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Comments of

TechFreedom

James E. Dunstan[i]

To the European Commission

On

Regulation of the European Parliament and of the Council

On the Safety, Resilience and Sustainability of Space Activities in the Union

Submitted

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TABLE OF CONTENTS

INTRODUCTION

TechFreedom welcomes the opportunity to provide feedback to the European Commission[1] regarding the draft European Union Space Act.[2]

Founded in 2011, TechFreedom is a nonprofit think tank dedicated to promoting the progress of technology that improves the human condition. To this end, we seek to advance public policy that makes experimentation, entrepreneurship, and investment possible, and thus unleashes the ultimate resource: human ingenuity. Wherever possible, we seek to empower users to make their own choices online and elsewhere.

TechFreedom, and the undersigned author, have more than 40 years' experience in outer space law and policy. A short list of our work includes:

- Prior Comments to NASA on its Low Earth Orbit Microgravity Strategy,[3]
- Prior Comments to NASA on its Lunar Non-Interference Questionnaire;[4]
- Prior Comments to NASA on its Technology Shortfalls;[5]
- Prior Comments to NASA on its Moon to Mars Objectives;[6]
- Testimony before the House and Senate on space issues;[7]

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[1] *EU Space Act—new rules for safe, resilient and sustainable space activities, Commission adoption*, https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/13971-EU-Space-Act-new-rules-for-safe-resilient-and-sustainable-space-activities_en.

[2] *Proposal for a Regulation of the European Parliament and of the Council on the Safety, Resilience and Sustainability of Space Activities in the Union*, 2025/0335 (COD), EUR. PARL. (June 25, 2025) [hereinafter Draft EU Space Act].

[3] TechFreedom, Comment on NASA's Low Earth Orbit Microgravity Strategy, (Sept. 27, 2024), https://techfreedom.org/wp-content/uploads/2024/10/TechFreedom-NASA-LEO-Microgravity-Comments-9-27-24.pdf.

[4] TechFreedom, Comment on Non-interference of Lunar Activities (June 7, 2024), https://techfreedom.org/wp-content/uploads/2024/06/TechFreedom-Non-Interference-Zones-NASA-6-7-24-v2.pdf.

[5] TechFreedom, Comment on Technology Shortfalls for NASA Space Technology Mission Directorate (STMD) (May 13, 2024), https://techfreedom.org/wp-content/uploads/2024/05/TechFreedom-Technology-Shortfalls-for-NASA-Space-Technology-Mission-Directorate-May-13-2024.pdf.

[6] TechFreedom, Comment on Moon to Mars Objectives (June 3, 2022), https://techfreedom.org/wp-content/uploads/2022/06/TechFreedom-Comment-Moon-to-Mars-6-3-22.pdf.

[7] *Continuing US Leadership in Commercial Space at Home & Abroad: Hearing Before the H. Comm. on Space, Sci., & Tech.*, 118th Cong. (2023) (statement of James E. Dunstan), https://techfreedom.org/wp-content/uploads/2023/07/Space-Governance-Testimony-July-13-2023.pdf; *Reopening the American Frontier: Exploring How the Outer Space Treaty Will Impact American Commerce and Settlement in Space: Before the S. Comm. on Commerce, Sci., & Transp. Subcomm. on Space, Sci., & Competitiveness*, 115th Cong. (2017) (written testimony of James E. Dunstan & Berin Szóka), https://www.commerce.senate.gov/services/files/A9AD88B2-9636-4291-A5B0-38BC0FF6DA90 (for

- Amicus briefs in key court cases related to outer space law and policy;[8]
- Law review and scholarly articles addressing key issues of space law;[9]
- Presentations at scientific conferences on outer space law and policy, including on issues related to orbital debris;[10]
- Comments in agency proceedings on a variety of space-related issues;[11] and

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video of the hearing, *see Reopening the American Frontier: Exploring How the Outer Space Treaty Will Impact American Commerce and Settlement in Space*, S. COMM. ON COMMERCE, SCI., & TRANSP. (May 23, 2017), https://www.commerce.senate.gov/2017/5/reopening-the-american-frontier-exploring-how-the-outer-space-treaty-will-impact-american-commerce-and-settlement-in-space).

[8] Brief for TechFreedom as Amicus Curiae Supporting Fed. Commc'ns Comm'n, The International Dark-Sky Association, Inc. v. Fed. Commc'ns Comm'n, No. 22-1337 (D.C. Cir. Ct. App. 2023), https://techfreedom.org/wp-content/uploads/2023/06/TF-22-1337-International-Dark-Sky-Association-Inc.-v.-FCC.pdf; Brief for TechFreedom as Amicus Curiae Supporting Respondent, Viasat, Inc. v. Fed. Commc'ns Comm'n, 47 F.4th 769 (D.C. Cir. 2022) (No. 21-1123), https://techfreedom.org/wp-content/uploads/2021/09/File-Stamped-TechFreedom-Amicus-Brief-Viasat-v-FCC.pdf.

[9] *See* James E. Dunstan, *Regulating Outer Space: Of Gaps, Overlaps, and Stovepipes*, THE CTR. FOR GROWTH AND OPPORTUNITY (July 10, 2023), https://www.thecgo.org/research/regulating-outer-space-of-gaps-overlaps-and-stovepipes/; James E. Dunstan*, "Space Trash:" Lessons Learned (and Ignored) from Space Law and Government,* 39 J. SPACE L. 23 (2013); James E. Dunstan, *Toward a Unified Theory of Space Property Rights*, *in* SPACE: THE FREE-MARKET FRONTIER (2002); James E. Dunstan et al., *The Geostationary Orbit: Legal, Technical and Political Issues Surrounding Its Use in World Telecommunications*, 16 CASE WEST. RESERVE J. INT. L. 223 (1984).

[10] James E. Dunstan & Bob Werb, *Legal and Economics Implications of Orbital Debris Removal: Comments of the Space Frontier Foundation*, DARPA Orbital Debris Removal (ODR) Request for Information for Tactical Technology Office (TTO), DARPA-SN-09-68 (Oct. 30, 2009); James E. Dunstan et al., *Doing Business in Space: This Isn't Your Father's (or Mother's) Space Program Anymore*, SPACE MANUFACTURING 13 (2001); James E. Dunstan, *Earth To Space: I Can't Hear You; Selling Off Our Future To The Highest Bidder*, SPACE MANUFACTURING 11 (1997); James E. Dunstan, *Generating Revenues in Space: Challenging Some of the Economic Assumptions of Space Exploitation*, Proceedings of the NASA Symposium on Lunar Bases and Space Professional Activities in the 21st Century (Apr. 1988).

[11] TechFreedom has commented in matters such as: Space Innovation & Facilitating Capabilities for ISAM, IB Docket Nos. 22-271 & 22-272 (Apr. 29, 2024), https://techfreedom.org/wp-content/uploads/2024/04/TechFreedom-FCC-ISAM-Comments.pdf; Revision of the Big LEO Spectrum Sharing Plan, RM-11975 (Apr. 25, 2024), https://techfreedom.org/wp-content/uploads/2024/04/TechFreedom-Comments-SpaceX-Petition-1-6-GHz.pdf; Mitigation Methods for Lauch Vehicle Upper Stages on the Creation of Orbital Debris, Docket No. FAA-2023-1858 (Dec. 22, 2023), https://techfreedom.org/wp-content/uploads/2023/12/TechFreedom-comments-Mitigation-Methods-for-Launch-Vehicle-Upper-Stages-on-the-Creation-of-Orbital-Debris-12-22-23.pdf; Development of a National Spectrum Strategy, Docket No. NTIA-2023-0003 (Apr. 17, 2023), https://techfreedom.org/wp-content/uploads/2023/04/Comment-NTIA-RFC-4-17-23.pdf; National Science and Technology Strategy for US Activities in Cislunar Space (July 20, 2022), https://techfreedom.org/wp-content/uploads/2022/07/TechFreedom-Comment-OSTP-Cislunar-Economy-7-20-22.pdf; Allocation of Spectrum for Non-Federal Space Launch Operations, ET Docket No. 13-115 (Sept. 10, 2021), https://techfreedom.org/wp-content/uploads/2021/09/TechFreedom-Reply-Comments-13-115-9-10-21.pdf (allocation of spectrum for non-federal space launches); Letter

- Submissions to Congress and the White House on key space law and policy issues.[12]

We are therefore well-versed in issues related to space law and policy. While we are a US-based think tank, we have a strong European presence and have commented often on European law and policy, especially as it relates to competition and emerging technologies.[13] Our comments focus mainly on the impact of the Draft EU Space Act on US companies, and a discussion of issues of reciprocal treatment of space companies as between the EU and US regulators.

I. Comprehensive Outer Space Legislation Is Long Overdue

We have long advocated for a more comprehensive approach to space regulation, especially regarding orbital debris both in the US as well as globally.[14] For many countries, the US included, outer space regulatory systems have evolved as a cumbersome patchwork quilt, crafted by various agencies, all claiming some aspect of outer space as part of their regulatory authority. In 2023 we undertook a comprehensive study of the US space regulatory environment and found that:

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from TechFreedom to Fed. Commc'ns Comm'n (Nov. 2, 2020), https://techfreedom.org/wp-content/uploads/2021/03/TechFreedom-Letter-to-FCC-11-2-20.pdf (warning of danger of FCC granting "market access" to a company proposing very large satellites and licensed by a government (Papua New Guinea) which is not a signatory to the Liability Convention).

[12] TechFreedom, Comment on OSTP Request for Comment on National Orbital Debris Research and Development Plan, 86 Fed. Reg. 61335 (Dec. 31, 2021), https://techfreedom.org/wp-content/uploads/2022/01/TechFreedom-Comments-OSTP-Orbital-Debris-Strat-Plan.pdf; Letter from TechFreedom to S. Subcomm. on Space & Sci. (July 21, 2021), https://techfreedom.org/wp-content/uploads/2021/07/Letter-to-Senate-Space-Subcommittee-7-21-21.docx-1.pdf (concerning the loophole of allowing US companies to get "flag of convenience" licenses from foreign jurisdictions).

[13] *See* Letter from Berin Szóka to Rep. Jim Jordan re FTC Legal Theories (Sept. 3, 2025), https://techfreedom.org/wp-content/uploads/2025/09/HJC-Letter-re-Censorhip-FTC-9.3.25-1.pdf; Letter from Prof. Martin Husovec & Berin Szóka, et al., to Rep. Jim Jordan (Sept. 3, 2025), https://husovec.eu/wp-content/uploads/2025/09/US-Academic-Letter-DSA-Censorship.pdf; TechFreedom, Comment on European Data Union Strategy, Ares(2025)4163996 (July 20, 2025), https://techfreedom.org/wp-content/uploads/2025/07/Call-for-Evidence_European-Data-Union-Strategy.pdf; TechFreedom, Comment on Apply AI Strategy, Ares(2025)2878101 (June 24, 2025), https://techfreedom.org/wp-content/uploads/2025/06/Call-for-Evidence_Apply-AI-strategy.pdf; Berin Szóka & Santana Boulton, *UK Encryption Crackdown Imperils Privacy, Security & Free Speech*, TECH POLICY PRESS (Feb. 21, 2025), https://www.techpolicy.press/uk-encryption-crackdown-imperils-privacy-security-free-speech/; Dean Jackson & Berin Szóka, *The Far Right's War on Content Moderation Comes to Europe*, TECH POLICY PRESS (Feb. 11, 2025), https://www.techpolicy.press/the-far-rights-war-on-content-moderation-comes-to-europe/.

[14] *See* Dunstan*, Space Trash*, *supra* note 9.

> In the United States, there exists no one National Outer Space Act and no single US Space Regulatory Agency. Instead, private companies seeking to do business in space face a patchwork quilt of regulations, promulgated by several separate agencies, relying on authorizing statutes that are nearly 100 years old.
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> …
>
> The current cumbersome and incomplete approach to regulation threatens to slow down US companies, or worse, drive them oversees to seek licenses from foreign jurisdictions willing to more lightly regulate their activities in exchange for fees and potential tax revenues. Moreover, a regulatory system full of friction (both in terms of time, cost, and complexity of compliance) threatens to allow our adversaries to catch up and perhaps become dominant in the new cis-lunar economy.[15]

In the US Congress's last attempt to harmonize the US regulatory system, H.R. 6131, undersigned counsel testified before the House Science Committee in 2023.[16] In our written testimony, we highlighted the need for a comprehensive, yet not overbearing, regulatory approach to outer space:

> The stakes are sky high . . . pun fully intended. Space is inherently international, and if we do not provide a practical regulatory system that can quickly and economically authorize and supervise the activities of US nationals in space (what I call a frictionless regulatory system), two things will happen:
>
> First, and we're already seeing this, US domestic companies will simply move offshore and find a country that will quickly and cheaply grant them authorization for their outer space activities in exchange for license fees or taxes (fees and taxes that are thus pulled out of the US economy).
>
> Second, the existing regulatory scheme, and any future regulatory scheme which is characterized by high degrees of friction, slows down the US space economy, and thus advances the interests of our adversaries, including China, who do not share our democratic

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[15] *See* Dunstan, *Regulating Outer Space*, *supra* note 9, at Executive Summary.

[16] *See* Dunstan, *Continuing U.S. Leadership*, *supra* note 7.

> principles, and who wish to export their ideals into space, to our direct detriment.
>
> …
>
> Understand that I am not here advocating for Congress to overregulate space activities. Overregulation introduces levels of friction into the regulatory system that could accelerate flight overseas and play directly into the interests of our adversaries.
>
> Nor am I advocating for a totally "hands-off" approach to space activities. The dangers to the "commons" of outer space require us to be good stewards of the cis-lunar system.
>
> In the same way that Earth sits in the "Goldilocks" zone of our solar system, not too close to the sun, but not too far away, Congress's task is to find a balance on the continuum between "permissionless innovation" (where nearly anything goes), and the "precautionary principle" (where the government must micromanage and approve every activity by US citizens in space).[17]

It is from this perspective that we comment on the Draft EU Space Act.

II. The EU's Regulatory Approach Will Be Burdensome and Costly, Especially on US-based Space Operators

With the Draft EU Space Act, the European Commission has taken its first steps toward comprehensive outer space regulation. Unfortunately, its approach embodies many more aspects of the "precautionary principle" than of "permissionless innovation" discussed above.[18] It would add new on top of the thirteen EU Member State regulatory regimes already in place.[19] A more thorough analysis of the potential preemptory effects of these proposed regulations on the thirteen member states with outer space domestic legislation is necessary to determine whether there will actually be harmonization, or whether this proposal will merely create additional regulatory

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[17] *Id.* at 3-4.

[18] From a strictly US perspective, this might not be a bad thing, read in a vacuum. The EU establishing overbearing regulations would actually slow, if not halt, the exodus of US aerospace companies seeking flags of convenience from friendlier jurisdictions. If adopted as proposed, few US companies would trade the patchwork quilt of US space regulation for the EU's multi-layer regulatory approach. But as discussed below, the broad application of the EU's claimed jurisdiction over foreign operators would ultimately force US companies to comply with any new EU space regulations.

[19] Draft EU Space Act at 2.

burdens on both EU and non-EU space operators. But one thing is sure: there *will* be more administrative layers: the Draft Act vests new authority with the European Union Agency for the Space Programme (the "Agency"),[20] as well as the Commission, and proposes a wholly new "Board of Appeal" which "should be independent from any regulatory and administrative structure of the Agency and should not be bound by any instruction. The decisions of the Board of Appeal should be subject to appeal before the Court of Justice of the European Union."[21]

While a "one-stop shop" for EU regulation of space activities could help to promote entrepreneurship and innovation in space, neither the Agency nor the Board appears to offer this.

A. The Draft EU Space Act Usurps the Rights of Non-EU Countries and Violates the Outer Space Treaty

It is one thing for the EU to assert jurisdiction over services delivered into the EU provided by satellites launched by non-EU countries, such as the pricing of satellite broad service or the protection of data involved in such a service. Whatever its policy merits, such regulation would at least be a legitimate exercise of the EU's jurisdiction over its own territory as a supra-national entity.

But the Draft Act goes much further; it asserts the EU's jurisdiction not merely over services provided within the EU by objects launched outside the EU, but over a broad range of how these objects operate on orbit and on Earth outside the EU. In effect, the Act asserts jurisdiction and control over the objects themselves. Today, that claim of authority is focused on orbital debris creation and mitigation, but once established, the EU's power could cover a range of other aspects of an object's operations, as the provisions related to measuring the "environmental footprint" of satellite systems presage.

This claim of jurisdiction violates the Outer Space Treaty (OST). Article VIII provides that each launching state "shall retain jurisdiction and control over" the objects launched and registered and activities conducted by its nationals.[22] Correspondingly, Article VII makes each launching state (or states that "procure" a launch) "internationally liable" for such activities.[23] Article VI requires "authorization and

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[20] *Id.* at 17, Finding 20.

[21] Draft EU Space Act at 34, Finding 125.

[22] Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies art. VII, Jan. 27, 1967, RES 2222 (XXI) [hereinafter *OST*].

[23] OST art. VI & VIII.

continuing supervision by the appropriate State Party to the Treaty."[24] On the one hand, the Draft Space Act claims "jurisdiction," "supervision," and responsibility for "authorization" of the activities of objects launched by foreign states. Yet, on the other, the Draft Space Act avoids any *responsibility* for the EU, as liability for space objects would remain entirely with each launching state under Article VII. In particular, the Act would explicitly disrupt the "registration and supervision" responsibilities of foreign states:

> To achieve a high common level of safety, resilience and environmental sustainability of space services through the operation and use of space infrastructure generating space-based data, this Regulation lays down harmonised rules on: (a) authorisation, registration and supervision of space activities carried out by space services providers established in the Union, and respectively, ***registration and supervision*** of space activities carried out by international organisations and ***space services providers established in third countries*** when providing space-based data or space services in the Union, with respect to matters of safety, resilience and environmental sustainability of space activities.[25]

The sweeping effects of the Act turn on the concept of "establishment." To American lawyers used to thinking only about the site of a company's "incorporation," the Act may appear to distinguish between space operators based inside and outside the European Union:

> The objective of the proposed initiative is to create a common level playing field at Union level, ensuring that Union space operators do not suffer from distortion of competition by space operators established outside the Union and benefiting from less stringent standards.[26]

But of course, in European law, the concept of "establishment" is broader than incorporation. A company that is "established" in the US and launches its objects from the US (or some third country) may *also* be considered to have multiple "establishments" inside the EU. For example, the European Court of Justice ruled that Google is "established" inside Spain because it sells advertising in that market.[27] In

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[24] OST art. VI.

[25] Draft EU Space Act at 39, Title I, Art. 1(2)(a) (emphasis added).

[26] *Id.* at 8.

[27] *See, e.g.*, Google Spain SL v. Agencia Española de Protección de Datos, Case C-131/12, ECLI:EU:C:2014:317, ¶ 56 (Grand Chamber, May 13, 2014) ("the activities of the operator of the

European data protection law, "the concept of 'establishment' … extends to any real and effective activity—even a minimal one—exercised through stable arrangements," which could include having local representatives or operating websites targeted at users in an EU country.[28] Thus, a satellite operator based outside the EU would be considered to be "established" in the EU by virtue of providing service there, and thus qualify as a "union space operator" under the draft Act.[29]

The question is: just what "stringent standards" will the EU impose on objects launched from non-EU states, and what impact will that have on the overall space economy?

B. The Current Draft Ignores the Warnings of the Draghi Report

In September 2023 European Commission President Ursula von der Leyen asked former European Central Bank president and former Prime Minister of Italy Mario Draghi to prepare a report on the future of European competitiveness. The aim was to quantify EU competitiveness on the world stage and to suggest how the EU can adapt to a rapidly changing world and secure sustainable growth for the decades ahead.[30]

Published one year later in September 2024, the "Draghi Report"[31] painted a bleak picture of EU productivity, especially vis-à-vis the United States, and especially with regard to emerging technology markets:

> Across different metrics, a wide gap in GDP has opened up between the EU and the US, driven mainly by a more pronounced slowdown in productivity growth in Europe. Europe's households have paid the price in foregone living standards. On a per capita basis, real disposable income has grown almost twice as much in the US as in the EU since 2000.

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search engine and those of its establishment [Google Spain] situated in the Member State concerned are inextricably linked since the activities relating to the advertising space constitute the means of rendering the search engine at issue economically profitable and that engine is, at the same time, the means enabling those activities to be performed.").

[28] Weltimmo s. r. o. v. Nemzeti Adatvédelmi és Információszabadság Hatóság, Case C-230/14, ECLI:EU:C:2015:639, ¶¶ 30-32 (Third Chamber, Oct. 1, 2015).

[29] Draft EU Space Act at 40, Article 15(17).

[30] *See The Draghi Report: One Year On,* EUROPEAN COMM'N (last accessed Nov. 4, 2025), https://commission.europa.eu/topics/eu-competitiveness/draghi-report/one-year-after_en.

[31] *See The Draghi Report on EU Competitiveness,* EUROPEAN COMM'N (last accessed Nov. 4, 2025), https://commission.europa.eu/topics/eu-competitiveness/draghi-report_en.

> Technological change is accelerating rapidly. Europe largely missed out on the digital revolution led by the internet and the productivity gains it brought: in fact, the productivity gap between the EU and the US is largely explained by the tech sector. The EU is weak in the emerging technologies that will drive future growth. Only four of the world's top 50 tech companies are European.
>
> If Europe cannot become more productive, we will be forced to choose. We will not be able to become, at once, a leader in new technologies, a beacon of climate responsibility and an independent player on the world stage. We will not be able to finance our social model. We will have to scale back some, if not all, of our ambitions. This is an existential challenge.
>
> First – and most importantly – Europe must profoundly refocus its collective efforts on closing the innovation gap with the US and China, especially in advanced technologies. Europe is stuck in a static industrial structure with few new companies rising up to disrupt existing industries or develop new growth engines. In fact, there is no EU company with a market capitalisation over EUR 100 billion that has been set up from scratch in the last fifty years, while all six US companies with a valuation above EUR 1 trillion have been created in this period. This lack of dynamism is self-fulfilling.[32]

The Draghi Report makes clear one of the key suppressors of innovation in the EU—the stifling regulatory environment:

> We have many talented researchers and entrepreneurs filing patents. But innovation is blocked at the next stage: we are failing to translate innovation into commercialisation, and innovative companies that want to scale up in Europe are hindered at every stage by inconsistent and restrictive regulations.
>
> As a result, many European entrepreneurs prefer to seek financing from US venture capitalists and scale up in the US market. Between 2008 and 2021, close to 30% of the "unicorns" founded in Europe – startups that

[32] Draghi Report, Part A at 5.

> went on the be valued over USD 1 billion – relocated their headquarters abroad, with the vast majority moving to the US.[33]
>
> The final building block is the will to reform the EU's governance, increasing the depth of coordination and reducing the regulatory burden.
>
> Regulation is seen by more than 60% of EU companies as an obstacle to investment, with 55% of SMEs flagging regulatory obstacles and the administrative burden as their greatest challenge.[34]
>
> Regulatory barriers to scaling up are particularly onerous in the tech sector, especially for young companies.
>
> The net effect of this burden of regulation is that only larger companies – which are often non-EU based – have the financial capacity and incentive to bear the costs of complying. Young innovative tech companies may choose not to operate in the EU at all.[35]

The Draghi Report drills down further on the intersection of technology and regulation in the EU by highlighting both the promise of artificial intelligence (AI), and how prior regulations imposed on similar digital technologies may stifle AI in the EU:

> Finally, while the ambitions of the EU's GDPR and AI Act are commendable, their complexity and risk of overlaps and inconsistencies can undermine developments in the field of AI by EU industry actors. The differences among Member States in the implementation and enforcement of the GDPR (as detailed in the Governance Chapter), as well as overlaps and areas of potential inconsistency with the provisions of the AI Act create the risk of European companies being excluded from early AI innovations because of uncertainty of regulatory frameworks as well as higher burdens for EU researchers and innovators to develop homegrown AI. As in global AI competition 'winner takes most' dynamics are already prevailing, the EU faces now an unavoidable trade-off between stronger ex ante regulatory safeguards for fundamental rights and product safety, and more regulatory light-handed rules to promote EU investment and innovation, e.g. through

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[33] *Id.*

[34] *Id.* at 18.

[35] *Id.* at 30.

> sandboxing, without lowering consumer standards. This calls for developing simplified rules and enforcing harmonised implementation of the GDPR in the Member States, while removing regulatory overlaps with the AI Act [as detailed in the Governance Chapter]. This would ensure that EU companies are not penalised in the development and adoption of frontier AI. With the DMA and DSA, the EU has also adopted pioneering legislation to ensure that digital competition and fair online market practices are enforced. This aims to protect smaller innovators and players from the dominance of Very Large Online Platforms, and to safeguard citizens, creators and IP holders from lack of accountability by the responsible platforms. While it is early to fully gauge the impact of these landmarks regulations, their implementation must avoid producing administrative and compliance burdens and legal uncertainties as the GDPR's and must be enforced within shorter timeframes and more stringent processes for compliance provisions.[36]

Yet the EU appears to be heading into a similar brick wall of space regulation.

As a predominantly American think tank, one might think that we'd be fine with Europe lagging behind in outer space development, remaining at best a runner-up to the US in moving out into the high frontier. Just the opposite.

While the EU and US can have strong differences in many areas of policy, our alignments far exceed those disagreements. When it comes to outer space development, to date, our disagreements have been small, while our alignment has been close, especially when compared with our mutual adversaries, notably Russia and China. Only by working together can Western democracies ensure that the rules of the road for outer space reflect the centuries of our shared values, and only such an approach to space governance can unleash the full potential of outer space to improve life here on Earth.

C. The Draft EU Space Act's Broad Reach Would Require Virtually All US Space Companies to Implement EU Requirements Across Their Operations and Creates the Equivalent of GDPR in Space

The Draft Act effectively anchors US space companies to European soil in a way that ensures that the EU regulations will have to be the prime governance regime for their

[36] Draghi Report, Part B at 79.

operations in space, even if the footprint of the US company in the EU is very small. Specifically, US entities:

1) Will have to designate legal representatives in the EU and thus submit to the jurisdiction of the EU.[37]

2) Will have to subscribe to an EU-sanctioned Collision Avoidance Space Service.[38]

3) Will have to calculate the "environmental footprint of their space activities throughout the lifecycle of space missions."[39] This certificate "should be issued by a qualified technical body for space activities carrying out the verification

[37] *Id.* at 18, Finding 26 ("All space services providers established in a third country should designate in writing one or more legal representative(s) in the Union, depending on their commercial needs and organisational requirements. Such legal representatives in the Union should be endowed with all necessary powers and resources to cooperate with the relevant authorities, the Commission and the Agency, on all aspects that are needed for the receipt of information and of decisions related to the compliance with, and enforcement, of this Regulation.").

[38] *Id.* at 23, Finding 59 ("Spacecraft CA space services require the capacity of the spacecraft to precisely transmit its position. Trackability requirements should be developed to enhance the public services provided by the Union Space Surveillance and Tracking Partnership (EU-SST) and to save time and money used by such tracking services to determine the orbital position precisely. The ability to track spacecraft should be ensured both at spacecraft and at ground segment level."); *id.*, Finding 60 ("Due to increased debris and traffic in orbit, the use of a CA space service is a must have for all spacecraft. Such requirement is necessary for ensuring the day-to-day station keeping of the spacecraft. A mandatory subscription to a CA space service should be at the very core of the space safety requirements. As a result, the entity in charge of delivering the CA space service would need to demonstrate certain capabilities."). *See also id.* at 24 (Finding 62) ("Developed as part of the SSA component, under Regulation (EU) 2021/696 of the European Parliament and the Council, the EU-SST Partnership, or any successor entity, using their sensors and well-developed know-how, has demonstrated its ability to manage a high number of spacecraft and therefore suitability to be the Union CA space services provider entity, in charge of the CA space service"), indicating that a US entity might be required to pay the EU-SST service for collision avoidance services, even if the entity was an experienced operator with well-trained staff fully versed in SSA and orbital collision avoidance protocols.at 24; Finding 62 ("Developed as part of the SSA component, under Regulation (EU) 2021/696 of the European Parliament and the Council, the EU-SST Partnership, or any successor entity, using their sensors and well-developed know-how, has demonstrated its ability to manage a high number of spacecraft and therefore suitability to be the Union CA space services provider entity, in charge of the CA space service"), indicating that a US entity might be required to pay the EU-SST service for collision avoidance services, even if the entity was an experienced operator with well-trained staff fully versed in SSA and orbital collision avoidance protocols.

[39] *Id.* at 30, Finding 96.

and validation of the calculation of the environmental footprint of space activities, to attest it.[40] Such an entity does not exist.[41]

4) Could face the possibility of EU investigators inspecting its facilities outside of the EU.[42]

5) Potentially face regulatory discrimination in that the Draft EU Space Act allows the Commission to waive virtually any of its rules for entities it favors.[43]

We've seen this script before: the EU steps in to regulate an inherently international ecosystem, effectively forcing the rest of the world to comply with their regulations as a prerequisite for doing business in the EU. The General Data Protection Regulation (GDPR) is such an example. Implemented ostensibly to provide data security for EU

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[40] *Id.*

[41] *Id.*, Finding 97 ("To limit the environmental impact of space activities and to encourage their sustainability, the Commission should develop a detailed methodology for calculating the environmental footprint of space activities, based on scientifically sound assessment methods or international standards, such as those outlined in the Commission Recommendation on the use of Environmental Footprint methods, with a view to facilitating comparison among space systems."); *id.* at 35, Finding 133 ("In the area of environmental sustainability, the Commission should further specify, by implementing acts, rules including a specific methodology for the calculation and verification of the environmental footprint of space activities.").

[42] *See id.* at 33, Finding 119 ("Therefore, the Commission and the Agency should have the power to request information and carry on investigations and on-site inspections."); *id.*, Finding 123 ("Where the Agency or the Commission find serious indication of existence of facts liable to constitute one or more infringements to this Regulation, they should carry out investigations in full respect of the rights of defence of the concerned Union space operator ***or third country space services provider***." (emphasis added); *Id.* at 58, Art. 30(3) ("Competent authorities shall have at least the following investigative powers: … (b) to obtain access to premises, land and means of transport, including to any data processing equipment and means"); *id.* at 72, 73, Art. 50 & 51 ("Investigations").

[43] *Id.* at 36, Finding 135 ("To ensure uniform conditions for the implementation of this Regulation, implementing powers should be conferred on the Commission to grant, on the basis of a detailed assessment, equivalence decisions, to grant derogations for launchers where a public interest condition is met, to allow a third country public entity to provide space services or space-based data in the Union until the conclusion of international agreements, to develop measures for launch collision avoidance, casualty risk at launch and re-entry, launcher space debris mitigation, spacecraft trackability, orbital traffic rules, spacecraft positioning in orbit, spacecraft space debris mitigation, spacecraft constellations, to specify the content and templates for reporting of significant incidents, to specify the method of calculation and verification of the EF of space activities and the templates and content for the reporting as regards the Environmental Footprint Declaration, to specify the design principles for SSIs and Composable and Exchangeable Functional Satellite Modules for ISOS, to lay down the common specifications covering the technical requirements for the e-certificate and for the dark and quiet skies, to lay down templates for the Union Space Label Schemes and to adopt new or amended Union Space Labelling Schemes. Those powers should be exercised in accordance with Regulation (EU) No 182/2011 of the European Parliament and of the Council.").

citizens, it has been criticized for its high compliance costs,[44] and the fact that enforcement efforts have been slow,[45] while privacy advocates wonder what the law has really achieved.[46] We have grave concerns that the EU may be following the same path with the Draft EU Space Act: creating a highly complex and multilayered system that imposes large regulatory costs but yields few benefits. Again, this approach ignores the inherent findings of the Draghi Report.

D. Compliance Costs May Be Seriously Understated and Their Impact on the Aerospace Sector Rests on Shaky Assumptions as to the Economic Benefits of the New Regulations

The Draft EU Space Act attempts to quantify regulatory compliance costs as follows:

> For the private sector, costs vary depending on the company. Satellite operators may face an increase of up to 10% in manufacturing costs for satellite platforms, depending on the space mission requirements. Launch service providers will incur additional expenses, with large scale providers potentially paying up to EUR 1.5 million for heavy launchers (Ariane 64 class) and SMEs up to EUR 200 000. Risk management costs for companies are estimated at 10% of their IT budgets, and authorisation requirements per product line will cost approximately EUR 100 000. Implementing the product environmental footprint category rules (PEFCRs) will cost EUR 4 000-8 000.[47]
>
> The costs for industry and particularly SMEs would derive from the need to meet technical and operational requirements, coupled with additional costs for administrative checks and enforcement. Overall,

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[44] Aryamala Prasad, *Two Years Later: A Look at the Unintended Consequences of GDPR*, REGULATORY STUDIES CENTER (Sept. 2, 2020), https://regulatorystudies.columbian.gwu.edu/sites/g/files/zaxdzs4751/files/downloads/Commentaries/GW%20Reg%20Studies%20-%20GDPR%20Two%20Years%20Later%20-%20APrasad--.pdf.

[45] Glyn Moody, *The EU's GDPR Is 5 Years Old and Still Not Working Properly: How Can It Be Fixed?*, PRIVATE INTERNET ACCESS (May 18, 2023), https://www.privateinternetaccess.com/blog/gdpr-still-flawed-after-five-years/.

[46] Akshaya Asokan & Anna Delaney, *5 Years of GDPR: Criticism Outweighs Positive Impact*, BANK INFO SECURITY (May 25, 2023), ("Despite the large sum of penalties, privacy and civil rights organizations maintain that the law has failed to achieve the intended goal of safeguarding European citizens' data, especially from big tech companies.").https://www.bankinfosecurity.com/-a-22156 ("Despite the large sum of penalties, privacy and civil rights organizations maintain that the law has failed to achieve the intended goal of safeguarding European citizens' data, especially from big tech companies.").

[47] Draft EU Space Act at 7 (Explanatory Memorandum).

> these alterations are likely to increase the administrative burden and costs across the industry, including for SMEs. Manufacturing costs could rise by 3% to 10%. This impact could be mitigated by: (i) the effect of the supporting measures and (ii) the proportionality embedded in the rules (to take account, for example the size of the companies, the criticality of the mission or the orbit).[48]

Nowhere does the Draft EU Space Act provide additional information as to how these compliance costs were calculated. Some commentators warn that even if the Draft Act authors are correct in their estimation of the costs of regulatory compliance, those costs may damage the aerospace industry.[49] Others point out that some regulatory costs seem to disproportionately impact US-based aerospace companies.[50]

Most important, the Draft EU Space Act's authors waive off these costs by claiming a net economic benefit that will result from a projected 50 percent decrease in orbital debris. [51] They provide no firm evidence of how these new regulations would

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[48] *Id.* at 8.

[49] Sara Dalledonne, *Bold Words, Blurred Lines: A Reflective Look at the EU Space Act*, ESPI (Aug. 1, 2025), https://www.espi.or.at/briefs/bold-words-blurred-lines-a-reflective-look-at-the-eu-space-act/ ("Among others, one crucial concern is represented by the cost increase. With manufacturing costs projected to rise by up to 10% and launch service providers facing increases of up to 20%, European companies will be further challenged, especially given the ongoing profitability pressures across much of the space sector. When assessing the proportionality between costs or burdens and expected benefits, it's essential to consider not only the direct financial impact but also the perceived burden. Excessive or unclear requirements risk disincentivising innovation and entrepreneurship, particularly in a sector where speed, agility and risk-taking are critical to growth."); Thao Pham & Francesco Casaril, *Regulating the Final Frontier: Why the EU Space Act Matters,* CELIS (July 10, 2025), https://www.celis.institute/celis-blog/regulating-the-final-frontier-why-the-eu-space-act-matters/. ("According to the Commission's own estimates, companies may face up to a 10% increase in manufacturing costs, €4,000 to €8,000 for implementing the product environmental footprint rules, and around €100,000 per product line for authorisation requirements. Although the proposal mentions support mechanisms (Articles 109-111), no concrete measures are outlined. Without reasonable, targeted assistance, many firms may be forced to scale back or even consider relocation, particularly given that around 15% of EU space startups are backed by US-based venture capital.").

[50] Chamber of Progress, Comment on NOAA Office of Space Commerce and Department of State's Office of Space Affairs Consultation on the EU Space Act (Aug. 7, 2025), https://progresschamber.org/wp-content/uploads/2025/08/ChamberofProgress_EU-Space-Act-_Comment.pdf.

[51] *Impact Assessment Report Accompanying the document Proposal for a Regulation of the European Parliament and of the Council on the Safety, Resilience and Sustainability of Space Activities in the Union*, at 50 (June 25, 2025), https://op.europa.eu/en/publication-detail/-/publication/efb81f6a-5283-11f0-a9d0-01aa75ed71a1/language-en ("Assuming that a legislative act for safe, resilient and environmentally sustainable space activities would allow for a 50% reduction of space debris over the

accomplish this, nor how a reduction in overall space debris directly benefits individual aerospace companies.[52]

E. Creating Separate and More Onerous Regulations for "Giga-Constellations" Singles out US Operators

The Draft EU Space Act creates a wholly new definition: "giga constellations,"[53] and proposes heightened regulatory burdens on operators of such large satellite systems. In practice, these heightened burdens will fall entirely on non-EU providers who, as noted above, would qualify as "union space operators." The largest proposed satellite constellation based in the European Union is IRIS, with a projected satellite count of 290 by 2030[54]—nowhere near the threshold of 1000 satellites needed to qualify as a giga-constellation. Only one company currently operates such a constellation: Starlink. The company that is closest to deploying such a constellation is Amazon's Kuiper. Both are American. Effectively, the Act would target American satellite companies in much the same way that the Digital Services Act and Digital Markets Act target American tech platforms.[55]

The Act imposes a unique burden on these companies:

> Union space operators of a giga-constellation shall provide to the competent authority, during the spacecraft design and operation, a plan

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next 10 years, the initiative would benefit satellite operators, enabling an annual benefit of EUR 677.5 million, completely offsetting the costs driven by the higher requirements stemming from the law.").

[52] Laura Cummings & Ester Latorre, *The EU Space Act: Une Révolution*, NAT'L L. REV. (July 28, 2025), https://natlawreview.com/article/eu-space-act-une-revolution ("The draft Act's impact assessment concludes the regulations strike a fair balance because the higher costs driven by requirements of the Act would be 'completely' offset by the annual benefits. However, this tradeoff (costs offset by benefits) relies on the following: 'The main assumption taken to carry the cost-benefit analysis was that the legislative act would reduce the amount of debris by 50% by 2034 due to increased sustainability of space activities.' This assumption is significant. It is not that the Act would slow the rate of growth of debris populations; it is that the Act would facilitate elimination of half the current debris catalogue (i.e., amount of debris) in 10 years. If the main assumption underlying the Act's cost-benefit analysis is unrealistic, then the cost-benefit analysis is flawed. More specifically, if the Act cannot prompt a 50% reduction in the total orbital debris population in 10 years, then the annual benefits would be less than claimed and may no longer 'completely' offset the Act's costs.").

[53] Draft EU Space Act at 39, Title I, Art. 5(5) ("'giga constellation' means a constellation that contains at least 1000 operational spacecraft").

[54] *Largest satellite constellations*, FUTURETIMELINE.NET (June 20, 2025), https://futuretimeline.net/data-trends/23-largest-satellite-constellations.htm.

[55] The only non-European Very Large Online Platform or Search Engine covered by the Digital Services Act is Booking.com. *Supervision of the Designated Very Large Online Platforms and Search Engines Under DSA*, EUROPEAN COMM'N, https://digital-strategy.ec.europa.eu/en/policies/list-designated-vlops-and-vloses (last updated July 14, 2025).

> evidencing the availability of propellant necessary to tackle the high number of manoeuvres related to the anticipated number of required collision avoidance."[56]

There is scant justification for treating larger satellite systems differently from a regulatory perspective. Indeed, on a per-satellite basis, operators of larger satellite systems probably need far *less* regulatory oversight. Their systems are engineered to fly in perfect orbital formations to maximize Earth coverage.[57] They know where all their satellites are at any given time and can move them rapidly when needed. Because they have on-orbit spares,[58] and their satellites are mass-produced for far less money than other satellites,[59] they can readily deorbit any satellite that shows signs of failure. Unlike so many scenarios where other satellite operators push the operational lives of their satellites far beyond their design lives,[60] NGSO constellation operators have a proven track record of being far better orbital stewards than governments or smaller operators, whose entire scientific or economic hopes ride on a single satellite—and thus have a strong incentive to keep their satellites in operation long past the point when they can safely deorbit them.[61]

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[56] Draft EU Space Act at 85, Art. 73(3).

[57] *See, e.g.*, StarWalkApp, *Almost 6,000 Starlink satellites in orbit! (2024)*, YOUTUBE (Jan. 31, 2024), https://www.youtube.com/shorts/Z_ThDsHPMzg.

[58] GOES-R Series Data Book at v, GOES-R (May 2019), https://www.goes-r.gov/downloads/resources/documents/GOES-RSeriesDataBook.pdf#:~:text=Two%20GOES%20satellites%20remain%20operational%20at%20all,four%20near%2Dinfrared%20channels%2C%20and%20ten%20infrared%20channels.

[59] TechFreedom, *Bring on the space barons*, MEDIUM (Sept. 14, 2021), https://medium.com/@TechFreedom/bring-on-the-space-barons-e425129fbff6 ("What Musk has going for him is not only SpaceX's much cheaper launches, but the price of space hardware itself. Each Starlink satellite costs only $500,000. That represents a 98 percent reduction of the cost on a price-per-kilogram basis as compared to traditional telecommunications satellites — a two-orders of magnitude reduction. The key, as with every other innovative product, is mass production."). *See also* Comments of TechFreedom in Expediting Initial Processing of Satellite and Earth Station Applications & Space Innovation, IB Docket Nos. 22-411 & 22-271 (Mar. 3, 2023), https://techfreedom.org/wp-content/uploads/2023/03/TechFreedom-Comments-Satellite-Streamlining-3-3-23.pdf.

[60] *See* James E. Dunstan, *Do we care about orbital debris at all?*, SPACENEWS (Jan. 30, 2018), https://spacenews.com/op-ed-do-we-care-about-orbital-debris-at-all/.

[61] *See, e.g.*, the discussion of the of ESA's Envisat in Dunstan, *Space Trash*, *supra* note 9, at 60-61 (footnotes omitted):

> In 2002, ESA launched Envisat, an 8,000 kilogram Earth observation satellite into the highly crowded 790 km polar orbit. At 26 meters x 10 meters, by 5 meters, it is one of the largest satellites orbiting Earth. It had an expected operational life of five years, but continued to operate for an additional five years. In April of 2012, ground controllers

F. The Act Itself Should Declare That US Regulatory Systems Meet the Definition of "Equivalence"

Like the GDPR,[62] the Draft EU Space Act contemplates the recognition of the adequacy of foreign regulatory compliance and thus reciprocal treatment of foreign-licensed operators:

> Certain third-country jurisdictions may adhere to high levels of safety, resilience and environmental sustainability of space activities and as such apply safety, resilience and environmental sustainability requirements similar to those laid down in this Regulation.[63]
>
> In these cases, a mechanism of equivalence is to ensure the recognition of a level of protection comparable to what is required under this Regulation. Thus, where an assessment has been carried out by the Commission, in relation to the applicable legal framework of a third country and the legally binding rules applicable in that third country, deemed to be equivalent to the requirements laid down in this Regulation, the compliance of the space services providers established in that third country should be established on that basis. Such space services providers should be able to provide space-based data and space services in the Union based on an equivalence decision to be adopted by the Commission.[64]

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lost contact with the satellite. Although being operated well beyond its expected operational life, no efforts were made to deorbit the satellite, move it to a safer orbit, or safe the fuels and batteries onboard. It is estimated that the satellite will remain in orbit, and a danger to space navigation, for between 100 and 150 years. ESA's response to why nothing was done to prepare Envisat for its inevitable end of life? According to one report, "ESA officials insist that the international guidelines on disposal of debris were not in force when Envisat was designed." So apparently, the international community will have to wait decades or more to even begin to slow the increase of orbital debris if spacefaring nations take the position that the orbital debris mitigation guidelines only apply to satellites designed after 2007.

[62] GDPR art. 45.

[63] Draft EU Space Act, Finding 27.

[64] *Id.*, Finding 28.

The United States has one of the most comprehensive regulatory regimes for outer space activities.[65] For example, the FCC has led the world in regulating orbital debris.[66] Since virtually every US company delivering "space services and space-based data generated through the use and operation of space infrastructure"[67] will require an FCC license, that license should suffice and allow US companies to register with the EU Commission without full regulatory review. The final Act should therefore include a blanket equivalency determination for any US company which has an FCC license which has included an orbital debris assessment.[68]

G. The Act Should Relieve Experienced US Operators from the Requirements of Hiring an EU-Based Collision Avoidance Consultant

Requiring demonstration of the operational ability to avoid collisions is a noble idea, in theory. But the EU Draft Space Bill engages in protectionism by requiring foreign entities to hire an EU-sanctioned Collision Avoidance (CA) company to provide Space Situational Awareness (SSA) and other services.[69] For some small US companies this might be helpful, but for large US operators, this requirement is unnecessary, and would add an additional layer of regulatory cost and operational distraction which might actually cause a collision. Established operators such as Starlink and Kuiper already have in-house capabilities for SSA and real-time collision avoidance maneuvers.[70] Adding another entity into the mix to decide whether, often very quickly, to move a satellite to avoid a potential collision might slow the process, introduce error into that decision making process, and ultimately result in a collision. Worse still, the

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[65] *See supra* note 9.

[66] *See generally* Orbital Debris (Feb. 21, 2024), https://www.fcc.gov/space/orbital-debris; Space Innovation & Mitigation of Orbital Debris in the New Space Age, Second Report and Order, IB Docket Nos. 22-271 & 18-313 (Sept. 30, 2022), https://docs.fcc.gov/public/attachments/FCC-22-74A1.pdf (reducing the time from satellite end of life to passive reentry from 25 to 5 years); Mitigation of Orbital Debris in the New Space Age, Order on Reconsideration, IB Docket No. 18-313 (Jan. 26, 2024), https://docs.fcc.gov/public/attachments/FCC-24-6A1.pdf.

[67] Draft EU Space Act, Explanatory Memorandum at 4.

[68] As discussed *infra* Section III, because non-US companies can receive "market access" authorizations without undergoing the full FCC licensing review process, any EU equivalency decision should extend only to US licensees, and not non-US entities which have received an FCC authorization to conduct business in the United States.

[69] Draft EU Space Act.

[70] *See, e.g.*, Tereza Pultarova, *SpaceX Starlink satellites had to make 25,000 collision-avoidance maneuvers in just 6 months*, SPACE (July 6, 2023), https://www.space.com/starlink-satellite-conjunction-increase-threatens-space-sustainability (since 2019 SpaceX has conducted over 50,000 collision avoidance maneuvers).

Draft EU Space Act implies that the CA entity might be able to overrule the decision of a space object operator:

> Any efficient reaction to a HIE Alert between two different spacecraft necessitates a dialogue between the involved spacecraft operators. To ensure that such dialogue can be initiated quickly, the CA space services provider should serve as facilitator, by holding the different points of contacts for Union spacecraft operators.
>
> Due to the increasing number of HIE alerts, Union spacecraft operators should be able to react to such alerts more frequently. Upon receipt of a HIE alert, the collision avoidance space service provider would propose a list of actions to the Union spacecraft operator. To facilitate the response time for the collision avoidance service provider, a standardised procedure on rules of the road should be established.[71]

In what appears to be a slight conflict between the Findings and the proposed regulations, Title II, Article 16 specifies that the CA space services requirement may be waived in the event that the Commission has adopted an equivalence decision.[72]

Thus, the new EU Act should make clear that any equivalence decision related to US-licensed space operators contains an explicit waiver of the CA space services requirement. Failing that, or in addition, the Act should waive the requirement that a US-based space object operator subscribe to an EU-based CA space service provider in the event that the US entity can show that it is fully licensed by the FCC and has an established track record of operating more than ten satellites for a total operating period of more than three years.

H. The Act Should Clearly State That EU Authorities Have No Rights to Inspect Non-EU Facilities

As stated above,[73] the Draft EU Space Act grants broad investigatory powers in both the "Commission" and the "Agency." These powers include the right to on-site inspections.[74] While Article 51's title of "on-site inspection in the Union" might make it appear that the EU is *not* claiming extraterritorial rights to inspect, other provisions,

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[71] Draft EU Space Act, Findings 104 & 105.

[72] *Id.*, Title II, Art. 15 ("Third country space operators that are established in a third country for which the Commission has adopted an equivalence decision, in accordance with Article 105, shall be presumed to comply with the requirements laid down in Article 15.").

[73] *See supra* note 42 and associated text.

[74] Draft EU Space Act, Art. 50 & 51.

both in the Findings,[75] and in Article 50, have no such territorial limitation. The final Act should make clear that the EU does not contemplate demanding on-site investigations of US facilities outside the EU.

Even investigations in EU facilities of US-based operators subject to these regulations raise significant problems. Under the US International Traffic in Arms Regulations (ITAR),[76] American companies are prohibited from allowing non-US citizens to inspect their facilities, even if located within EU territory. This critical issue must be harmonized, or it could force US entities to cease all operations within the EU.

I. Reflectivity Requirements Proposed in the Regulations Currently Are Not Possible for Most NGSO Systems

In order to combat light pollution for casual night observers and astronomers, Article 72(2) proposes to limit the visual magnitude of each spacecraft to a factor of the 7th magnitude.[77] That brightness, according to one source, equates to "[t]he dimmest objects we can see with the naked eye,"[78] or as the U.N.'s Committee on the Peaceful Uses of Outer Space (COPUOS) has stated, "At 7th magnitude, satellites should be invisible to the unaided eye."[79] But even at that, COPUOS notes, "It is essentially impossible to avoid all effects on astronomical science, as large telescopes can see objects millions of times fainter than this."[80]

There are two significant problems with placing a specific limit on visual magnitude. First, there is as yet no clear international consensus on light pollution and what the proper magnitude value should be. While some advocate for limiting the reflectivity of satellites to the 7th magnitude (*i.e.*, below the threshold discernable by the naked eye), This is currently only a recommendation by the International Astronomical Union

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[75] *See supra* note 42 and associated text.

[76] International Traffic in Arms Regulations, 22 C.F.R. §§ 120 et. seq.

[77] Draft EU Space Act, Art. 72 ("The visual magnitude for spacecraft during the entire lifetime, including the design requirements on low reflectivity coating or shielding, shall be at least 7 magnitude.").

[78] *Magnitudes*, GLOBE AT NIGHT, https://globeatnight.org/magnitudes/ (last visited Aug. 14, 2025).

[79] Conference Room Paper on the Protection of Dark and Quiet Skies, COMM. ON THE PEACEFUL USES OF OUTER SPACE at 3 (Feb. 12, 2025), https://www.unoosa.org/res/oosadoc/data/documents/2025/aac_105c_12025crp/aac_105c_12025crp_22rev_3_0_html/AC105_C1_2025_CRP22Rev03E.pdf.

[80] *Id.*

(IAU), and is driven by the astronomy community.[81] As such, it is far from clear that the 7th magnitude figure is the correct one for regulatory purposes.

Second, while satellite operators are attempting to "darken" their satellites as much as possible, achieving a sub-7th magnitude visual brightness simply may not be possible throughout each satellite's complete orbit. As one recent study indicates, while efforts to reengineer Starlink satellites reduced significantly their overall brightness, there are specific points in a satellite's orbit (mainly when directly overhead of the observer and "when oriented toward the sun at low elevations where light is specularly reflected,") where a satellites reflectivity will be above the 7th magnitude.[82] Because this issue remains under significant study,[83] codifying the 7th magnitude standard is not warranted.

J. There Are No Current Scientifically Supported Methods for Measuring a Satellite System's Environmental Footprint

The Draft EU Space Act makes as a prime goal "reducing the environmental footprint of space activities and allows addressing in future potential new commitments of the Union under international conventions concluded in the area."[84] It is described as part of Europe's larger effort toward environmental protection:

> Since this Regulation is part of the Union comprehensive efforts to establish a robust policy framework for environmentally sustainable products, services and business models, it should complement the measures laid down in the Eco-design for Sustainable Products Regulation and the Circular Economy Action Plan framework. The Environmental Footprint studies in the context of this Regulation should in this sense support the development of improved eco-design practices and contribute to mapping energy and materials flows in the Union

[81] *Id.* at 4 ("Public workshops established a recommendation on the orbital height of constellations, but this was based exclusively on minimizing sunlight streaks in the dark sky for the largest professional observatories.").

[82] Phanindra Kandula et al., *Simulated impact on LSST data of Starlink V1.5 and V2 satellites* (June 25, 2025), https://arxiv.org/pdf/2506.19092.

[83] *See* Emma R. Hasson, *Can Astronomers and Satellite Operators Learn to Share the Sky?*, SCI. AM. (Aug. 7, 2025), https://www.scientificamerican.com/article/starlink-and-astronomers-are-in-a-light-pollution-standoff/.

[84] Draft EU Space Act, Explanatory Memorandum at 3.

> space sector, including strategic and/or critical raw materials and enabling higher supply chain resilience.[85]

The Act would impose new environmental regulations on any space operator wishing to do business in the EU in a way that has not been applied by any country.[86] The problem is that there are no current methods for calculating the environmental footprint of a space system, and the Draft Act admits as much:

> Methodologies for evaluating the impacts of space activities, for example the Life Cycle Assessment (LCA) or the environmental related Union policies and tools, such as the Product Environmental Footprint (PEF), are clearly underdeveloped today. Moreover, none of the general sustainability or environment-related frameworks, such as the Environmental, Social and Governance (ESG) framework, considers any of the specific and particularly complex environmental impacts of space activities.[87]

Given this uncertainty, the draft's estimated cost of compliance of €4,000-8,000 is little more than a guess. If there are no current mechanisms for complying with these regulations, how can the EU then predict that such compliance costs will be less than €8,000? [88] We urge the EU to not adopt specific regulations for evaluating the environmental footprint of space systems until the science has actually identified a mechanism for measuring such effects.

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[85] *Id.*, Finding 95, at 29.

[86] *See id.*, Findings 96-97 ("Space operators should consequently be required to calculate the environmental footprint of their space activities throughout the lifecycle of space missions. A certificate should be issued by a qualified technical body for space activities carrying out the verification and validation of the calculation of the environmental footprint of space activities, to attest it. To limit the environmental impact of space activities and to encourage their sustainability, the Commission should develop a detailed methodology for calculating the environmental footprint of space activities, based on scientifically sound assessment methods or international standards, such as those outlined in the Commission Recommendation on the use of Environmental Footprint methods, with a view to facilitating comparison among space systems."). *See also* Article 96 ("Environmental footprint of space activities").

[87] *Id.*, Explanatory Memorandum at 3 (footnotes omitted). *See also id.,* Finding 133 ("In the area of environmental sustainability, the Commission should further specify, by implementing acts, rules including a specific methodology for the calculation and verification of the environmental footprint of space activities.").

[88] Indeed, the use of this specific figure in the cost estimation calls into question the entirety of the EU's cost-benefit analysis.

III. Consequences of the EU Denying Equivalence and Requiring Full Compliance by US Entities

If the EU does not demonstrate that it will treat US-based aerospace companies with respect and reciprocity, this could lead to direct retaliation by the United States. For example, foreign-licensed satellite communications companies are able to conduct business in the United States through a process known as "market access" at the Federal Communications Commission.[89] This process actually grants such foreign competitors a quicker and less onerous regulatory path than is provided to US-based companies.[90] These procedures stemmed from the 1997 World Trade Organization (WTO) Fourth Protocol to the General Agreement on Trade in Services (WTO Agreement).[91] The US has always read these provisions in such a way that it has bent over backwards to treat foreign-entities at least as well as US-based companies.[92]

If the EU embarks on a regulatory regime for outer space that handicaps US companies vis-à-vis its citizens, the US may rethink how it approaches its obligations under the WTO Basic Telecom Agreement at the same time it reconsiders US participation generally in the WTO.[93] As it relates to outer space and satellite systems, the FCC would be fully justified in revising its market access rules in response to the additional burdens that US-based aerospace companies will encounter in entering the EU market

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[89] *See, e.g.*, *Part 25 Space Station License and Market Access Checklist* (Oct. 27, 2023), https://www.fcc.gov/part-25-space-station-license-and-market-access-checklist.

[90] *See* TechFreedom, Comments on Expediting Initial Processing of Satellite and Earth Station Applications & Space Innovation, IB Docket Nos. 22-411 & 22-271, at 12 (Mar. 3, 2023), https://techfreedom.org/wp-content/uploads/2023/03/TechFreedom-Comments-Satellite-Streamlining-3-3-23.pdf ("Processing of applications for an FCC license should mirror as closely as possible the processing of petitions for market access, and at no time should market access petitions be subject to less stringent, or different, review."); TechFreedom, Comments in the Matter of National Orbital Debris Research and Development Plan, 12-14 (Jan. 2021), https://techfreedom.org/wp-content/uploads/2022/01/TechFreedom-Comments-OSTP-Orbital-Debris-Strat-Plan.pdf; Letter from TechFreedom to FCC (Nov. 2, 2020), https://techfreedom.org/wpcontent/uploads/2021/03/TechFreedom-Letter-to-FCC-11-2-20.pdf (warning of the danger of the FCC granting "market access" to a company proposing very large satellites and licensed by Papua New Guinea).

[91] General Agreement on Trade in Services by the Fourth Protocol to the GATS. Fourth Protocol to the General Agreement on Trade in Services (WTO 1997), 36 I.L.M. 354, 366 (1997)(the "WTO Basic Telecom Agreement").

[92] *But see* Telesat Canada v. Fed. Commc'ns Comm'n, No. 20-1234 (D.C. Cir. 2021) (Court upheld the FCC extending regulatory fees to foreign satellite operators who have received market access authorizations).

[93] *See* Mohammed Saideffine, *Trump leads wholesale withdrawals from international organisations*, EURONEWS (Aug. 2, 2025), https://www.euronews.com/2025/02/07/one-by-one-trump-leads-wholesale-withdrawals-from-international-organisations.

under these draft regulations. An all-out space trade war between the US and the EU is not out of the question.

CONCLUSION

Outer space inherently is international. Any government's attempt to benefit its own people, or worse, force foreign companies to comply with its regulations for aspects of their business that are wholly outside its territorial jurisdiction is ultimately harmful to the international rule of law. We urge the EU not to take its mistakes with the GDPR and digital regulation and launch them into space. To do so would likely result in a 2035 Draghi-like report bemoaning the lack of productivity and competitiveness of the EU aerospace sector. Past will be prologue.

Again, we appreciate the opportunity to share our thoughts on these vital issues.

Respectfully submitted,

_____/s/_____
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