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School of Law – University of Minho

Beyond Mars and Venus? Approaches to space commercialisation in contemporary transatlantic relations[*]

Bruno Reynaud de Sousa[**]

ABSTRACT: This article explores how transatlantic tensions are transforming outer space, contrasting US commercial dominance with the EU's regulatory, risk-averse approach. In the third space age, the US leadership in reusability, mega-constellations, and contracts has led to asymmetric dependence: European payloads launch on US rockets, European users rely on US LEO connectivity, and crisis management depends on US-owned space systems. Europe's response focuses on regulatory power rather than pure disruption amid a fragmented capital market, encumbered innovation and limited launch capacity. The article assesses the EU Space Act as a means of consolidating the Union's internal market and setting external standards. Its key regulatory measures – mandatory trackability, debris-mitigation plans, cybersecurity risk management, and life-cycle assessment – aim to embed sustainability into licensing, reflecting a Brussels-effect strategy. A transatlantic divide could be imminent: if US companies continue prioritising a first-mover strategy based on speed and scale, while Europe increases its focus on prescriptive safeguards, divergence will intensify. The EU might face higher costs, more complex access to US-provided space services, and increased trade tensions. Security considerations further entwine the commercial and strategic dimensions. Ultimately, regulation alone cannot bridge Europe's capability gap, a challenge that requires patient capital, the capacity to absorb it, and the ability to scale the market at speed.

KEYWORDS: EU Space Act – transatlantic relations – space policy.

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[*] The present article is based on and develops a previous *blog* post by the author – see Bruno Reynaud Sousa, "The Brussels Effect in orbit: can the EU Space Act reshape global space governance in an American-led era?", *Official Blog of UNIO - Thinking and Debating Europe*, 30 September 2025 https://officialblogofunio.com/2025/09/30/the-brussels-effect-in-orbit-can-the-eu-space-act-reshape-global-space-governance-in-an-american-led-era/. In addition, the author previously approached Robert Kagan's work, applying the "*Mars and Venus*" dichotomy to space in the article Bruno Reynaud Sousa, "Mars and Venus revisited: juxtaposing EU and US attitudes toward space traffic management in the context of commercialization", *European Review of International Studies*, 10(3) (2024): 352-373, retrieved 31 August 2025, from https://brill.com/view/journals/eris/10/3/article-p352_005.xml.

[**] Assistant Professor at the School of Law of University of Minho. Researcher (JusGov, E.TEC Group).

1. Introduction

Contemporary transatlantic relations are fraught with tension, as longstanding allies find themselves at odds over an array of commercial and geopolitical issues. In recent years, clashes have emerged from NATO to Ukraine, climate to trade, and from tech regulations to China, with nearly every central policy area becoming a potential flashpoint between the United States and Europe.

The first Trump administration (2017–2021) ushered in an era of open disagreements as unilateral tariffs, implementing the *"America First"* political platform's trade measures, which drew European retaliation. The US withdrawal from the Paris Agreement on climate was met with European dismay. Even under more conciliatory US leadership under the Biden Presidency, frictions persisted. For instance, the US Inflation Reduction Act's generous *"Buy American"* subsidies[1] sparked European accusations of unfair trade practice, amid fears that EU exports will be hampered and firms lured to relocate across the Atlantic.[2]

Such disputes underscore a broader trend: after decades of partnership, on both sides, there is increasing apprehension regarding each other's economic and strategic commitments. European leaders have increasingly voiced the need for greater *"strategic autonomy"*[3] – the capability to act independently of the US – in domains from defence to technology. This overall climate of transatlantic strain forms the backdrop for the growing interplay in outer space policy.

Differences in regulatory philosophy, risk tolerance, and strategic objectives between the US and Europe are apparent in areas like digital technology, finance, and agriculture. For example, in agriculture, the EU's precautionary principle is at the source of the regulation of genetically modified organisms, whereas the US legal regime emphasises the existence of concrete evidence of harm. A similar transatlantic gap is evident in automotive and environmental standards, with EU legislation imposing emissions limits while the US rolled back Corporate Average Fuel Economy (CAFE) standards.[4]

Fundamentally, whereas the US often approaches regulation by valuing market freedom, rapid innovation, and minimal bureaucratic oversight, the EU prefers a high-regulation, high-safeguard approach across industries, prioritising consumer protection, market stability, and sustainability. In 2025, the EU is bringing its regulatory approach to outer space with the EU Commission's proposal for a regulation laying down common rules that aim to address space activities: the EU Space Act.

As the present article will discuss, transatlantic ties in space run deeper on a practical level: US rockets carry European payloads, but European satellites contribute to global networks, and American astronauts fly in partnership with Europeans on the International Space Station. Europeans have increasingly turned to American

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[1] US Department of the Treasury, *Inflation Reduction Act of 2022*. Internal Revenue Service (2022). Retrieved 31 August 2025 from https://www.irs.gov/inflation-reduction-act-of-2022.

[2] Bruce Stokes, *EU-US relations after the Inflation Reduction Act, and the challenges ahead (PE 759.588)*, MRS European Parliamentary Research Service (EPRS), February 2024, https://doi.org/10.2861/385275.

[3] Charlotte Beaucillon, "Strategic autonomy: a new identity for the EU as a global actor", *European Papers*, v. 8, no. 2 (2023): 417, https://doi.org/10.15166/2499-8249/664.

[4] Martin Nesbit, *Comparative study of US and EU vehicle emissions legislation*, Institute for European Environmental Policy (IEEP) for the European Parliament Committee on Emission Measurements in the Automotive Sector (5 December 2016). Retrieved 31 August 2025 from https://www.europarl.europa.eu/cmsdata/112300/2016.12.05-Comparative%20study%20of%20US%20and%20EU%20Vehicle%20emissions%20legislation_Martin_Nesbit_IEEP.pdf.

space firms for critical services, thereby intertwining the two continents' space sectors more closely than ever.

2. The third space age: the EU stuck in second gear?

The United States and Europe today both host vibrant space industries, but the scale, structure, and dynamism of their commercial space sectors differ markedly. These differences are both a cause and a consequence of the divergent approaches discussed above. US companies, supercharged by abundant private investment and government contracts, are driving a rapid expansion of space activity. Europe, by contrast, is characterised by risk aversion and fragmented commercial sector, historically anchored by a few large aerospace and defence firms and state-backed launch providers. In comparison with the US, Europe has only recently experienced a surge in the number of startups in the space sector, in part inspired by American innovators who are leading the commercialisation of space activities.

For the past decade, the US has initiated a commercial space revolution, leading in both scale and technological innovation. Underwritten by commercialisation, the increase in US-licensed satellites, especially small satellites, has rapidly expanded the global satellite count, ushering in the so-called "*third space age.*"[5] Data from 2025 indicates that the total number of active satellites is approximately 11,000 objects, according to the European Space Agency (ESA).[6] Data from multiple sources suggest that over 8,500 active satellites are owned or operated by US-based entities,[7] representing more than three-quarters of the total. This number is an order of magnitude greater than that of the next closest competitor: Russia has approximately 1,500 satellites, and China has about 900 satellites.[8] Other spacefaring countries, such as India and Japan, each operate only a few hundred or fewer satellites,[9] highlighting the relatively small scale of their space activities compared to leading space-faring nations.

In actual fact, EU Member States supervise only a few hundred active satellites – a small fraction of the total number of satellites under US jurisdiction. In terms of raw numbers and global coverage, particularly in sectors such as telecommunications and Earth observation, the US satellite constellations are unmatched. The most notable example is SpaceX's Starlink, a mega-constellation for broadband internet that presently comprises more than 7,400 operational satellites,[10] making up nearly half of all active satellites globally.

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[5] Todd Harrison, "Building an enduring advantage in the third space age", *American Enterprise Institute*, May 2024. Retrieved 27 September 2025 from https://www.aei.org/wp-content/uploads/2024/05/Building-an-Enduring-Advantage-in-the-Third-Space-Age.pdf.

[6] European Space Agency, Space Debris Office, *ESA Space environment report 2025*, ESA (1 April 2025). Retrieved 31 August 2025 from https://www.esa.int/Space_Safety/Space_Debris/ESA_Space_Environment_Report_2025.

[7] BryceTech, *Smallsats by the numbers 2025 – a report on global small satellite activity from 2015 to 2024,* (2025). Retrieved 31 August 2025 from https://brycetech.com/reports/report-documents/smallsats-2025/: Todd Harrison, "Building an enduring advantage in the third space age"; Union of Concerned Scientists, *UCS Satellite Database*, 2023 (data current through 30 April 2023), https://www.ucs.org/resources/satellite-database; Jonathan McDowell, *Space statistics (Jonathan's space pages)*, 2025. . Retrieved 31 August 2025 from https://planet4589.org/space/stats/index.html.

[8] BryceTech, *Smallsats by the numbers 2025 – a report on global small satellite activity from 2015 to 2024*. Todd Harrison, "Building an enduring advantage in the third space age"; Jonathan McDowell, *Space statistics (Jonathan's space pages)*.

[9] Jonathan McDowell, *Space statistics (Jonathan's space pages)*.

[10] Johnathan McDowell, *Starlink statistics | Jonathan's space report*, accessed 27 September 2025, https://

In 2015, SpaceX decisively innovated reusability since the Space Shuttle years with the successful return of a Falcon-9 rocket's first stage to Earth, with the ORBCOMM-2 mission leading to reduced launch costs and increased launch frequency, thereby supporting US leadership in launch capacity.[11] By 2024, nearly 2,800 small satellites had been launched worldwide, with about 75% of all small satellites launched since 2015 being US missions,[12] primarily due to the successful operation of SpaceX's Falcon 9 and Falcon Heavy rockets.[13] In 2024, the US carried out substantially more orbital launches than any other country, with US operators executing 145 of the 258 worldwide launches, more than twice as many as China's 66 and significantly more than Russia's 17 launches.[14] SpaceX's dominance is so marked that out of 145 US launches, 138 were by SpaceX alone,[15] giving it near-monopoly status in the global launch market. In stark contrast, there were only three launches of European-made rockets in 2024, two attributed to France and one to ESA.[16]

For example, in 2024, the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT) chose Elon Musk's SpaceX to launch Europe's next weather satellite, after delays in Europe's new Ariane 6 rocket.[17] Likewise, to maintain its satellite navigation system, the EU has had to contract SpaceX's Falcon 9 rockets to orbit Galileo satellites[18] as a stopgap measure made necessary by the lack of available European launch capacity. Likewise, the EarthCARE Earth observation satellite, developed by the ESA and the Japan Aerospace Exploration Agency (JAXA), was launched by SpaceX in 2024.[19]

Data for September 2025 indicates that the US conducted over 100 launches, followed by 44 launches by China, nine by Russia, and four attributed to France.[20] These figures highlight the US's leadership in launch capability, supported by technology that competitors are only beginning to develop, with reusability so far eluding other companies.[21] At the time of writing, whereas China is testing partial reusability concepts,[22] Europe and Japan field non-reusable yet next-generation rockets (Ariane 6 and H3, respectively).

Over the past decade, the synergy of venture capital and government support has catapulted US companies such as SpaceX, Planet, Maxar, Capella Space, among others,

planet4589.org/space/con/star/stats.html, last modified 26 September 2025.

[11] BryceTech, *Global space launch activity in 2024*, 15 February 2025, https://brycetech.com/reports/report-documents/global-space-launch-activity-2024/.

[12] BryceTech, *Global space launch activity in 2024.*

[13] SpaceX, *Launches (SpaceX official launch manifest and schedule)*, 2025. Retrieved 31 August 2025 from https://www.spacex.com/launches.

[14] Johnathan McDowell, *Space statistics (Jonathan's space pages).*

[15] Johnathan McDowell, *Space statistics.*

[16] Johnathan McDowell, *Space statistics.*

[17] SpaceX, *Launches (SpaceX official launch manifest and schedule).*

[18] SpaceX, *Launches (SpaceX official launch manifest and schedule).*

[19] SpaceX, *Launches (SpaceX official launch manifest and schedule).*

[20] Johnathan McDowell, *Space statistics.*

[21] Jeff Foust, "Expending the expendables: more launch companies are betting their future on reusability", *Spacenews*, 11 November 2024. Retrieved 31 August 2025 from https://spacenews.com/expending-expendables-more-launch-companies-betting-their-future-reusability/.

[22] Andrew Jones, "China is about to start trying to land and reuse its rockets", *SpaceNews,* 25 August 2025. Retrieved 31 August 2025 from https://spacenews.com/china-is-about-to-start-trying-to-land-and-reuse-its-rockets/; Andrew Jones, "New rocket plans continue to emerge to support China's growing space ambitions", *SpaceNews,* 22 August 2025, https://spacenews.com/new-rocket-plans-continue-to-emerge-to-support-chinas-growing-space-ambitions/.

into a position of leadership in several domains, namely launch and telecommunications. In contrast, Europe's industry, while advanced in specific niches, operates on a smaller financial basis and at a technological disadvantage. Europe suffers from a funding gap for the space sector, and there is a realisation of the need to unlock private capital for the space economy. The reality is that the EU is composed of 27 different capital markets: a 2022 McKinsey report observed that investment in European space startups in 2020 at €500 million was about nine times lower than US levels at $4,4 billion.[23] Unsurprisingly, both the so-called "*Draghi Report*" and the "*Letta Report*" highlight the need to have a truly functioning capital market in the EU, with Enrico Letta pointing to the Savings and Investments Union (SIU) initiative as a prime solution.[24] In other words, the venture funding and startup ecosystem blossoming in the US has only recently begun to take off in Europe. European venture capital for space hit record highs in 2024 at more than €1,5 billion despite a broader venture capital slowdown, but it remains a fraction of US levels.[25]

Furthermore, there is the issue of public sector spending in space, with the ratio of the public space budget to the Gross Domestic Product (GDP) offering insights. The proportion for Europe (comprising the EU27, Norway, Switzerland, and the United Kingdom) was 0.06% in 2023, remaining stable in comparison to 2022.[26] Luxembourg, with a share of 0.135% in 2023, maintains the highest proportion of public space funding relative to GDP within Europe.[27] On a global scale, Luxembourg ranks third, following the United States (0.262%) and Russia (0.169%).[28]

The most visible sign of divergent commercial trajectories is the advent of American mega-constellations. Starlink's growth and pace of innovation have been remarkable, altering the orbital landscape to create a broadband internet network in LEO. The initial tranche of satellites gave way to laser-linked Starlink V2 "*mini*" satellites around 2023, which are heavier (ca. 800 kg) and can carry perhaps 4-10 times the bandwidth of earlier models.[29] As of 2024, SpaceX has deployed over 7,000 Starlink satellites with plans approved for tens of thousands more in a Gen2 constellation with direct-to-device connectivity.[30] The service is on track to reach more than 8 million users globally by year-end 2025, with consumer revenues projected to reach $10.3 billion by 2026.[31]

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[23] Giacomo Gatto *et al.*, "Strengthening collaboration in the European space ecosystem", *McKinsey & Company*, 22 June 2022. Retrieved 31 August 2025 from https://www.mckinsey.com/industries/aerospace-and-defense/our-insights/strengthening-collaboration-in-the-european-space-ecosystem.

[24] Mario Draghi, *The future of European competitiveness: a competitiveness strategy for Europe, including "in-depth analysis and recommendations" (Part B)*, European Commission, 2024. Retrieved 31 August 2025 from https://commission.europa.eu/topics/eu-competitiveness/draghi-report_en; Enrico Letta, *Much more than a market: speed, security, solidarity - report on the future of the single market*, European Commission / Council of the European Union, April 2024, https://www.consilium.europa.eu/media/ny3j24sm/much-more-than-a-market-report-by-enrico-letta.pdf.

[25] European Space Agency, *Report on the space economy 2025*, ESA, 2025, https://space-economy.esa.int/documents/tJMabTj61KkdGVOtF6SKw6wGSxicen6ajUWamCG3.pdf.

[26] European Space Agency, *Report on the space economy 2025.*

[27] European Space Agency, *Report on the space economy 2025.*

[28] European Space Agency, *Report on the space economy 2025.*

[29] SpaceX, *Launches (SpaceX official launch manifest and schedule).*

[30] Federal Communications Commission, *DA-24-1193A1 (Application for authority for modification of the SpaceX NGSO satellite system to add a direct to cellular system)*, 2024, https://docs.fcc.gov/public/attachments/DA-24-1193A1.pdf.

[31] Quilty Space, *Starlink financial & strategic analysis 2025 1H*, 9 September 2025. Retrieved 10 September 2025 from https://www.quiltyspace.com/product-page/starlink-financial-strategic-analysis-2025-1h.

In direct response to Starlink's success, Amazon's Project Kuiper is now entering the fray. Amazon aims to deploy a constellation of 3,200+ satellites in LEO to provide its own global broadband service, with the first test batch of Kuiper satellites launching in late 2024.[32] The company has committed a massive budget – an estimated $10 billion – to Project Kuiper, viewing it as a new pillar of Amazon's business alongside e-commerce, Amazon Web Services cloud, and media.[33] To meet the ambitious launch schedule, Amazon purchased a large number of launch vehicle flights, including on Europe's upcoming Ariane 6 and on Blue Origin's New Glenn, and even some on SpaceX's Falcon 9.[34] Technologically, Kuiper satellites are expected to be in the 600-700 kg class, each using Ka-band and likely also incorporating inter-satellite laser links and sophisticated phased-array antennas.[35] They will orbit slightly higher than Starlink (~600 km *vs* Starlink's ~550 km),[36] which means less atmospheric drag but also a potentially longer orbital debris lifetime for any failed units – something regulators on both sides of the Atlantic will watch.[37]

Notably, Europe has no private venture on the scale of Starlink or Kuiper. Recognising this gap, the EU decided to create its own constellation via a public-private partnership: the Infrastructure for Resilience, Interconnectivity and Security by Satellite-IRIS² program.[38] Agreed in 2022, IRIS² will be a multi-orbit network (LEO+GEO) aiming to provide secure communications for European governments and broadband for remote regions, with a planned deployment by 2027-2030.[39] The EU has pledged €2,4 billion initially, and a consortium of European aerospace companies and telecommunications companies will contribute further funds to build a few hundred LEO satellites.[40] Whereas the strategic rationale is explicitly to ensure a degree of autonomy for critical connectivity, IRIS² will be less capable than SpaceX's Starlink, essentially serving niche government needs and select commercial uses.[41] In the meantime, European users and companies are turning to Starlink or OneWeb for LEO broadband – a fact that underscores Europe's current dependency in this domain. This dynamic, where US firms offer services that Europe then regulates or strategically reacts to, exemplifies a trend in transatlantic relations that informs the appearance of the EU Space Act.

The European space industry's fragmentation and slower pace are something the EU Space Act and related policies hope to address by fostering a single market and encouraging investment.[42] One reason for optimism is the fact that the full innovation potential of Low Earth Orbit has yet to be realised by either side of

[32] PayloadSpace, *Kuiper launches first production internet satellites*, 2025. Retrieved 31 August 2025 from https://payloadspace.com/kuiper-launches-first-production-internet-satellites/.

[33] Amazon, *What is Amazon Project Kuiper*, 2025. Retrieved 31 August 2025 from https://www.aboutamazon.com/news/innovation-at-amazon/what-is-amazon-project-kuiper.

[34] SpaceX, *Launches (SpaceX official launch manifest and schedule)*.

[35] SpaceX, *Launches (SpaceX official launch manifest and schedule)*.

[36] SpaceX, *Launches (SpaceX official launch manifest and schedule)*.

[37] SpaceX, *Launches (SpaceX official launch manifest and schedule)*.

[38] European Commission, *IRIS²*, Defence Industry and Space, Brussels, 16 December 2024. Retrieved 31 August 2025 from https://defence-industry-space.ec.europa.eu/eu-space/iris2-secure-connectivity_en.

[39] European Commission, *IRIS²*.

[40] European Commission, *IRIS²*.

[41] European Commission, *IRIS²*.

[42] European Commission, *Commission staff working document: impact assessment report,* Brussels, 25 June 2025, SWD(2025) 335 final, Part 1. Retrieved 31 August 2025 from https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52025SC0335.

the Atlantic. Over the past five years, LEO has mainly been used for broadband constellations and Earth observation data, but its potential goes far beyond these applications. There are nascent ventures in in-space manufacturing, namely: the production of high-quality fibre-optic cable, pharmaceuticals, or semiconductors in microgravity; space tourism and commercial human spaceflight; in-orbit servicing to extend satellite lifespans; space debris removal; and space-based solar power.[43]

The EU Member States, through ESA, are also funding some of these types of space activities, such as the ClearSpace mission, a demonstration of orbital debris removal led by a Swiss startup company with support from European mid-tier space company OHB SE.[44] Many of these potential industries, such as pharmaceuticals, materials, and energy, are areas where Europe possesses significant expertise. By channelling its strengths in precision engineering, science, and global standards into these emerging space sectors, the EU could establish leadership niches and prevent ceding everything to American firms.

By sheer presence, American systems will significantly define the LEO operational environment. Several stakeholders, including in Europe, fear scenarios like the Kessler Syndrome, where chain-reaction collisions make LEO essentially unusable, as the risk to space operations is increasing: in 2024, SpaceX reported conducting ca. 50,000 collision-avoidance manoeuvres every six months for Starlink satellites to increase separation safety regarding other spacecraft or debris.[45]

The US space sector is unleashing the innovation potential of LEO communications at scale, essentially treating satellites as a new class of network infrastructure similar to terrestrial telecommunications networks. Whereas SpaceX's and Amazon's constellations could seize large global market shares in connectivity, raising the stakes for latecomers, Europe seems at ease with missing out on the economic upside of this LEO revolution as long as it can guarantee its strategic autonomy for national security applications.

Furthermore, there are natural consequences at the national security and defence level. Firstly, in 2019, the US became the first NATO member state to create a branch of the armed forces dedicated to the space domain: the United States Space Force.[46] This policy decision has since been mirrored by European NATO countries, either by renaming an existing branch of the armed forces (e.g., France, the Netherlands, and Spain) or by creating a new command structure (e.g., Germany, the United Kingdom, and Italy).

Secondly, as in the past, space assets may be leveraged for so-called gunboat diplomacy in space, whereby "*[t]he limited use of space forces may be combined with*

[43] McKinsey & Company, *The role of space in driving sustainability, security, and development on earth*, 2022. Retrieved 31 August 2025 from https://www.mckinsey.com/~/media/mckinsey/industries/aerospace%20and%20defense/our%20insights/the%20role%20of%20space%20in%20driving%20sustainability%20security%20and%20development%20on%20earth/the-role-of-space-in-driving-sustainability-security-and-development-on-earth-vf.pdf.

[44] ESA, "ESA advances Clearspace-1 development", *ESA - Space Safety*, 23 April 2024. Retrieved 31 August 2025 from https://www.esa.int/Space_Safety/ClearSpace-1/ESA_advances_Clearspace-1_development.

[45] Tereza Pultarova, "SpaceX Starlink satellites made 50,000 collision-avoidance maneuvers in the past 6 months", *Space.com*, 23 July 2024, https://www.space.com/spacex-starlink-50000-collision-avoidance-maneuvers-space-safety.

[46] The White House, *Space Policy Directive-4: establishment of the United States Space Force*, The White House (Trump administration archives) (2019), https://trumpwhitehouse.archives.gov/presidential-actions/text-space-policy-directive-4-establishment-united-states-space-force/.

diplomatic pressure to affect the internal or external affairs of a competitor."[47] Finally, taking into account that privateers and pirates are historically "*two aspects of naval irregular warfare*",[48] one cannot exclude the appearance of such non-state actors as commercial space activities consolidate, also keeping in mind that "*what is and is not a commercial space entity is currently elusive*"[49] – especially with reference to China's space sector.

Finally, leveraging its *"first-mover advantage"*,[50] there is the decision by the US to develop a "*next-generation missile defence shield.*"[51] Under US Presidential Executive Order 14186 titled "*The iron dome for America*",[52] the US Secretary of War is directed to develop and implement a comprehensive missile defence architecture, including space-based sensors, interceptors, and integrated systems to counter hypersonic, ballistic, and cruise missile threats.[53] Subsequently renamed "*The golden dome for America*", the project innovatively foresees the "*[d]evelopment and deployment of proliferated space-based interceptors capable of boost-phase intercept.*"[54] Although the final characteristics of the architecture are yet unknown, preliminary scholarly considerations suggest that the golden dome's deployment could accelerate space militarisation and erode the 1967 Outer Space Treaty (OST).[55]

Much like the Strategic Defence Initiative of the 1980s, golden dome's reliance on space-based technologies could face insurmountable feasibility issues against modern hypersonic threats, as well as scalability challenges, including the vast geographical scope, advanced adversary countermeasures, and prohibitive costs, which would likely result in limited operational success.[56] Nonetheless, the US is uncontestably the only space power capable of seriously considering the development of a project of the foreseen magnitude, largely thanks to the success of commercialisation.

The conditions are, thus, in place for a growing reliance on US-based infrastructure and services to meet civil, commercial, and security needs. European reliance brought to light significant strategic consequences, as demonstrated by the war in Ukraine: if US-based commercial firms provide the backbone of space-based services for other nations – particularly during wartime – such dominance creates a complex strategic environment.

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[47] John Jordan Klein, *Fight for the final frontier: irregular warfare in space* (Naval Institute Press, 2023).
[48] John Jordan Klein, *Fight for the final frontier: irregular warfare in space.*
[49] John Jordan Klein, *Fight for the final frontier: irregular warfare in space.*
[50] Bruce McClintock, Krista Langeland and Michael Spirtas, *First mover typology for the space domain: building a foundation for future analysis*, R. Corporation, 2023, https://www.rand.org/pubs/research_reports/RRA2208-1.html.
[51] The White House, *Executive Order 14186 - the iron dome for America*, Washington, D.C.: The White House (2025). Retrieved from https://www.presidency.ucsb.edu/documents/executive-order-14186-the-iron-dome-for-america.
[52] The White House, *Executive Order 14186.*
[53] The White House, *Fact sheet: President Donald J. Trump directs the building of the iron dome missile defense shield for America*, Washington, D.C.: The White House (2025). Retrieved from https://www.whitehouse.gov/fact-sheets/president-donald-j-trump-directs-the-building-of-the-iron-dome-missile-defense-shield-for-america/.
[54] The White House, *Executive Order 14186.*
[55] Pranay R. Vaddi and John K. Warden, "Golden dome and arms control: impediment or opportunity?", *Bulletin of the Atomic Scientists*, v. 81, no. 4 (2025): 296-304, https://www.tandfonline.com/doi/full/10.1080/00963402.2025.2518872.
[56] Steve Fetter and David Wright, "Can the iron dome be transmuted into a golden dome?", *The Washington Quarterly*, v. 48, no. 2 (2025): 95-114, https://doi.org/10.1080/0163660X.2025.2514916.

3. The EU Space Act: enabling strategic autonomy?

Faced with the reality of American primacy, the EU developed a comprehensive regulatory response: the proposed EU Space Act.[57] The EU Space Act aims to assert the Union's normative standards and safeguard European interests in commercial space activities, even as the EU lags behind the US in space capabilities.

At its heart, the EU Space Act aligns with the current European zeitgeist of strategic autonomy and aims to level the legal playing field across the Union. Currently, space activities within the EU are governed by a patchwork of national legislation, with less than half of Member States having its own space legislation.[58] This fragmentation is viewed as a competitive disadvantage, warranting EU law intervention to level the playing field in an ecosystem where small and medium-sized enterprises coexist with large system integrators in the aerospace and defence sector.[59] Therefore, by establishing common standards for licensing, insurance, liability, debris mitigation, and related areas, the EU aims to eliminate internal barriers and enable European companies to operate under a single set of rules across all Member States.[60]

Beyond market unity, the EU Space Act explicitly aims to bolster the safety and sustainability of space activities. Firstly, there is the requirement that "*Union spacecraft operators shall ensure that a spacecraft possesses the technical means to allow trackability and precise determination of the orbital position*" (Article 63),[61] thereby protecting the orbital environment and the long-term viability of space infrastructure. Secondly, the resilience of space systems is mandated through a risk assessment framework for cybersecurity tailored to the specific needs of the space sector.[62] In addition, underscoring the EU's environmental ethos, the proposal would "*create a common method for calculating the environmental impact of space activities*"[63] in the EU. This objective is to be implemented by mandatory Life Cycle Assessment (LCA) and environmental footprint (EF) and product environmental footprint (PEF) certification for satellites, launchers, and related space activities (Articles 96-100).[64]

The proposal's emphasis on sustainability and regulation is especially noteworthy, as it differentiates the EU's regulatory approach from that of the US. The draft EU Space Act reads almost like an environmental and safety manifesto for orbit, codifying the principle that the prevention of debris generation must be prioritised. For instance, Recital 58 of the draft states bluntly: "*[to] protect the space environment, there is a need to ensure that launch vehicles and spacecraft produce the least amount of debris.*"[65] In turn, this imperative is linked to Earth-bound policy, noting

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[57] European Commission, *Proposal for a Regulation of the European Parliament and of the Council on the safety, resilience and sustainability of space activities in the Union*, Brussels, 25.6.2025, COM(2025) 335 final. European Union – Directorate-General for Defence Industry and Space (2025).

[58] European Commission, *Impact assessment report*.

[59] European Commission, *Impact assessment report*.

[60] European Commission, *Impact assessment report*.

[61] European Commission, *Proposal for a Regulation on the safety, resilience and sustainability of space activities in the Union*.

[62] European Commission, *Explanatory memorandum – Proposal for a Regulation of the European Parliament and of the Council on the safety, resilience and sustainability of space activities in the Union,* Brussels, 25.6.2025, COM(2025) 335 final. European Union – Directorate-General for Defence Industry and Space (2025).

[63] European Commission, *Explanatory memorandum – Proposal for a Regulation of the European Parliament and of the Council on the safety, resilience and sustainability of space activities in the Union.*

[64] European Commission, *Proposal for a Regulation on the safety, resilience and sustainability of space activities in the Union*.

[65] European Commission, *Proposal for a Regulation on the safety, resilience and sustainability of space*

that debris prevention is akin to the top tier of the waste management hierarchy under EU environmental law, namely, the Waste Framework Directive.[66]

Consequently, the EU Space Act would impose obligations at the design phase of spacecraft and launchers to limit debris and throughout their orbital lifetime. This means that European satellite manufacturers and launch providers would have to incorporate debris-mitigating design features (e.g., de-orbit sails, propulsion for controlled re-entry, and minimising the explosive risk of components) as a condition of licensing. As per Article 61 of the proposed draft, operators would be required to submit two space debris mitigation plans demonstrating how each mission will comply with debris reduction requirements: a "*debris control plan*" and "*an end-of-life plan.*"[67] The EU Space Act effectively seeks to make practices that are currently voluntary guidelines (such as those by the Inter-Agency Space Debris Coordination Committee and ISO) legally mandatory within the EU. As stated above, the draft regulation introduces a novel requirement that all spacecraft in the EU must have positional trackability (Article 63)[68] – essentially, the ability to be reliably tracked, either via on-board transponders or responsive ground tracking. To this end, the EU Space Act calls for developing common standards for trackability and, as per Article 64, even mandates subscription to Collision Avoidance "*space services provided by the collision avoidance space services provider in charge of the Space Surveillance and Tracking (SST).*"[69]

Therefore, it is the EU Commission's view that no satellite may be launched without a clear plan for avoiding collisions and minimising its footprint. This represents a proactive regulatory stance that exceeds the current US requirements. Furthermore, the EU Space Act knits together these safety concerns with market fairness: it argues that uneven national rules on debris and safety create an unlevel playing field – operators in stricter countries face higher costs than those in lax regimes – so an EU-wide rule not only benefits the environment but "*ensur[es] equal treatment of space operators and a level playing field for the Union space industry*."[70] In essence, Europe is betting that raising the bar on regulation will actually make its industry more competitive globally, by spurring innovation in clean and safe tech and by avoiding catastrophic costs from debris collisions down the line.

Another significant aspect of the proposal is its timeline, which envisions a lengthy implementation period, with the regulation only fully coming into force by the end of this decade. In other words, EU lawmakers are planning now (in 2025) for a regulatory regime that will really bite after 2030. By defining this time horizon, the EU Commission is sending a signal that these new rules are the Union's effort to shape the environment in which commercialisation's true innovation in space activities will unfold.

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activities in the Union.

[66] Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives (the Waste Framework Directive). Official Journal of the European Union, L 312, 22.11.2008, 3-30.

[67] European Commission, *Proposal for a Regulation on the safety, resilience and sustainability of space activities in the Union*.

[68] European Commission, *Proposal for a Regulation on the safety, resilience and sustainability of space activities in the Union*.

[69] European Commission, *Proposal for a Regulation on the safety, resilience and sustainability of space activities in the Union*.

[70] European Commission, *Explanatory memorandum*.

In other words, the Union is laying the groundwork now so that, if predictions prove correct and the 2030s see a surge in satellites and space activities, it will have a strong framework in place rather than having to play catch-up. Politically, the long lead time also serves to avoid immediate confrontation with allies or industry: US companies like SpaceX or Amazon's Project Kuiper might not worry about EU regulations today, but by 2030, those rules could influence whether or not they serve European customers, and how.

Furthermore, the 2030 date appears to underscore that the EU Space Act is a strategic, rather than just tactical, Union initiative. Specifically, the Act looks beyond the current Commission's term ending in 2029 and beyond immediate political cycles, embedding the policy in the EU's long-term trajectory. The EU Commission and supportive Member States are effectively setting a course for Europe, irrespective of transatlantic shifts that might occur in the interim. By 2030, many current satellite systems, as well as the International Space Station, will be winding down, and new ones (such as private space stations and lunar ventures) could likely be coming online.

To conclude, the Space Act's underlying objective is clear: to protect Europe's space sector from being reduced to a second-tier industry. Although from Washington's perspective, the Space Act might constitute thinly veiled protectionism, from Brussels' point of view, it is a necessary response to a perceived chaotic *"wild west"* scenario and a way to ensure Europe remains a co-creator of the rules governing the final frontier. The Space Act is therefore as much about internal consolidation – aimed at increasing efficiency and scale – as it is about geopolitics.

4. A "*fork in the road*" moment for the EU?

A large majority of EU Member States are also members of ESA.[71] This circumstance was key to the development of the EU space sector given the "*geographical return policy*" (also referred to as "*geo-return*") paradigm enshrined in Article VII of the ESA Convention,[72] whereby preference to industry in all Member States was to be granted to "*fullest extent possible.*" By mandating an effort to achieve a 1:1 return of the financial contribution of each Member State in the context of a fragmented space sector, this provision in time contributed to a long-ignored state of entropy, although there are recent calls to scrap "*geo-return.*"[73]

As calls for strategic autonomy increase and Europe feels a sense of urgency regarding security and defence, it is imperative that Europe advances its strategic posture and adopts an enhanced Next-Space mindset, going beyond the decades-old "*NewSpace*"[74] mindset. A critical step toward this goal is the adoption and implementation of the EU Space Act, which signifies a decisive move towards fostering innovation, strengthening infrastructure, and ensuring strategic independence in space activities.

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[71] ESA, ESA Member States and Cooperating States, https://www.esa.int/ESA_Multimedia/Images/2013/02/ESA_Member_States_and_Cooperating_States.

[72] Convention for the establishment of a European Space Agency, opened for signature May 30, 1975, Paris, 1297 U.N.T.S. 161 (entered into force October 30, 1980).

[73] Mario Draghi, *The future of european competitiveness*, 176. Balázs Bartóki-Gönczy and Katarzyna Malinowska, "Paradigm shift in the European Union's space policy: institutional restructuring and its possible consequences for the CEE region", *Frontiers in Political Science*, v. 7 (2025). Retrieved 27 September 2025 from https://www.frontiersin.org/journals/political-science/articles/10.3389/fpos.2025.1536170/full.

[74] Jason Hay *et al.*, «Global space industry: refining the definition of "New Space"» (AIAA Paper 2009-6400), *AIAA SPACE 2009 Conference & Exposition*, Pasadena, CA (2009). Retrieved 27 September 2025 from https://arc.aiaa.org/doi/10.2514/6.2009-6400.

The current transatlantic tensions may perhaps be at a lower point than twenty years ago, when Robert Kagan concluded that "*Americans are from Mars and Europeans are from Venus*", agreeing on "*little and understanding one another less and less.*"[75] In the wake of the most recent EU-US tensions on trade and Ukraine, few would dispute the fact that transatlantic relations could soon be beyond the "*Mars and Venus*" paradigm,[76] evoking two different solar systems.

Europe's greatest fear in this scenario would be marginalisation, as EU member states risk being increasingly seen as customers of the US instead of allies. Transatlantic relations are at a critical juncture, and the space domain will either continue to be a key area of transatlantic cooperation or become a novel source of trade irritants. The US, with its dominant position in commercial space activities, possesses both the capability and the intention to shape the emerging space order through its technological and market leadership.

As with data privacy in the past,[77] the EU Space Act draft demonstrates a strong European commitment to remain competitive and influence global governance with the Union's own rules. The EU Commission, recognising the substantial innovation gap and the decreasing resilience of the single market, is decisively promoting its own vision for space commercialisation by doubling down on regulatory activism. The next decade could likely see the consolidation of US primacy in space, as China continues to rise, leaving Europe either aligned with the US or attempting to chart its own course. Conversely, a more balanced and collaboratively managed transatlantic approach to space activities could also succeed, preserving the long-standing alliance in a domain that is becoming increasingly vital to all aspects of society.

The EU Space Act has not yet been finalised, and its implementation is not expected until the end of the decade. Given the rapid pace of innovation in space technologies, it is only speculation to predict what the global space market will look like in five years. Larger political shifts could increase this estrangement, potentially leading to a future scenario where a US administration is less willing to engage in constructive dialogue with EU stakeholders through established platforms – namely, the Transatlantic Economic Council (TEC), the Transatlantic Business Dialogue (TABD), the Transatlantic Legislators Dialogue (TLD), and most recently, the Trade and Technology Council (TTC).

At the same time, the EU could adopt a more assertive stance and decisively push for a strategy for autonomy with concrete actions beyond financial mechanisms. The outcome could be a divided system, marked by regulatory fragmentation, where a satellite may need separate approvals under US and EU rules, each focusing on different priorities. Politically, if left unresolved, this issue could add to tensions in EU-US relations and potentially affect cooperation in related areas.

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[75] Robert Kagan, "Power and weakness", *Policy Review*, v. 113 (2002), https://campusweb.franklinpierce.edu/ICS/icsfs/2_19r360.pdf?target=90096719-76a1-4a55-80c0-de16b2954ad5.

[76] Bruno Reynaud de Sousa, "Mars and Venus revisited: juxtaposing EU and US attitudes toward space traffic management in the context of commercialization", *European Review of International Studies*, v. 10, no. 3 (2024): 352-373. Retrieved 31 August 2025, from https://brill.com/view/journals/eris/10/3/article-p352_005.xml.

[77] Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation – GDPR). Official Journal of the European Union, L 119, 4.5.2016, 1-88.

The EU Space Act proposal encapsulates Europe's approach of combining internal market integration, environmental stewardship, and strategic positioning. Its core goals – namely, protecting the space environment, unifying regulations to strengthen the European space sector, and embedding security – are as much about ensuring Europe's long-term freedom of action in space as they are about altruistic sustainability. The Act's provisions demonstrate an EU willingness to impose challenging requirements (such as debris prevention, mandatory trackability, cyber security, and LCA) that go well beyond international norms, effectively making the EU space sector a laboratory for responsible space operations.

The EU Commission's approach has the potential to level the playing field within Europe by holding all operators to high standards, and perhaps internationally by pressuring others to rise to these standards if they wish to do business with Europe. Historically, when Europe raises regulatory standards, it can set *de facto* global benchmarks – a phenomenon often called the "*Brussels effect.*"[78]

Prospectively, the key question is: will the EU achieve an agreement on a space sustainability framework? At the time of writing, the EU Commission seems ready to accept the costs charting a course of divergence from the US-based space sector, the largest in the world by several orders of magnitude in 2025 – and most likely in 2030 and beyond. If US space policy continues a deregulation course, commercial space services could become yet another source of transatlantic tension at a time when European societies need them most.

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[78] Anu Bradford, "The Brussels Effect", *Northwestern University Law Review*, v. 107, no. 1 (2012): 1-68. Retrieved 27 September 2025 from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2770634.