a dedicated EU Space Law is also in preparation (expected by 2025), aiming to address resilience, sustainability, and safety of space operations[51].

Yet, the dual-use nature of many space assets creates legal and political friction. There is a delicate balance between the EU's supranational capacity in space and the intergovernmental control over defence. This tension can limit the EU's ability to legislate comprehensively in the space domain[52].

[48] Article 24(1) and Article 275 TFEU limit the jurisdiction of the CJEU over CFSP, allowing judicial review only on questions of procedural legality and fundamental rights.
[49] The legal basis for the EDF is Article 173 TFEU, which empowers the EU to support the competitiveness of industry, including the defence sector.
[50] Article 189(2) TFEU explicitly states that the EU's space policy "shall not entail harmonisation of the laws and regulations of the Member States."
[51] "EU Space Strategy for Security and Defence", European Commission, March 10, 2023. Available here: https://defence-industry-space.ec.europa.eu.
[52] **F. Von der Dunk** , "The Lisbon Treaty's Dual-Use Conundrum: A Barrier to EU Space Endeavour?", European Law Blog, 2023.

Both defence and space policies are shaped by significant legal constraints. In the defence sector, the Treaties prohibit the harmonisation of Member State laws and require unanimity for decisions. The EU cannot independently create a common army or impose binding military commitments on its Member States. In the space domain, while the EU has greater legislative powers, it is still prevented from harmonising national legal frameworks and must adhere to the principle of subsidiarity.

The CJEU plays a limited role. It may review procedural legality and ensure respect for fundamental rights under the Treaties, but it cannot assess the substance of CFSP or CSDP measures[53].

Conclusions

As the European Union forges ahead in a world increasingly defined by shifting power balances, technological disruption, and hybrid threats, space can no longer be treated as a peripheral asset. It is now a decisive domain—one that underpins not only Europe's economic growth and innovation but also its strategic autonomy and security.

To rise to these challenges, the EU must accelerate the operationalization of its Space Strategy for Security and Defence, moving from vision to implementation with determination and unity. Initiatives like IRIS² mark a crucial step forward, but they must be complemented by a broader investment in resilient infrastructure, cybersecurity protocols, and intra-European industrial capabilities. Enhancing public-private partnerships, securing critical supply chains, and fostering a new generation of space professionals are all vital elements in this endeavour.

Moreover, the EU must assume a more assertive role in shaping international norms for responsible space behaviour, in the means of the adoption of safe, sustainable, and peaceful practices in space activities, minimizing space debris, ensuring transparency and cooperation among space actors, respecting international laws and preventing harmful or aggressive actions that could threaten the stability and security of the space environment. It has both the credibility and the obligation to champion global stability in orbit, ensuring that outer space remains a domain of peaceful cooperation - not confrontation.

The EU's growing involvement in space also brings regulatory and institutional challenges. Despite the increasing ambition in space and defence, the Union must operate within the constraints of

[53] Article 275 TFEU limits CJEU jurisdiction in CFSP, with exceptions for legality of sanctions and procedural compliance.

its supporting and shared competences, the limitations of the Common Foreign and Security Policy (CFSP), and the lack of harmonization powers in defence. Coordination with Member States, legal clarity regarding dual-use technologies, and the preservation of international norms—particularly the peaceful use of outer space—remain essential to EU credibility and operational effectiveness.

The success of the EU Space Strategy will depend on its ability to ensure coherent governance across defence, civil, and commercial domains; align funding instruments with strategic needs; and implement infrastructure like IRIS² in a timely and secure manner. Enhancing cooperation with international partners, including NATO and ESA, while ensuring full EU ownership of critical assets, will also be necessary to safeguard Europe's strategic autonomy in an increasingly contested space environment.

A bold, coherent, and forward-looking approach will enable Europe not only to defend its interests but also to inspire the next chapter of space governance - one that reflects democratic values, technological leadership, and strategic resilience.