

Title: International Arbitration for Outer Space Disputes: Current Critical Needs and Emerging Practice

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Abstract: This article examines the extent to which arbitration can advance the sustainability of outer space activities by enhancing legal and operational certainty in the resolution of space-related disputes. As the participation of States and private actors in outer space expands, disputes concerning liability for space activity impacts (including space debris), contractual performance, and other operational matters become increasingly complex. Arbitration offers a recognized, flexible measure of dispute resolution that is consistent with relevant legal frameworks. These include UN Charter Article 33, Article III of the Outer Space Treaty, aspects of the 1972 Liability Convention, and the Permanent Court of Arbitration's Optional Rules for Arbitration of Disputes Relating to Outer Space Activities. Despite its growing inclusion in contracts, investment treaties, and insurance arrangements, arbitration's contribution to space sustainability has received limited scholarly attention, largely because of the confidentiality of proceedings and awards. Through analysis of applicable legal frameworks and review of publicly available information about selected arbitral awards, including the recent *NorthStar v. Spire* arbitration, this article argues that embedding arbitration more systematically within international agreements, commercial contracts, and national licensing regimes can strengthen space governance and support the long-term sustainability of space activities by enhancing stakeholders' legal and operational certainty.

1. Introduction and Presentation of the Problem

As outer space becomes an increasingly vital and critical arena for both nation-state activity and commercial enterprise, the quantity and diversity of disputes among space actors and stakeholders is growing. The dramatic surge in space activity over the past decade has created complex operational, contractual, legal and regulatory challenges which increasingly require robust and innovative dispute resolution mechanisms that can address unique issues of space activity and liability. A specialized, and efficient dispute resolution mechanism is fast becoming a critical, real-time need of stakeholders, as they seek to reduce operational, legal, and regulatory risk.

This article argues that international arbitration stands out as an advantageous measure for the resolution of space disputes, and can contribute significantly to long-term outer space governance by boosting legal clarity, certainty, and reliability.¹ Arbitration, which is based on the prior agreement of the parties to the dispute that its outcome will legally bind them, has a robust track record for dispute resolution in a variety of contexts of human activity, and is especially effective in cross-border disputes involving multiple legal jurisdictions.² Overall, the arbitral process offers disputing parties a high degree of expediency and expertise, and can be tailored to the unique legal, technical and practical challenges of outer space ventures, as detailed in Section 5 below.

¹ Roger Ni, “Space law under pressure: a history of disputes and emerging governance needs”, Global Arbitration Review (31 March 2026), <https://globalarbitrationreview.com/guide/the-guide-aviation-and-space-disputes/second-edition/article/space-law-under-pressure-history-of-disputes-and-emerging-governance-needs>.

² Ahmad Sulton & Abdillah Fikri, “The Role of International Arbitration in Resolving Cross-Border Commercial Disputes” (2025), *Justicia Insight*, 2(1), at 28.

Nonetheless, because of the confidentiality of most arbitral proceedings that have taken place with respect to space activities, space arbitrations have not yet been comprehensively researched.³ The core research question which will be explored in this paper is the extent to which the use of arbitration as a preferred mechanism for the resolution of space disputes supports space sustainability and governance. It will be argued that the leveraging of arbitration mechanisms in international agreements, contracts and national licenses for space activities can contribute significantly to the clarification of currently unresolved legal and regulatory issues of space law, and to the mitigation of operational risks inherent in the New Space economy.⁴ It will be further argued that when stakeholders can rely upon such a regulatory and contractual measure to bolster certainty regarding due compensation for liability claims, the sustainability of space activity is expanded.

It should be noted at the outset that in addition to arbitration, other mechanisms for dispute resolution in the framework of outer space activities are relevant to disputing parties. These include traditional court-based litigation under national space laws and regulations (such as the 2024 *Otero v. NASA* claim for space debris damage)⁵, diplomatic negotiations for state

³ See the initial research of and Viva Dadwal & Eytan Tepper, "Arbitration in Space-Related Disputes: A Survey of Industry Practices and Future Needs", Proceedings of the International Institute of Space Law (2019) at 159 [Dadwal and Tepper]; and Vivasvat Dadwal & Madeleine Macdonald, "Arbitration of Space-Related Disputes: Case Trends and Analysis" (2020) 63 Proc Int'l Inst Space L 33 [Dadwal & Macdonald].

⁴ Elizabeth Silbert, Carson Bennet & Viva Dadwal, "Pipelines to payloads: risk management lessons for the space economy", Space News, July 20, 2026.

⁵ Michael Sainato, "US family sues Nasa for \$80,000 in damages after space debris hits home", The Guardian, (22 June 2024) <https://www.theguardian.com/us-news/article/2024/jun/22/florida-family-sues-nasa-space-debris>; and Lauren Napier and Molly Doyle, "The law as a last line of defence when space debris hit home" (2025), Room, Issue 37, <https://room.eu.com/article/the-law-as-a-last-line-of-defence-when-space-debris-hit-home>.

parties (such as the Cosmos 954 dispute between Canada and the USSR⁶), technical cooperation,⁷ and, potentially, the innovative “space courts” such as those that are being established in Dubai.⁸ Review of these mechanisms is beyond the scope of this article, but is referenced in the Conclusion as one of the topics for further research insofar as they compare with arbitration’s advantages.

Likewise, this article does not include an analysis of the substantive space law that is applied by arbitral tribunals that carry out space-related arbitrations. The extensive literature and analysis regarding the current state of international space law and domestic space law – and the interaction between these two bodies of law - includes a diversity of approaches to their application, revision, and reform in the current geopolitical context.⁹ The focus in the present article is exclusively on the arbitral mechanisms that apply the substantive *lex lata*, whatever form it might take into the future.

⁶ See Protocol Canada–USSR (2 April 1981); Statement of Claim (23 January 1979), 18 ILM 899; B P Schwartz & M L Berlin, “After the Fall: An Analysis of Canadian Legal Claims for Damage Caused by Cosmos 954” (1981–82) 27 *McGill Law Journal* at 676.

⁷ See NASA, “Iridium 33/Cosmos 2251 Collision” (2009); and Ram Jakhu, “Iridium-Cosmos Collision and its Implications for Space Operations” (2010), *Yearbook on Space Policy 2008/2009*, Springer, at 254. Spectrum use issues are also resolved on a regular basis through technical cooperation between parties, sometimes leveraging the International Telecommunication Union Radiocommunications Bureau.

⁸ The United Arab Emirates, via its Future Foundation, launched a dedicated court in 2021 to deal with space-related disputes. The Courts of Space “signals [sic] to the international space community the intent of the UAE to play a leading role in advancing its judicial systems to specifically direct capacity and capability to commercial space related disputes.” (Dubai Future Foundation, “Space Disputes Guide, Edition 2”, no date). See also the proposal for a UN-backed space court in Ben Casey, “Justice for the New Frontier: How the United Nations Creates a Space Court” (February 7, 2022), available at SSRN: <https://ssrn.com/abstract=4028709> or <http://dx.doi.org/10.2139/ssrn.4028709>.

⁹ See, for example, Ram Jakhu & Steven Freeland (Eds.), *Manual on international law applicable to military uses of outer space (MILAMOS)* (2022), Montreal: McGill University; Steven Freeland, “Promoting safety and security: Challenges for the future governance of space activities” (2023), *Advanced Space Law* 12 at 63; and Ely Sandler, “Governing Outer Space: A Conference of the Parties for the Outer Space Treaty” (December 8, 2025), Cambridge MA: Belfer Center for Science and International Affairs.

2. Methodology, Structure and Aims

The research methodology upon which this article is based consists of a review of the use of arbitration in the context of outer space disputes between diverse types of space actors in a changing environment of space activities, proceeding to an analysis of the current arbitration regimes for outer space activities (treaties and intergovernmental agreements, space-related investment disputes, and commercial arbitration). The article continues with a brief literature review of arbitrations which have taken place and are publicly accessible, including the complex Devas-Antix arbitral award regarding the lease of S-band satellite spectrum,¹⁰ the 2011 Avanti- SpaceX arbitration for the Hylas-1 breached launch contract,¹¹ the *OneWeb v. Russia* arbitration that commenced in 2025¹², and the recently-concluded *NorthStar v. Spire* arbitration regarding the imposition of replacement costs when a Space-as-a-Service satellite failed to perform.¹³ The analysis of these arbitration proceedings is presented in terms of the typology of the space disputes submitted by parties to selected arbitral proceedings that have been published, according to five *loci* of the dispute along the

¹⁰ See the review and summary of the proceedings in Ata Turkfiliz, “Devas-Antrix Saga: A New Hope – Amici Curiae Brief (February 3, 2025), The American Review of International Arbitration, <https://aria.law.columbia.edu/devas-antrix-saga-a-new-hope-amici-curiae-brief/?cn-reloaded=1>; and *Devas Multimedia Private Limited v. Antrix Corporation Limited*, ICC Case No. 18051/CYK.

¹¹ “Avanti Wins Arbitration Award Against SpaceX”, SpaceNews, April 20, 2011, <https://spacenews.com/avanti-wins-arbitration-award-against-spacex/>.

¹² *OneWeb v. Russian Federation* (2025), convened under the arbitral clause of the Agreement Between the Government of the United Kingdom of Great Britain and Northern Ireland and the Government of the Union of Soviet Socialist Republics for the Promotion and Reciprocal Protection of Investments (1989).

¹³ Morris Robinson, “Satellite Buyers Have No Replacement Rights Under ICC Arbitration Ruling” (August 6, 2026), TechTimes, <https://www.techtimes.com/articles/323405/20260806/satellite-buyers-have-no-replacement-rights-under-icc-arbitration-ruling.htm>.

lifetime of the space asset: supply chain, launch, active operations, de-orbiting, and geopolitical constraints.

The structure of the article is as follows. Section 3 provides a brief review of the context of New Space activities, their operational risks, and new types of disputes that are likely candidates for arbitral resolution. Section 4 identifies the research problem that we aim to address: the advantages and challenges of implementing arbitral dispute resolution in the context of rapidly evolving contemporary outer space activities. Section 5 describes and analyzes arbitration as an effective measure for outer space dispute resolution, proposes a typology of arbitral disputes throughout the lifespan of the space asset, and includes a table of selected arbitral awards that have been conducted, organized according to this typology. Section 6 analyzes some overall trends in space arbitration based on these selected awards. In the Conclusion, several open issues and topics for future research are identified, and we revisit the central research proposition that the use of arbitration can serve as a measure to support the sustainability of space activities and innovation in space, by providing a reliable and efficient framework of legally clear and practical dispute resolution.

3. The Contemporary Space Ecosystem: “New Space”, New Disputes

Contemporary space activities undertaken by an increasing number of governmental, commercial, and hybrid actors have been popularly referred to as New Space. This

increasingly complex ecosystem is characterized by dramatic technological innovation, unprecedented financial investment, and a level of media awareness and engagement that recalls the initial forays of humankind into outer space during the 1960's. In the context of our analysis, the focus in this section is on those aspects of New Space that bring into play an increased need on the part of space actors for robust dispute resolution measures that can efficiently address the new typology of space-based disputes, in order to continue to enable and support innovative space activities.¹⁴

The technological foundations of New Space began to emerge in the early 2000s and have accelerated dramatically in the past decade. Several mutually reinforcing developments drove this acceleration. First, launch costs began to decline substantially through the commercialization of reusable launch vehicles. Global launch activity reached record levels during 2025, with 325 orbital launches and more than 4,500 spacecraft deployed worldwide.¹⁵ Commercial operators conducted approximately 87% of orbital launches during 2025, led by companies such as SpaceX, China Aerospace and Science and Technology Corporation (CASC), RocketLab, and Roscosmos. illustrating the ongoing shift in outer space activities from government-led to commercially led launch activity.¹⁶

¹⁴ Laura Yvonne Zielinski, "Eight Reasons Why Space Disputes Will Become More Frequent" (February 9, 2026), Kluwer Arbitration Blog, <https://legalblogs.wolterskluwer.com/arbitration-blog/eight-reasons-why-space-disputes-will-become-more-frequent/>.

¹⁵ BryceTech, "2025 Year in Review", <https://brycetek.com/reports/report-documents/global-orbital-activity-2025>.

¹⁶ *Ibid.* This development is supported by regulatory changes incentivizing private sector engagement with outer space, such as the White House Executive Order 14335 of August 2025 entitled "Enabling Competition in the Commercial Space Industry"; the United States Department of Defense "Commercial Space Integration Strategy", April 2, 2024; and the Netherlands *Space Activities Act of 2007* (extended in 2015), which establishes a licensing framework for private entities engaging in space activities.

Second, the miniaturization of satellites has significantly reduced manufacturing costs, while expanding mission flexibility: microelectronics enables sophisticated capabilities to be incorporated into spacecraft weighing only a few kilograms. Approximately 98% of spacecraft launched during 2025 had masses below 1,200 kg,¹⁷ and such small satellites carry out, *inter alia*, Earth observation, communications, navigation, and military defense missions. Their proliferation has dramatically impacted four characteristics of New Space: LEO orbital density, the sharply increased demand for launch services, the need for coordination of frequency use, and the monitoring of space traffic.

Third, leverage of increasingly sophisticated digital technologies has transformed spacecraft design and ongoing operations. The incorporation of digital dependency throughout the supply chain and the space asset lifespan has also sharply increased exposure to cyber-based risks and may result in disputes related to cyberattacks on space systems.¹⁸

Fourth, many governments (particularly in the West) shifted from internal ownership and management of space systems toward purchase of external, commercial services, causing a fundamental change in the supply-chain economics and incentivization of New Space technological developments.¹⁹

Fifth, and partially stemming from the previous point, the venture capital sector has come to view outer space as an attractive, investable technology sector which it has entered

¹⁷ BryceTech, *supra* note 15.

¹⁸ Deborah Housen-Couriel, “Cybersecurity threats to satellite communications: Towards a typology of state actor responses” (2016) *Acta Astronautica*, Volume 128, Nov.–Dec. 2016, at 409.

¹⁹ An example of this change was NASA’s Commercial Orbital Transportation Services program (NASA SP-2014-617, “Commercial Orbital Transportation Services” (2014)) and its subsequent Commercial Crew and Commercial Lunar Payload Services initiatives (<https://www.nasa.gov/commercial-lunar-payload-services/>).

aggressively: private sector investment in outer space for the year 2025 exceeded USD 540 billion – 79% of the global outer space economy, a 13% increase over 2024.²⁰ This final aspect leads to a brief summary of the changes that have taken place in the outer space economic ecosystem, which further impact the need for robust dispute resolution mechanism such as arbitration, given the increasingly steep opportunity costs of the non-resolution of disputes in the operational and financial contexts.

The transformation to private-sector investment has promoted the sustained growth of the global space economy: according to the 2026 Space Economy Market Report, the space sector is growing at more than 8% per annum and is set to exceed USD 640 billion in 2030.²¹ This current expansion has been accompanied by a significant redistribution of economic risk: historically, governments financed most space infrastructure directly, assuming both technological and financial risks associated with development. Contemporary procurement models increasingly allocate those risks to commercial providers, with governments often joining commercial actors as “consumers” of space assets and operational capabilities such as space transport, communications, navigation, information sharing hubs, satellite imagery, and launch services.

²⁰ Space Foundation, *The State of the Global Space Economy* (July 2026), at 2; Reuters, “Space sector eyes further investment growth in 2026 after record year,” (Jan 19, 2026); and Massimo Colombo, Alessandro Lucini-Paioni, & Bogdan Tofan, “Mapping venture capital investments in the (new) space economy with large language models: a comparative analysis of Europe and the United States” (15 March 2026), *Journal of Industrial and Business Economics*, Springer, <https://link.springer.com/article/10.1007/s40812-026-00401-7>.

²¹ The Business Research Company, “Space Economy Market Report 2026” (July 2026).

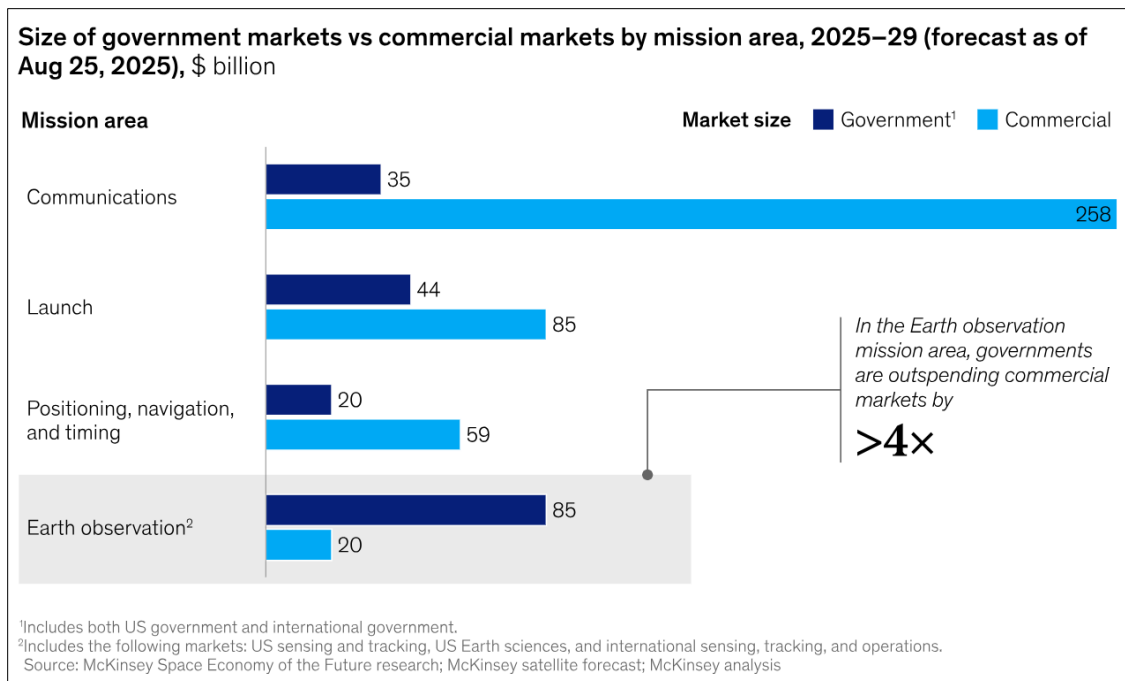
These changes in the economic and financial structure of outer space activities introduce new risks and potential sources of dispute between space actors. Silbert, Bennet and Dadwal characterize these new risks as follows:

[L]ong-term investments with high upfront costs repaid over years or decades; enduring state leverage (including through state-owned enterprises); exposure to political and geopolitical risk; intense regulatory oversight; national security sensitivities and reputational “social license” pressures.”²²

These growing gaps between government and commercial market shares globally are illustrated by Figure 1 below, which provides a comparison carried out by McKinsey in April 2026 for four key space mission areas: communications, launch, PNT, and earth observation.²³

²² Silbert, Bennet and Dadwal, *supra* note 4 at 2.

²³ Christian Rodriguez, Dale Swartz, Ryan Brukardt, Karl Hujsk & Katherine Ottenbreit, “New space, new rules: Commercial space markets are taking off” (April 13, 2026), McKinsey and Company.



To summarize this section, the diversification of space actors and the new types of space activities, enhanced innovation, and commercial competition has simultaneously introduced new forms of financial, operational, and regulatory risk: as a result, New Space has given rise to new types of disputes among space actors, a trend which is likely to continue as outer space activities increase in complexity.²⁴

4. Resolution of Disputes for Contemporary Outer Space Activities: What's the Problem?

Despite a long-standing regime for outer space activities based on the five multilateral treaties that were concluded in the 1960's and 1970's and several additional

²⁴ Zielinski, *supra* note 14.

intergovernmental agreements addressing aspects of space law,²⁵ substantive outer space law does not provide a specific, comprehensive regime for dispute resolution. In the event that a claim for damages does arise among States Parties to the OST and the 1972 Liability Convention (including “natural or judicial persons” who suffer damages and whose claims are adopted by the State Party), the latter does provide for treatment of the claim through diplomatic channels and, should these not bring resolution, by establishment of a Claims Commission.²⁶ Yet the Claims Commission has not been utilized since its entry into force in 1972 by the approximately 100 States Parties to the Liability Convention.

Nevertheless, as we shall see below, the use of arbitration to resolve outer space disputes, while not always specifically embraced by substantive space law, is recognized as a potential tool for dispute resolution. In the three types of sources reviewed – space treaties and intergovernmental agreements, investment treaties, and commercial space contracts - arbitration is either incorporated indirectly as a mechanism for dispute resolution (*via* Article III of the OST, for instance) or explicitly included (as in many commercial launch services agreements).²⁷ In addition to the legal and regulatory support for arbitration, this mode of

²⁵ A review of substantive international space law is beyond the scope of this article. See for example Manfred Lachs, *The Law of Outer Space: An Experience in Contemporary Law-Making*, Tanja Masson-Zwann and Stephen Hobe (Ed.'s), (Leiden-Boston: Nijhoff, 2010); and Nandasiri Jasentulyana, *International Space Law and the United Nations* (The Hague, London, Boston: Kluwer, 1999).

²⁶ See Articles VIII through XXII of the *Convention on international liability for damage caused by space objects* [Liability Convention], United Nations. (March 29, 1972), 961 U.N.T.S. 187 (entered into force September 1, 1972). <https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/liability-convention.html>.

²⁷ See, for example, Exhibit 10.1 of the Falcon 1e Commercial Launch Services Agreement filed with the Securities Exchange Commission on August 28, 2009. Article 22 refers disputes that cannot be settled by negotiation to the Commercial Arbitration Rules of the American Arbitration Association. (<https://www.sec.gov/Archives/edgar/data/1361983/000095012310069848/c04014exv10w1.htm>); and the

dispute resolution is especially appropriate for addressing the deeply technical characteristics of many outer space disputes, the need for cross-border jurisdiction and enforceability, and the priority of confidentiality of dispute proceedings.²⁸ As shown in the previous section, the economic and operational incentives for resolving contemporary space disputes are growing as the pace of space activities, innovation, and investment on the part of both nation-states and private stakeholders increases.

5. Arbitration as an Effective Measure for Outer Space Dispute Resolution

5.1 Defining arbitration and its attributes

Arbitration is a voluntary method of dispute resolution in which disputing parties refer their dispute to one or more decision-makers (“arbitrators”), either from a pre-determined registry or an *ad hoc* agreed listing. The parties agree ahead of time to be bound by the arbitrators’ decision (the “award”), which is then enforceable by a designated court of law.²⁹

The generic advantages of arbitration for disputing parties include a wide degree of control over the dispute resolution proceedings (venue, identity of the arbitrators, the issues to be resolved); its adaptability to multi-jurisdictional disputes; confidentiality of the proceedings

2007 Globalstar – Arianespace Launch Services Agreement (Article 24, <https://www.sec.gov/Archives/edgar/data/1376567/000119312507109540/dex101.htm?>).

²⁸ Dadwal and Tepper and Dadwal and McDonald, *supra* note 3.

²⁹ As discussed above, legal and regulatory changes to substantive space law have not yet been formally instituted at the international level, although they are discussed at the relevant international for a such as the UN’s Committee on the Peaceful Uses of Outer Space (“COPUOUS”), the United Nations Institute for Disarmament Research (“UNIDIR”), the UN Group of Governmental Experts on Transparency and Confidence-Building Measures in Outer Space that convened between 2011-2013 and submitted a report to the UN Secretary-General on July 29, 2013 (Group of Governmental Experts on Transparency and Confidence-Building Measures in Outer Space Activities, U.N. GAOR, 68th Sess. U.N. Doc A/68/189.), and the Open-Ended Working Group (OEWG) on “Reducing space threats through norms, rules and principles of responsible behaviours” which met between 2021-2023.

and the award; and the defined timetable for concluding the dispute – usually much shorter than court processes.³⁰ The costs of arbitrations vary, but are likely to be more predictable than court costs.

The arbitrators work in accordance with a transparent process – usually a codified framework of procedural rules endorsed by an arbitral institution – which permits the parties to intervene under defined circumstances that are known in advance. Examples of such institutions and rules include the Paris-based International Chamber of Commerce (ICC) Rules of Arbitration,³¹ the London Court of International Arbitration (LCIA) Arbitration Rules,³² and the globally-distributed International Centre for Dispute Resolution (ICDR), which is the international division of the American Arbitration Association and operates under the International Dispute Resolution Procedures.³³ In addition, the United Nations Commission on International Trade Law (UNCITRAL) has established arbitration rules which are widely used for trade and investment disputes.³⁴

5.2 Advantages of Arbitration for Space-Related Disputes

For space-related disputes, parties benefit from additional advantages. Arbitrators can be selected with the specific scientific, technical and regulatory expertise needed; expert

³⁰ After Dadwal and Tepper, *supra* note 3.

³¹ The ICC Rules were recently revised to include, *inter alia*, expedited arbitration procedures. See ICC, “2026 Arbitration Rules”, <https://iccwbo.org/dispute-resolution/dispute-resolution-services/arbitration/rules-procedure/2026-arbitration-rules/>.

³² LCIA, “Arbitration Rules 2020”, https://www.lcia.org//Dispute_Resolution_Services/lcia-arbitration-rules-2020.aspx.

³³ ICDR “Rules”, https://icdr.org/rules_forms_fees.

³⁴ UNCITRAL, Arbitration Rules [UNCITRAL Rules], 2010, <https://uncitral.un.org/en/texts/arbitration/contractualtexts/arbitration>.

witnesses can be employed to analyze factual complexity and risks of space operations; and *de facto* practice with respect to space activities may be considered by arbitrators, in addition to the applicable law.

For example, in the Permanent Court of Arbitration's *Optional Rules for Arbitration of Disputes Relating to Outer Space Activities*, which are based on the UNCITRAL Rules,³⁵ provision is made for: (a) "the particular characteristics of disputes having an outer space component involving the use of outer space by States, international organizations and private entities"; (b) "the public international law element that pertains to disputes that may involve States and the use of outer space, and international practice appropriate to such disputes"; and (c) the submission to the tribunal of "a non-technical document summarizing and explaining the background to any scientific, technical or other specialized information which the arbitral tribunal considers to be necessary to understand fully the matters in dispute."³⁶ Such a document is designed to aid the arbitral tribunal in understanding the complex technical issues of the dispute, and in deciding whether a scientific or technical expert should be appointed.

Apart from expert knowledge of technical and scientific matters at stake, the requirement of confidentiality for the parties to space arbitrations is also worth emphasizing. Although not exclusive to the field of space activities, disputes among nation-state, commercial, and

³⁵ UNCITRAL Rules, *supra* note 34.

³⁶ Permanent Court of Arbitration, *Optional Rules for Arbitration of Disputes Relating to Outer Space Activities*, December 6, 2011, [Optional Rules] <https://docs.pca-cpa.org/2016/01/Permanent-Court-of-Arbitration-Optional-Rules-for-Arbitration-of-Disputes-Relating-to-Outer-Space-Activities.pdf>.

hybrid parties with respect to space exploration, resource exploitation, and the commercialization of services require a high degree of confidentiality to protect the interests of the nation-states, organizations, and companies involved. Leakage of sensitive information on technology developments – and even the fact that a dispute has arisen – may result in a significant economic and reputational loss for the affected entities.³⁷

The Optional Rules are available to all types of space actors, including states, international organizations and commercial entities; and provide a pre-established list of arbitrators specializing in outer space disputes, as well as legal and technical experts.³⁸ Baez emphasizes the criticality of the “certainty and continuity” that the Optional Rules provide to parties interested in the resolution of outer space disputes.³⁹

5.3 Overview of the Use of Arbitration in Outer Space Disputes

We have reviewed above the relatively new diversity of actors in outer space activities as an impetus for increased adoption of arbitration as an appropriate tool for dispute resolution. It is suitable for nation-states in the context of treaties and intergovernmental agreements; for nation-states and private entities in investment disputes; and among private entities and

³⁷ Cecilia Vincenzo, “Resolving disputes in outer space: the role of international arbitration”, April 6, 2023, DLA Piper, <https://www.dlapiper.com/en-us/insights/publications/2023/04/resolving-disputes-in-outer-space-the-role-of-international-arbitration>.

³⁸ See “Panels of Arbitrators and Experts for Space-related Disputes” (2026), <https://pca-cpa.org/en/about/panels/panels-of-arbitrators-and-experts-for-space-related-disputes/>.

³⁹ Jesse Baez, “The PCA’s Optional Rules for Arbitration of Disputes Relating to Outer Space Activities: Bringing Arbitration to Infinity and Beyond” (2012) 4 *Arb. L. Rev.* at 218

nation-states acting in their relevant capacities under private law. In this section we review some key arbitral provisions in each of these contexts.

Arbitration in Outer Space Treaties and Inter-governmental Agreements

Underlying its practical value, arbitration is also a dispute resolution mechanism which conforms to the present international legal framework for space activities and is permissible under this regime.

First and foremost, Article 33 of the UN Charter, which is applicable to outer space activities through its incorporation by Outer Space Treaty (OST) Article III,⁴⁰ provides for the peaceful resolution of disputes by means which include arbitration and authorizes the Security Council to “call upon the parties to settle their dispute by such means.”⁴¹ Although the 1972 Liability Convention does not explicitly include reference to arbitration as a means of resolving disputes, its claims procedure and, specifically, the Claims Commission it envisages, shares important elements with arbitration; and its Article XXIII (2) allows for a broad range of agreements to be concluded between States parties, including arbitration agreements.⁴²

⁴⁰ United Nations. (1967, January 27). *Treaty on principles governing the activities of states in the exploration and use of outer space, including the Moon and other celestial bodies* [Outer Space Treaty or OST]. 610 U.N.T.S. 205 (entered into force October 10, 1967).

<https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/outerspacetreaty.html>

⁴¹ United Nations Charter, <https://www.un.org/en/about-us/un-charter/full-text>.

⁴² Liability Convention, *supra* note 26.

There are several examples of the use of arbitration in inter-governmental agreements. First, the International Space Station Intergovernmental Agreement (IGA) signed on January 29, 1998, by 15 governments to establish the cooperative legal framework for the development and operation of the International Space Station, references arbitration as one of the dispute resolution mechanisms “[i]f an issue not resolved through consultation still needs to be resolved.”⁴³ Second, the European Space Agency’s Convention of 1975, ratified by 23 countries, contains a detailed arbitration clause in its Article XVII which provides for establishment of an arbitral tribunal and the binding nature of the arbitral award.⁴⁴ Thirdly, the Convention of the Asia-Pacific Space Cooperation Organization (APSCO), in which Bangladesh, China, Iran, Mongolia, Pakistan, Peru, Thailand, and Turkey are members, includes an arbitration clause in its Article 19.⁴⁵ Finally, the satellite consortia Intelsat and Inmarsat contain arbitration clauses for dispute settlement in their original, constitutive agreements.⁴⁶ Thus, for example, the Intelsat Convention’s Article 4 establishes:

- (a) Any petitioner wishing to submit a legal dispute to arbitration shall provide each respondent and the executive organ with a document which contains:
 - (i) A statement which fully describes the dispute being submitted for arbitration, the reasons why each respondent is required to participate in the arbitration, and the relief being requested;

⁴³ *The Agreement Concerning Cooperation on the Civil International Space Station*, January 29, 1998, Article 23(4) [ISS Agreement].

⁴⁴ *Convention for the establishment of a European Space Agency*, 30 May 1975, CSE/CS (73)19, rev.7.

⁴⁵ *The Convention of the Asia-Pacific Space Cooperation Organization*, Beijing, 28 October 2005.

⁴⁶ See *Agreement relating to the International Telecommunications Satellite Organization "INTELSAT"*, Washington D.C., 20 August 1971, Article XVIII and Annex C; and *The Convention on the International Maritime Satellite Organization (INMARSAT)*, International Maritime Organization, 3 September 1976, Article 31 and Annex.

(ii) A statement which sets forth why the subject matter of the dispute comes within the competence of a tribunal to be constituted in accordance with this Annex, and why the relief being requested can be granted by such tribunal if it finds in favor of the petitioner;

(iii) A statement explaining why the petitioner has been unable to achieve a settlement of the dispute within a reasonable time by negotiation or other means short of arbitration;

(iv) In the case of any dispute for which, pursuant to Article XVIII of this Agreement or Article 20 of the Operating Agreement, the agreement of the disputants is a condition for arbitration in accordance with this Annex, evidence of such agreement; and

((v) The name of the person designated by the petitioner to serve as a member of the tribunal.

(b) The executive organ shall promptly distribute to each Party and Signatory, and to the chairman of the panel, a copy of the document provided pursuant to paragraph (a) of this Article.

The abovementioned Optional Rules for Arbitration of Disputes Relating to Outer Space Activities, as advantageous as they may be in terms of structure and approach, have, nonetheless, never been known to have been implemented by parties since their publication. Explanations include insufficient private sector awareness and the highly competitive dispute resolution “market”.⁴⁷ Yet they are often referenced in the academic literature as a ready resource for disputants. Moreover, Rosenberg and Dadwal observed on the tenth anniversary of the Optional Rules that:

⁴⁷ Charles Rosenberg & Vivasvat Dadwal, “The 10 Year Anniversary of the PCA Outer Space Rules: A Failed Mission or the Next Generation?” Kluwer Arb. Blog, Feb. 16, 2021, <http://arbitrationblog.kluwerarbitration.com/2021/02/16/the-10-year-ann-to-thesiversary-of-the-pca-outer-spacerules-a-failed-mission-or-the-next-generation/>

[T]he use of the PCA Outer Space Rules will likely increase as the types of disputants and the complexity of space disputes continue to evolve. This is because the future of international space law is rapidly transforming – as too is the space industry as a whole.... The Rules are well suited to ... resolve the next generation of space disputes.⁴⁸

In addition to these sources, it is worth noting that in 1984 the International Law Association published a Draft Convention on the Settlement of Space Law Disputes, including reference to arbitration, but that draft document has not yet progressed beyond its initial version.⁴⁹

To summarize, the arbitration option for dispute resolution has been included in international space treaties and inter-governmental space agreements since the conclusion of the OST in 1969, along a range that at one end mentions arbitration as a dispute resolution option (in the OST *via* Article III), through the inclusion of arbitration clauses in the Intelsat and Inmarsat treaties, and the detailed Optional Rules for Arbitration of Disputes Relating to Outer Space Activities. As stated above, the actual practice of

⁴⁸ *Ibid.* The authors also note that “The PCA has administered disputes relating to outer space, but in those cases, the parties arbitrated their disputes under the 1976 UNCITRAL Arbitration Rules rather than the PCA Outer Space Rules.”, citing *CC/Devas (Mauritius) Ltd., Devas Employees Mauritius Private Ltd., & Telcom Devas Mauritius Ltd. v. Republic of India*, PCA Case No. 2013-09; and *Deutsche Telekom AG v. The Republic of India*, PCA Case No. 2014-10).”

⁴⁹ International Law Association, *Draft for a convention on the settlement of space law disputes*, 1984. See Karl-Heinz Bockstiegel, *Proposed Draft Convention on the Settlement of Space Law Disputes*, *Journal of Space Law*: Vol. 12(2), Article 3, www.egrove.olemiss.edu/j_space/vol12/iss2/3. See also Hanneke van Traa-Engelman, "Settlement of Space Law Disputes" (1990) 3:3 LJIL 139, at 151.

stakeholders regarding the application of these options to arbitrate is difficult to map and analyze, as it is for the following two categories.

Arbitration in selected space-related investment disputes

Arbitration clauses are regularly used in bilateral and multi-lateral investment treaties, often referring to the UNCITRAL Rules⁵⁰ or those of the International Centre for Settlement of Investment Disputes (ICSID)⁵¹ which both provide an institutional framework for arbitrations. Nation-states exercise jurisdiction over space objects carried on their national registry, and thus the establishment of the applicability of UNCITRAL, ICSID, and other investment regimes to space activities is a matter of establishing the appropriate national nexus.⁵² Investment protection is not precluded because of the location of the asset in outer space. Examples of such investment treaty arbitrations that involve space-related disputes include:

- The dispute under ICSID arbitration rules between Eutelsat and Mexico in 2017 on the issue of national Mexican regulatory requirements that satellite companies reserve a portion of their bandwidth capacity for use by the Mexican government, without payment. Eutelsat claimed that Mexico enforced these requirements in a discriminatory and disproportionate manner, forcing Satmex (a company which

⁵⁰ UNCITRAL Rules, *supra* note 34.

⁵¹ International Centre for Settlement of Investment Disputes (ICSID), “Arbitration Rules” (2022), https://icsid.worldbank.org/sites/default/files/Arbitration_Rules.pdf.

⁵² Stephane Hobe, Rada Popova, Hussein El Bajjati & Julian Scheu, “The Protection of Satellite Telecommunications Activities Under Bilateral Investment Treaties”, *The Journal of World Investment & Trade* (2018), Vol. 19 (5-6) at 1024.

Eutelsat had acquired in 2014) to provide significantly more free megahertz to Mexico than its commercial competitors.⁵³

- The 2018 *Ukrkosmos v Macdonald Dettwiler* dispute, in which Ukraine filed a claim to recover funds paid to the supplier of a ground station for its first geostationary satellite, when the supplier claimed *force majeure* following the outbreak of the Russian invasion into Crimea, where the ground station was located.⁵⁴
- An anonymous Hong Kong satellite owner and operator filed a claim under UNCITRAL rules in 2019 against an anonymous Thai satellite operator. The claim (“C v. D”) was based on the unauthorized broadcast by the Thai operator of prohibited video content that reached China, in violation of legal restrictions of the Hong Kong Special Administrative Region. A partial award was delivered by the Hong Kong International Arbitration Centre in 2020.⁵⁵
- The ongoing 2025 *OneWeb v. Russia* dispute, which was triggered by the Russian space agency Roscosmos’ refusal to launch a batch more than 30 OneWeb satellites on a Soyuz rocket. Roscosmos demanded that the UK government sell its stake in OneWeb, and that the company guarantee the satellites would not be used for

⁵³ Eutelsat claimed breach of fair and equitable treatment under the bilateral investment treaty between France (where the company is based) and Mexico. It filed an arbitration claim under ICSID Rules in August 2017 for more than USD million in damages. The tribunal ultimately dismissed all of Eutelsat’s claims in September 2021. See *Eutelsat S.A. v. United Mexican States* (ICSID Case No. ARB(AF)/17/2), <https://investmentpolicy.unctad.org/investment-dispute-settlement/cases/841/eutelsat-v-mexico>.

⁵⁴ Sebastian Perry, “Ukrainian space agency loses satellite claim”, Global Arbitration Review (1 October 2020), <https://globalarbitrationreview.com/article/ukrainian-space-agency-loses-satellite-claim>.

⁵⁵ *C. v. D.*, <https://jsumundi.com/en/document/decision/en-company-d-v-company-c-judgment-of-the-hong-kong-court-of-appeal-2022-hkca-729-tuesday-7th-june-2022>.

military purposes against Russia. OneWeb refused these Russian demands, Roscosmos did not launch the OneWeb satellites, and as a result – the latter activated the arbitration clause in the 1989 UK–Russia Bilateral Investment Treaty, which refers disputes to the UNCITRAL Rules.⁵⁶

Commercial arbitration among private space actors or nation-states acting in their capacities under private law

With respect to non-State space actors and nation-states acting in a commercial capacity, arbitral clauses are often included in contracts for the implementation of space activities. These are often long-term and complex service agreements, or even a series of such agreements for each stage of development: manufacture, launch, operations, and de-orbiting.⁵⁷ Likewise, insurance policies covering the financial and operational risks for each of these stages are likely to include arbitration clauses for any disputes arising between the insurers and the policy holders.⁵⁸

⁵⁶ Laura Yvonne Zielinski & Jan Frohloff, “Orbiting human-built objects: managing and resolving satellite disputes”, Global Arbitration Review (31 March 2026), <https://globalarbitrationreview.com/guide/the-guide-aviation-and-space-disputes/second-edition/article/orbiting-human-built-objects-managing-and-resolving-satellite-disputes#footnote-19>.

⁵⁷ Dadwal & Tepper and Dadwal & Macdonald, *supra* note 3; and Alexis Mourre, “Arbitration in Space Contracts” (2005), Arbitration International, Vol. 21(1), 37 at 38.

⁵⁸ Jonathan Fernandes & Vamikla Puri, “Managing and resolving insurance disputes in the satellite sector” (2026), Global Arbitration Review, <https://globalarbitrationreview.com/guide/the-guide-aviation-and-space-disputes/second-edition/article/managing-and-resolving-insurance-disputes-in-the-satellite-sector>. See also, Lloyds, “Space” (no date), <https://www.lloyds.com/market-resources/tools/crystal-plus/risk-location-guidance/class-of-business/space>; AON, “Insuring Space Activities” (2016), https://www.aon.com/russia/files/Insuring_Space_Activities_whitepaper.pdf; and AXA XL, “Space Insurance” (no date), <https://axaxl.com/insurance/products/space-insurance>.

Space assets such as satellites, space stations, rovers – and other assets being developed in the New Space ecosystem – are characterized by their highly-technical and multi-national supply chains, sophisticated manufacturing processes, and the need to be launched and placed in orbit and then removed from orbit within defined timelines. Concurrently, launching states may change launch schedules or impose new conditions for launch; and spectrum allocations required by a given space asset may be altered by states which own assets (as seen above in the 2017 *Eutelsat v. Mexico* arbitration, and the 2011 *Devas v. Antrix* arbitration reviewed below).

Within the multifaceted legal relationships which result from these characteristics, disputes can occur. Cross-waivers of liability among stakeholders in some space-related contractual arrangements may provide a rapid method of overcoming such disputes, but they do not always provide full resolution.⁵⁹ In such cases, arbitration is often the preferred method of dispute resolution. With respect to the satellite industry in particular, Zielinski and Frohloff observe:

From the point of view of a satellite industry actor, the best satellite arbitration is the one that does not happen. The satellite industry is uniquely non-litigious, and the reason for this can be easily explained. The satellite industry has historically consisted of only a small number of market participants, who were generally familiar with each other and were often forced to collaborate or at least interact on a regular basis. As a consequence, the industry has prioritised dispute avoidance over dispute resolution and has developed mechanisms to avoid formal dispute settlement proceedings.⁶⁰

⁵⁹ See, for example, the statutory cross-waiver of liability in Section 107 of the *United States Commercial Space Launch Competitiveness Act of 2015*, <https://www.govinfo.gov/content/pkg/PLAW-114publ90/html/PLAW-114publ90.htm>.

⁶⁰ Zielinski & Frohloff, *supra* note 56, “Avoiding satellite arbitrations”.

More generally, arbitration clauses in space contracts provide the above-mentioned advantages of relatively rapid time frames, selection of arbitrators who are expert in the specific space sector in which the dispute has occurred, confidentiality, and multi-jurisdictional enforceability.⁶¹

Two recent developments regarding commercial arbitration rules and enforceability of arbitral awards are likely to enhance the attractiveness of arbitration for parties to space disputes. First, the adoption on the part of several arbitration institutions of fast-track timelines for arbitrations, such as the ICC's *Expedited Arbitration Provisions* which came into force in July 2026, allows disputing parties to bypass extended discovery stages and to receive an award within a limited time period – under the new ICC rules, within three months of the initial arbitral conference.⁶² Secondly, regarding the critical point of enforceability of arbitral awards for space activities, a recent US court decision regarding a long-contested ICC arbitration between Devas Multimedia Private Limited and Antrix Corporation Limited⁶³ ruled that foreign (in this case non-US) arbitral awards are fully enforceable outside of the state in which the award has been given.⁶⁴

⁶¹ See also Mourre, *supra* note 57.

⁶² ICC, *Expedited Procedure Provisions* (2026), <https://iccwbo.org/dispute-resolution/dispute-resolution-services/arbitration/rules-procedure/expedited-procedure/>.

⁶³ See the sources on *Devas v. Antrix* at *supra* note 10.

⁶⁴ Caroline Simson, “9th Circ. Enforces \$2B Devas Satellite Award” (August 12, 2026), Law360, <https://www.law360.com/washington/articles/2512700/9th-circ-enforces-2b-devas-satellite-award>; *Devas Multimedia Private Limited v. Antrix Corporation Limited* (August 12, 2026), No. 22-35103, D.C. No. 2:18-cv-01360TSZ.

Several space-related disputes have been resolved through institutional and *ad hoc* arbitration procedures, including those of the abovementioned ICC, LCIA, and ICDR.

Examples include the following:

- The ICC arbitration between NorthStar Earth & Space and Spire Global, which resulted in a \$12.4 million award to Spire in July 2026. NorthStar had claimed breach of contract, willful misconduct, and fraudulent misrepresentation by Spire over underperforming and lost satellites – and demanded their replacement. The arbitral panel ruled that the "commercially reasonable efforts" included in the parties' contract did not unconditionally require Spire to manufacture replacement satellites.⁶⁵
- The core issue of the *Devas Multimedia v. Antrix Corp.* arbitration of 2015 was the 2005 agreement between the parties for the lease by Antrix, an Indian corporation, of S-band spectrum to Devas for use in providing commercial multimedia and broadband data services to the Indian market. In February 2011, the government of India banned the private, commercial exploitation of the spectrum included in the lease. Antrix unilaterally cancelled its contract with Devas, citing its government's decision as *force majeure*. In response, Devas submitted an arbitral claim for breach of contract to an ICC tribunal, which ultimately ruled in 2015 that Antrix termination was unlawful, and awarded Devas damages of more than \$560 million.⁶⁶

⁶⁵ Robinson, *supra* note 13.

⁶⁶ See sources on *Devas v. Antrix*, *supra* note 10.

Enforcement of the award has been subject to jurisdictional questions, which have been recently resolved.⁶⁷

- In *Avanti v Indonesia*, the 2018 arbitral award of the London Court of International Arbitration (LCIA) ruled that damages of more than \$20 million were due to Avanti, a UK satellite operator, for breach of contract by Indonesia's Ministry of Defense. Indonesia had concluded a 2016 agreement with Avanti – a private sector entity - to prevent losing its L-band spectrum rights at the 123 degrees east orbital slot previously held by one of Indonesia's satellites, de-orbited in 2015. The country had agreed to pay Avanti \$30 million for the relocation and use of Avanti's Artemis satellite but stopped making payments after approximately a third of this sum. After months without payment, Avanti submitted its arbitral claim and de-orbited Artemis.⁶⁸

To conclude this Section, Table 1 below presents a typology of selected arbitrations for space-related disputes, arranged by the stage of the space asset lifespan: supply chain, launch, active operations, and overarching geopolitical constraints.⁶⁹ An additional element in the typology which relates to de-orbiting, including space debris disputes, is not known to

⁶⁷ See Simson, *supra* note 64.

⁶⁸ Caleb Henry, "Indonesia ordered to pay Avanti \$20 million for missed satellite lease payments" (June 8, 2018), Space News, <https://spacenews.com/indonesia-ordered-to-pay-avanti-20-million-for-missed-satellite-lease-payments/>.

⁶⁹ Sources used for the details of the arbitrations in this table include: Zielinski & Frohloff, *supra* note 56; Jan Frohloff, "Arbitration in Space Disputes", *Arbitration International* (2019), Vol. 35 at 309;

have been the subject of arbitration as yet, but is likely to arise in the near term because of the increasing risks caused by space debris in the New Space ecosystem.

Table 1: Typology of Selected Arbitrations for Space-Related Disputes

	Parties to the Arbitration [source]	Year of Award	Stage of Space Asset Lifespan	Issue(s)	Arbitration Institution / Rules	Estimated Claim / Award
1	Spire v. Northstar [source] [source]	2026	Supply chain	Non-functional equipment and defective services	International Chamber of Commerce	USD 12.4 million
2	Ukrkosmos v Macdonald Dettwiler [source]	2018	Supply chain / Geopolitical constraints	Breach of contract for construction of geostationary satellite ground segment in Crimea; <i>force majeure</i>	UNCITRAL Arbitration Rules	USD 227 million (claimed, not awarded)
3	Spacecom v. Israel Aerospace Industries [source]	2012	Supply chain	Late delivery of AMOS-8 satellite	Israel Arbitration Law, 1968	USD 10 million
4	Devas Multimedia v. Antrix Corp. [source] [source] [source]	2015	Supply chain (pre-launch) / Geopolitical constraints	Spectrum use (spectrum reserved for government where the satellite company is registered)	International Chamber of Commerce (ICC)	USD 562.5 million
5	Avanti v. SpaceX [source] [source]	2018	Launch	Return of launch cost deposit	London Court of International Arbitration,	USD 7.6 million

6	Union of India v. McDonnell Douglas Corp. [source]	1997	Launch	Satellite not inserted into the correct orbit; applicability of Indian / UK law	Indian Arbitration Act 1940	Unknown.
7	Space Communications Corp. v. Boeing Satellite Systems [source]	2009	Active operations	Satellite did not reach orbital height	International Centre for Dispute Resolution (ICDR)	USD 240 million (claimed, not awarded)
8	Eutelsat v. Mexico [source]	2017	Active operations	Spectrum use (spectrum reserved for government where the satellite company is registered)	ICSID Rules	USD 120 million (claimed, not awarded)
9	ABS v KT and KTSAT Corporation [source]	2018	Active operations	Transfer of title to satellite	International Chamber of Commerce (ICC)	USD 1 million
10	Hong Kong satellite owner and operator (anonymous) v. Thai satellite operator (anonymous) [source]	2020	Active operations	Unauthorized video content broadcasted by the Thai satellite operator	UNCITRAL Arbitration Rules	
11	Avanti v. Indonesia [source]	2018	Active operations	Breach of contract for satellite services (non-payment)	London Court of International Arbitration	USD 20 million
12	OneWeb v. Russia [source]	2025	Active operations /	Refusal to launch OneWeb satellites on	UNCITRAL as incorporated	Ongoing

			Geopolitical constraints	the part of Roscosmos given the UK stake in OneWeb and no guarantee the satellites would not be used for ant-Russian military purposes.	into the UK–Russia Bilateral Investment Treaty, 1989	
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6. Analysis of Space Arbitration Trends [to be expanded following the Workshop]

The trends which emerge from the space arbitrations reviewed above point to several clear developments:

- Disputes submitted to arbitration have so far conformed to four main categories: supply chain and pre-launch issues, launch timelines, active operations (mostly of satellites), and geopolitical constraints that are claimed as *force majeure* by parties defaulting on their contractual obligations.
- Arbitral disputes have so far not encompassed the entire lifespan of space assets to include, for example, space resource exploitation issues, intellectual property disputes, collisions, and space debris liability. These are some especially controversial issues currently, and it remains to be seen whether arbitration will be leveraged to address such disputes in the future.
- As the militarization of space increases, and more nation-states and nation-state proxies gain access to outer space, the national security aspects of the use of space

may increasingly impact arbitrations as seen in the cases of *Devas v. Antrix*, *Ukrkosmos v Macdonald Dettwiler* and *OneWeb v. Russia*.

- The lack of transparency with respect to arbitral awards in outer space disputes is a double-edged sword: on the one hand, it provides an important incentive to disputing parties; on the other, the prized confidentiality of arbitration prevents comprehensive analysis of the instances in which it has been effectively utilized.

7. Conclusion

This article argues that arbitration is the mode of dispute resolution which is most suited to the disputes that arise in the current context of outer space activities. It proposes that arbitration can advance the sustainability of outer space activities by enhancing legal certainty in the resolution of space-related disputes, as the participation of both States and private actors in outer space expands and as space disputes become increasingly complex. Its procedural flexibility, suitability to multi-jurisdictional disputes, and ability to readily incorporate the technical, scientific and regulatory expertise needed for outer space disputes are all positive incentives to parties to such disputes. Moreover, we have argued that stakeholders' reliance upon such a dispute resolution measure to bolster certainty regarding due compensation for liability claims, mitigation of operational risk – expands the sustainability of space activity.

Nonetheless, the confidentiality of arbitral proceedings and awards sets a constraint on comprehensive scholarly analysis of arbitration's contribution to space sustainability. This aspect, which is an advantage for parties to space disputes, will continue as long as parties prioritize discretion for the resolution of their disputes.⁷⁰ As argued above, there is still much information to be gleaned from both the arbitral clauses that are included – and are publicly accessible - in contracts, investment treaties, and insurance arrangements; as well as selected publication of arbitral proceedings and awards.

The analysis of the arbitrations reviewed above shows a growing use of arbitration throughout the life cycle of space assets, with a particular emphasis on disputes stemming from delayed contractual commitments such as equipment production timelines and launches, operational performance, and spectrum use. Additional use cases that may engage arbitration as a tool of dispute resolution in the future are space resource exploitation issues, intellectual property disputes, collisions, and space debris liability. Interestingly, the *One Web v. Russia* arbitration which commenced in 2025 under UNCITRAL auspices involves geopolitical aspects of the use of outer space, which may also emerge as a use case in future years as the militarization of outer space increases.

Topics for further research that would serve to expand the scope of the present work include:

(a) review and analysis of other mechanisms for dispute resolution in the framework of outer space activities, such as traditional court-based litigation, diplomatic negotiations,

⁷⁰ See the proposal of Dadwal & Macdonald that a catalogue of space arbitration awards be initiated, *supra* note 4.

mediation, and the innovative “space courts” which were referred to above; (b) analysis of data that might be made available by insurers regarding their use of arbitration clauses in space-related disputes; and (c) specific space-related topics that would benefit from the option of arbitration in the coming years, such as damages from orbital collisions, intellectual property rights developed in outer space, and space resource exploitation.⁷¹

In conclusion, this article argues that embedding arbitration more systematically within international agreements, commercial contracts, and national licensing regimes can strengthen space governance and support the long-term sustainability of outer space activities. The March 2026 assessment of the space arbitration expert Roger Ni is salient:

Space-related disputes are not anomalies in international law but remain an important driving force behind its evolution. These disputes reveal the institutional mismatch within space law as it faces new actors, new modes of activity and new forms of risk. They require the international community to shift from broad principles to more procedural and operational governance. The future legal order for space must find a new balance between national sovereignty, commercial interests and the common interest of humanity as a whole, so as to ensure outer space remains peaceful, sustainable and fair as its use continues to expand.⁷²

In our view, the tool of arbitration is eminently suited to this task.

⁷¹ See Alison Torline, “Looking Back While Looking Up: A Review of Space Arbitration Topics” (February 22, 2023), Kluwer Arbitration Blog, <https://legalblogs.wolterskluwer.com/arbitration-blog/looking-back-while-looking-up-a-review-of-space-arbitration-topics/>.

⁷² Roger Ni, *supra* note 1, under “Conclusion”.