ASIAN ACADEMY OF INTERNATIONAL LAW

Hong Kong as a Space Disputes Hub: A Proposal for a Specialist Arbitration Framework

Policy Paper | 2026

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Executive Summary

The rapid expansion of Low Earth Orbit (LEO) constellations is changing outer space from a relatively sparse operating environment into a dense commercial infrastructure layer. European Space Agency (ESA) materials have referred to expectations that around 100,000 satellites may be in orbit by 2030, and related industry and policy materials increasingly treat dense LEO deployment as a realistic planning assumption.[1] As the number of satellites rises, the probability and volume of disputes arising from launch failure, orbital insertion errors, conjunction events, radiofrequency interference, debris generation, service disruption, and licensing action will rise with it.[2]

The current international legal structure remains indispensable, but it is not sufficient for this operating environment. The Outer Space Treaty, Liability Convention and Registration Convention provide a framework of responsibility, liability and registration, yet they do not supply detailed, enforceable rules for space traffic management, live operational transparency, private-party claims handling, or the efficient resolution of frequent commercial disputes in a crowded LEO economy.[3]

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[1] European Space Agency, 'Around 100 000 satellites are expected to be in orbit by 2030', ESA Multimedia, 1 April 2025, available at https://www.esa.int/ESA_Multimedia/Images/2025/04/Around_100_000_satellites_are_expected_to_be_in_orbit_by_2030; European Space Agency, 'ESA Space Environment Report 2025', ESA, 2025, available at https://www.esa.int/Space_Safety/Space_Debris/ESA_Space_Environment_Report_2025.

[2] Jay Hilotin, '100,000 satellites: A sky full of spacecraft? The race to blanket Earth from space', Gulf News, 9 May 2025, available at https://gulfnews.com/technology/100000-satellites-a-sky-full-of-spacecraft-the-race-to-blanket-earth-from-space-1.500120054; International Federation of Air Traffic Controllers' Associations, 'Space Debris and its Implications for Aviation Safety', IFATCA, 20–24 April 2026, available at https://ifatca.org/wp-content/uploads/C.5.8_B.4.10_Space-Debris-.pdf; Institute of Air Law, Space Law and Cyber Law, University of Cologne / German Aerospace Center (DLR), 'The Cologne Manual on Space Traffic Management', May 2025, available at https://ilwr.jura.uni-koeln.de/sites/ilwr/user_upload/CM-STM_2025__Guidelines.pdf; ESA, 'ESA Space Environment Report 2025'.

[3] United Nations Office for Outer Space Affairs, 'Space Law Treaties and Principles', UNOOSA, available at https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties.html; United Nations Office for Outer Space Affairs, 'Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies', UNOOSA, available at https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/outerspacetreaty.html; United Nations Office for Outer Space Affairs, 'Convention on Registration of Objects Launched into Outer Space', UNOOSA, available at https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/registration-convention.html; United Nations Office for Outer Space Affairs, 'Convention on International Liability for Damage Caused by Space Objects', UNOOSA, available at https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/liability-convention.html.

The result is a widening gap between the legal architecture inherited from the first space age and the dispute profile of the new commercial space age.[4]

This paper argues that, while treaty reform remains desirable, the most practical near-term response is to build specialist dispute-resolution capacity. Arbitration is especially well suited to this role because it offers neutrality, cross-border enforceability, confidentiality, procedural flexibility and the ability to integrate technical expertise directly into adjudication.[5] Hong Kong is particularly well placed to host such a framework because it combines a mature arbitration ecosystem, a common-law legal system, strong judicial support, global credibility, and a unique connective position between Mainland Chinese and international commercial actors.[6]

The paper by the Asian Academy of International Law (AAIL) proposes an initiative lead by Hong Kong to develop a Hong Kong-centred "space disputes" arbitration framework. The objective is not to legislate for outer space through private rules, displace public-law processes, or resolve spectrum-orbit allocation questions. It is to create a specialist forum and procedural model for civil and commercial disputes that existing public law leaves unresolved or under-institutionalised.[7] That

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[4] IFATCA, 'Space Debris and its Implications for Aviation Safety'; University of Cologne/DLR, 'Cologne Manual on Space Traffic Management'; Herbert Smith Freehills Kramer, 'Disputes in space – The next frontier?', 18 September 2024, available at https://www.hsfkramer.com/insights/reports/inside-arbitration-issue-18/disputes-in-space-the-next-frontier.

[5] Pinsent Masons, 'Hong Kong SAR's position as a major centre of arbitration continues to develop in 2026', Out-Law, 31 March 2026, available at https://www.pinsentmasons.com/out-law/analysis/hong-kong-sar-centre-of-arbitration-2026; CMS, 'Space & Dispute Resolution: legal disputes in space?', CMS, 2 March 2026, available at https://cms.law/en/deu/legal-updates/space-dispute-resolution-legal-disputes-in-space; Herbert Smith Freehills Kramer, 'Disputes in space'; Aceris Law, 'Reaching for the Stars: Arbitration of Space-Related Disputes', Aceris Law, 25 May 2024, available at https://www.acerislaw.com/reaching-for-the-stars-arbitration-of-space-related-disputes/.

[6] Anthony Neoh, 'Hong Kong's Role in Space Commercialisation', Asian Academy of International Law, 16 September 2025, available at https://aail.org/wp-content/uploads/2025/09/16_Anthony_Neoh_ppt_HK_Role_in_Space_Commercialisation.pdf; China Daily Hong Kong, 'Touch base for Hong Kong's space economy', China Daily Hong Kong, 21 November 2025, available at https://www.chinadailyhk.com/hk/article/624024; Pinsent Masons, 'Hong Kong SAR's position as a major centre of arbitration'; Gregg Li, 'Hong Kong should think strategically about space commercialization', China Daily Hong Kong, 26 January 2026, available at https://www.chinadailyhk.com/hk/article/627719.

[7] CMS, 'Space & Dispute Resolution'; Herbert Smith Freehills Kramer, 'Disputes in space'; Aceris Law, 'Reaching for the Stars'.

framework could begin as a model ruleset, protocol, or consultation draft, to be later adopted or adapted by established arbitral institutions in Hong Kong.[8]

[8] Neoh, 'Hong Kong's Role in Space Commercialisation'; Faculty of Law, The University of Hong Kong, 'CCL Talk: Resolution of Space Disputes in the New Space Age: A Dispute System Design Approach', 20 March 2026, available at https://www.law.hku.hk/events/ccl-talk-20260320/; Hong Kong International Arbitration Centre, '2024 Administered Arbitration Rules', effective 1 June 2024, PDF hosted by Aceris Law, available at https://www.acerislaw.com/wp-content/uploads/2024/06/2024-HKIAC-ADMINISTERED-ARBITRATION-RULES-in-English.pdf.

I. The 2030 LEO Environment

A. The Scale of the Shift

LEO constellations are being deployed at a pace and scale that was not contemplated when the core space treaties were negotiated. ESA has publicly referred to the expectation that about 100,000 satellites may be in orbit by 2030, while market analyses continue to forecast strong growth in the LEO satellite economy over the same period.[9] This growth is driven above all by broadband, Earth observation, defence-related support functions, and integrated data services, with the USA and China likely to remain leading strategic and industrial actors.[10]

This projected increase is not simply quantitative. It changes the legal and operational character of LEO itself. A larger concentration of satellites in commonly used orbital shells means more conjunction warnings, more operational manoeuvres, more data dependency, more interactions between public and private actors, and more pressure on shared orbital and radiofrequency resources.[11] In other words, the central problem is no longer only access to space; it is traffic, coexistence, resilience and accountability in orbit.[12]

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[9] ESA, 'Around 100 000 satellites'; Research and Markets, 'LEO Satellite Market by Subsystem, Satellite Mass, Application, Band, Orbit Type, End User and Region – Global Forecast to 2030', GlobeNewswire, 5 August 2025, available at https://www.globenewswire.com/news-release/2025/08/05/3127486/28124/en/leo-satellite-market-global-forecast-report-to-2030-key-industry-players-like-spacex-and-airbus-lead-leo-satellite-advancements.html; Grand View Research, 'LEO Satellite Market (2025–2033) Size, Share & Trend Analysis Report', Grand View Research, available at https://www.grandviewresearch.com/industry-analysis/leo-satellite-market-report; Next Move Strategy Consulting, 'Low Earth Orbit (LEO) Satellites Market by Satellite Type, Subsystem, Application, End Use and Region – Global Opportunity Analysis and Industry Forecast 2024–2030', Next Move Strategy Consulting, available at https://www.nextmsc.com/report/leo-satellite-market.

[10] Marc Julienne and others, 'China in the Race to Low Earth Orbit: Perspectives on the Future Internet Constellation Guowang', Ifri, 27 April 2023, available at https://www.ifri.org/en/papers/china-race-low-earth-orbit-perspectives-future-internet-constellation-guowang; Cheng Yu and Ma Si, 'China's satellite industry set for rapid expansion', China Daily Hong Kong, 13 January 2026, available at https://www.chinadailyhk.com/hk/article/626967; Hilotin, '100,000 satellites'.

[11] IFATCA, 'Space Debris and its Implications for Aviation Safety'; University of Cologne/DLR, 'Cologne Manual on Space Traffic Management'; ESA, 'ESA Space Environment Report 2025'.

[12] IFATCA, 'Space Debris and its Implications for Aviation Safety'; University of Cologne/DLR, 'Cologne Manual on Space Traffic Management'.

B. Why Disputes Will Multiply

The next generation of disputes in space will arise not only from spectacular failures but from routine operational friction. Launch delays can cascade through constellation deployment schedules. Orbital insertion errors can alter collision risk. Inadequate coordination around conjunction warnings can create arguments about manoeuvre responsibility. Debris events may trigger complex causation disputes among multiple operators, insurers and service users.[13]

Radiofrequency interference will remain a parallel source of conflict, especially where mega-constellation filings and deployment plans overlap or appear strategically expansive. Studies have already raised concerns about whether existing International Telecommunication Union (ITU) approaches are sufficiently robust for large low-orbit systems, and whether current filing practices permit inefficient occupation of orbital and spectral resources.[14] Downstream service disputes will also increase as enterprise, governmental and infrastructure users become more reliant on constellation-based connectivity and data services.[15]

C. Commercial Activity as the Main Dispute Source

The dispute-resolution case for Hong Kong is strongest when framed around the civil and commercial relationships generated by the space economy. Satellite broadband, mobile connectivity, Earth observation, remote-sensing analytics, launch and manufacturing services, hosted payloads, ground-segment services, SSA and STM data services, insurance, financing and

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[13] IFATCA, 'Space Debris and its Implications for Aviation Safety'; ESA, 'ESA Space Environment Report 2025'; Herbert Smith Freehills Kramer, 'Disputes in space'; Aceris Law, 'Reaching for the Stars'.

[14] LEO Policy Working Group, 'Low Earth Orbit Satellites: Policies to Promote Spectrum Sharing, Foster Competition, and Close Digital Divides', New America / International Center for Law & Economics, October 2025, available at https://laweconcenter.org/wp-content/uploads/2025/10/Low_Earth_Orbit_Satellites_FINAL.pdf; Bob Yirka, 'Study shows need for ITU to tighten regulations for low orbit satellites as filing numbers grow', Phys.org, 18 October 2023, available at https://phys.org/news/2023-10-itu-tighten-orbit-satellites.html; Hilotin, '100,000 satellites'.

[15] Research and Markets, 'LEO Satellite Market Global Forecast Report to 2030'; Grand View Research, 'LEO Satellite Market'; Herbert Smith Freehills Kramer, 'Disputes in space'.

downstream enterprise service contracts all create private rights and obligations that may be disrupted by events in orbit or by regulatory action.[16]

The relevant disputes will therefore look familiar in legal form but specialised in evidence: breach of service-level obligations, disputed data quality, delay, failure of delivery, indemnity allocation, warranty and limitation clauses, force majeure, regulatory compliance covenants, insurance coverage, subrogation and causation. The framework should be primarily designed for those disputes, rather than for public-law allocation of orbital or spectrum resources.

[16] OECD, 'The Space Economy in Figures: Responding to Global Challenges', OECD Publishing, 15 December 2023, available at https://www.oecd.org/en/publications/the-space-economy-in-figures_fa5494aa-en.html; World Economic Forum, 'Space Economy Set to Triple to $1.8 Trillion by 2035, New Research Reveals', 8 April 2024, available at https://www.weforum.org/press/2024/04/space-economy-set-to-triple-to-1-8-trillion-by-2035-new-research-reveals/; ITU and UNESCO, 'The State of Satellite Broadband 2025', August 2025, available at https://www.itu.int/dms_pub/itu-s/opb/pol/S-POL-BROADBAND.31-2025-PDF-E.pdf.

II. The Existing International Legal Structure

A. A Necessary Baseline

The current international legal structure still matters. The 1967 Outer Space Treaty remains the constitutional foundation of international space law, establishing principles such as freedom of exploration and use, non-appropriation, State responsibility for national activities in space, and the requirement that private activities be authorised and continuously supervised by States.[17] The 1972 Liability Convention provides for liability of launching States, including fault-based liability for damage caused in outer space, while the 1975 Registration Convention requires States to maintain registries and furnish information on space objects.[18]

These treaties are not obsolete. They remain the primary legal basis for attributing conduct, allocating international responsibility, and connecting private operations to State oversight.[19] They also provide the background legal environment within which national licensing systems, insurance structures and commercial contracts operate.[20]

B. Why the Treaty Framework Is No Longer Enough

The difficulty is that the treaty framework is pitched at a high level of abstraction. It was designed for an era of relatively few spacefaring States, a small number of missions, and limited commercial

[17] UNOOSA, 'Space Law Treaties and Principles'; UNOOSA, 'Treaty on Principles Governing the Activities of States'; UNOOSA, 'Convention on Registration of Objects Launched into Outer Space'; Space Foundation Editorial Team, 'International Space Law', Space Foundation Space Briefing Book, available at https://www.spacefoundation.org/space_brief/international-space-law/.

[18] UNOOSA, 'Space Law Treaties and Principles'; UNOOSA, 'Convention on Registration of Objects Launched into Outer Space'; UNOOSA, 'Convention on International Liability for Damage Caused by Space Objects'.

[19] UNOOSA, 'Space Law Treaties and Principles'; UNOOSA, 'Convention on Registration of Objects Launched into Outer Space'; Space Foundation, 'International Space Law'.

[20] UNOOSA, 'Convention on Registration of Objects Launched into Outer Space'; IFATCA, 'Space Debris and its Implications for Aviation Safety'.

participation. It does not provide a detailed operating code for a congested orbital environment populated by thousands of manoeuvrable commercial satellites belonging to many actors.[21]

Nor does it provide a specialised standing mechanism for resolving routine commercial disputes. The Liability Convention is State-centric and diplomatic in form. It is not structured for rapid, repeated, data-intensive disputes between private launchers, operators, data providers, insurers and customers.[22] As a result, the law still applies, but its operational utility declines as the density and commerciality of LEO increases.[23]

C. Gaps in the Current Legal Order

The following gaps are relevant to this proposal only in a limited and practical sense. They explain why commercial parties will need more specialised contractual risk allocation, evidence management and claims-handling procedures; they are not presented as problems that private arbitration can solve as a matter of public international law. Debris mitigation and sustainability, for example, have been discussed for decades and are reflected in substantial non-binding guidance, but the absence of a comprehensive binding global regime remains important when debris-related events generate private claims.[24]

a. No Binding Space Traffic Management Regime

The most obvious gap is the absence of a binding international space traffic management (STM) regime. Existing law contains broad obligations of due regard and avoidance of harmful

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[21] UNOOSA, 'Convention on International Liability for Damage Caused by Space Objects'; IFATCA, 'Space Debris and its Implications for Aviation Safety'; University of Cologne/DLR, 'Cologne Manual on Space Traffic Management'; Herbert Smith Freehills Kramer, 'Disputes in space'.

[22] UNOOSA, 'Convention on International Liability for Damage Caused by Space Objects'; IFATCA, 'Space Debris and its Implications for Aviation Safety'; Herbert Smith Freehills Kramer, 'Disputes in space'.

[23] IFATCA, 'Space Debris and its Implications for Aviation Safety'; University of Cologne/DLR, 'Cologne Manual on Space Traffic Management'.

[24] United Nations Office for Outer Space Affairs, 'Long-term sustainability of outer space activities', UNOOSA, available at https://www.unoosa.org/oosa/en/ourwork/topics/long-term-sustainability-of-outer-space-activities.html; United Nations Office for Outer Space Affairs, 'Space Debris Mitigation Standards Compendium', UNOOSA, available at https://www.unoosa.org/oosa/en/ourwork/topics/space-debris/compendium.html.

interference, but it does not prescribe specific, enforceable rules on conjunction thresholds, manoeuvre priorities, data-sharing obligations, or minimum technical capabilities for operation in congested LEO shells.[25] In practice, operators rely on national rules, bilateral coordination, technical norms, and ad hoc operational judgment.[26]

That is manageable in a relatively sparse environment, but increasingly fragile at scale. A regime built on voluntary coordination becomes harder to sustain as more actors compete in similar orbital altitudes and as automated systems begin to play a larger role in conjunction response.[27]

b. Debris and Sustainability Remain Under-Normed

Debris mitigation is another major weakness. Although a substantial body of soft-law guidance exists through organisations such as the Inter-Agency Space Debris Coordination Committee and through agency-level standards, much of this guidance remains non-binding.[28] ESA's space environment reporting continues to indicate that debris accumulation remains a serious and growing concern, even where mitigation practices improve.[29]

This produces a legal asymmetry. The industry increasingly recognises the technical necessity of debris mitigation, but the legal system has not yet transformed that technical consensus into a comprehensive set of enforceable obligations that apply consistently across jurisdictions and

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[25] UNOOSA, 'Treaty on Principles Governing the Activities of States'; IFATCA, 'Space Debris and its Implications for Aviation Safety'; University of Cologne/DLR, 'Cologne Manual on Space Traffic Management'.

[26] University of Cologne/DLR, 'Cologne Manual on Space Traffic Management'; Herbert Smith Freehills Kramer, 'Disputes in space'.

[27] IFATCA, 'Space Debris and its Implications for Aviation Safety'; University of Cologne/DLR, 'Cologne Manual on Space Traffic Management'; ESA, 'ESA Space Environment Report 2025'.

[28] Inter-Agency Space Debris Coordination Committee, 'IADC Space Debris Mitigation Guidelines', Revision 2, March 2020, available at https://orbitaldebris.jsc.nasa.gov/library/iadc-space-debris-guidelines-revision-2.pdf; United Nations Office for Outer Space Affairs, 'Long-term sustainability of outer space activities', UNOOSA, available at https://www.unoosa.org/oosa/en/ourwork/topics/long-term-sustainability-of-outer-space-activities.html; ESA, 'ESA Space Environment Report 2025'.

[29] ESA, 'ESA Space Environment Report 2025'.

operators.[30] That history matters for the proposal because debris mitigation is not an arbitration problem in itself; it becomes relevant when a debris-related event triggers contractual compliance questions, insurance exclusions, indemnities, causation disputes, due-care arguments or claims for service disruption and asset damage.[31]

c. Liability Rules Are Misaligned with Commercial Reality

The Liability Convention remains important, but its architecture is poorly aligned with a high-frequency private market. Claims are channelled through launching States rather than presented directly by the private entities that typically suffer commercial loss.[32] This model may still be suitable for exceptional interstate incidents, but it is ill adapted to a world in which a collision or debris event may affect numerous private actors at once and produce layered contractual, insurance and service losses.[33]

The problem is compounded by the complexity of proof in orbit. Fault allocation may depend on technical evidence concerning ephemeris quality, manoeuvre timing, autonomous system performance, or compliance with best-practice conjunction standards. The existing treaty framework offers little guidance on how these questions should be investigated or adjudicated.[34]

d. Registration and Transparency Are Inadequate for Modern Operations

The Registration Convention requires only limited information about space objects. It does not create a modern operational transparency regime suitable for an environment in which collision

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[30] IADC, 'IADC Space Debris Mitigation Guidelines'; UNOOSA, 'Long-term sustainability of outer space activities'; University of Cologne/DLR, 'Cologne Manual on Space Traffic Management'.

[31] Inter-Agency Space Debris Coordination Committee, 'IADC Space Debris Mitigation Guidelines', Revision 2, March 2020, available at https://orbitaldebris.jsc.nasa.gov/library/iadc-space-debris-guidelines-revision-2.pdf; UNOOSA, 'Guidelines for the Long-term Sustainability of Outer Space Activities'.

[32] UNOOSA, 'Space Law Treaties and Principles'; UNOOSA, 'Convention on International Liability for Damage Caused by Space Objects'; IFATCA, 'Space Debris and its Implications for Aviation Safety'.

[33] IFATCA, 'Space Debris and its Implications for Aviation Safety'; Herbert Smith Freehills Kramer, 'Disputes in space'; Aceris Law, 'Reaching for the Stars'.

[34] IFATCA, 'Space Debris and its Implications for Aviation Safety'; University of Cologne/DLR, 'Cologne Manual on Space Traffic Management'; Herbert Smith Freehills Kramer, 'Disputes in space'.

avoidance and post-event fault analysis depend on timely, granular and often continuously updated data.[35] Without sufficiently robust transparency, both prevention and dispute resolution suffer.[36]

The significance of this gap is practical rather than merely formal. A tribunal or claims body cannot assess due care, causation or mitigation without access to reliable information on orbital status, manoeuvre capability, operator conduct and warning communications.[37] Where data remain fragmented or proprietary, dispute resolution becomes slower, more expensive and less predictable.[38]

e. ITU Allocation Processes and Commercial Spectrum-Related Disputes

Spectrum and associated orbit resources are subject to the ITU Radio Regulations and national-administration filing, coordination and notification processes.[39] The ITU has also been developing mechanisms for non-GSO and mega-constellation realities, including additional non-GSO data requirements and milestone-based deployment requirements under Resolution 35 (REV. WRC-23).[40] A Hong Kong arbitration framework should therefore not be presented as a forum for allocating spectrum-orbit resources, changing ITU priority, or bypassing the ITU and national-administration process.

Its relevance is narrower but still important. Where interference, capacity constraints or regulatory measures give rise to contractual failures - for example under satellite telecommunications capacity

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[35] UNOOSA, 'Space Law Treaties and Principles'; UNOOSA, 'Convention on Registration of Objects Launched into Outer Space'; IFATCA, 'Space Debris and its Implications for Aviation Safety'.

[36] University of Cologne/DLR, 'Cologne Manual on Space Traffic Management'; Herbert Smith Freehills Kramer, 'Disputes in space'; Aceris Law, 'Reaching for the Stars'.

[37] IFATCA, 'Space Debris and its Implications for Aviation Safety'; University of Cologne/DLR, 'Cologne Manual on Space Traffic Management'; Herbert Smith Freehills Kramer, 'Disputes in space'.

[38] Herbert Smith Freehills Kramer, 'Disputes in space'; Aceris Law, 'Reaching for the Stars'.

[39] International Telecommunication Union, 'Radio Regulations, edition of 2024: Volume 1: Articles', ITU, available at https://search.itu.int/history/HistoryDigitalCollectionDocLibrary/1.49.48.en.101.pdf; International Telecommunication Union, 'Non-geostationary-satellite networks (Non-GSO)', ITU, available at https://www.itu.int/en/ITU-R/space/support/nonGSO/Pages/default.aspx.

[40] International Telecommunication Union, 'Resolution 35 (REV. WRC-23)', ITU, available at https://www.itu.int/en/ITU-R/space/Pages/res35main.aspx.

contracts, mobile-connectivity arrangements, remote-sensing data contracts, ground-segment agreements, service-level agreements, indemnities, insurance policies or financing covenants - arbitration can determine private rights and remedies without purporting to decide the public-law allocation question.[41] The procedural value is to handle the technical evidence and multi-party commercial consequences that may follow from an ITU-facing or licensing issue.[42]

[41] OECD, 'The Space Economy in Figures'; World Economic Forum, 'Space Economy Set to Triple'; CMS, 'Space & Dispute Resolution'; Herbert Smith Freehills Kramer, 'Disputes in space'.

[42] CMS, 'Space & Dispute Resolution'; Aceris Law, 'Reaching for the Stars'.

III. Plugging the Gaps

A. Long-Term Public-Law Development

The most complete public-law response would include further development of international law. A future STM or Orbital Activity instrument could establish common standards on conjunction management, manoeuvre coordination, transparency and sustainability, while integrating more clearly with ITU processes and national licensing systems.[43] Such an instrument would not need to replace the existing treaties; it could supplement them in the same way later conventions have supplemented earlier framework regimes in other fields.[44] However, the long history of debates over debris mitigation, STM and sustainability confirms that such development cannot be assumed in the near term.

Similarly, the law of liability could be modernised through a protocol or agreed practice that better accommodates direct commercial claims, multi-party apportionment and contemporary evidentiary realities.[45] Registration obligations could also be strengthened to include more operationally relevant data and more regular updates.[46]

B. Immediate Transnational and Private-Law Responses

The reality, however, is that treaty development will be slow. The more practical near-term path is to build an intermediate layer of governance through licensing practice, industry standards, technical protocols, insurance requirements, and dispute-resolution design.[47] This is where the concept of a

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[43] IFATCA, 'Space Debris and its Implications for Aviation Safety'; University of Cologne/DLR, 'Cologne Manual on Space Traffic Management'.

[44] IFATCA, 'Space Debris and its Implications for Aviation Safety'; Herbert Smith Freehills Kramer, 'Disputes in space'.

[45] UNOOSA, 'Convention on International Liability for Damage Caused by Space Objects'; IFATCA, 'Space Debris and its Implications for Aviation Safety'.

[46] UNOOSA, 'Convention on Registration of Objects Launched into Outer Space'; University of Cologne/DLR, 'Cologne Manual on Space Traffic Management'; UNOOSA, 'Long-term sustainability of outer space activities'.

[47] IFATCA, 'Space Debris and its Implications for Aviation Safety'; University of Cologne/DLR, 'Cologne Manual on Space Traffic Management'; Herbert Smith Freehills Kramer, 'Disputes in space'.

developing lex orbitalis becomes useful: not a comprehensive code, but a body of transnational norms and practices that tribunals and contracting parties can use to allocate risk and assess conduct.[48]

This intermediate layer can perform several functions. It can give more concrete content to open-textured duties such as due regard and due care. It can create default expectations for data-sharing, mitigation and conjunction conduct. It can reduce uncertainty in contract drafting and claims handling. Most importantly, it can create a structured dispute environment before public law fully catches up.[49]

C. Why Arbitration is the Best Immediate Vehicle

Arbitration is not the only possible mechanism for resolving space disputes, but it is the most practical immediate one. Court litigation remains vulnerable to jurisdictional fragmentation, uneven judicial familiarity with space operations, and difficulties in managing multi-party cross-border disputes. State-to-State mechanisms remain politically important but procedurally cumbersome for routine commercial controversies.[50] Mediation has real value, especially where technical cooperation must continue, but it is not a substitute for a binding adjudicative mechanism where a final and enforceable outcome is required.[51]

Arbitration offers a better combination of features. It allows parties to choose a neutral seat, a reliable institution, specialist adjudicators and tailored procedures. Awards can be enforced internationally under the New York Convention. Proceedings can remain confidential. Expert

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[48] CMS, 'Space & Dispute Resolution'; Herbert Smith Freehills Kramer, 'Disputes in space'; Aceris Law, 'Reaching for the Stars'.

[49] IFATCA, 'Space Debris and its Implications for Aviation Safety'; CMS, 'Space & Dispute Resolution'; Herbert Smith Freehills Kramer, 'Disputes in space'.

[50] UNOOSA, 'Convention on International Liability for Damage Caused by Space Objects'; CMS, 'Space & Dispute Resolution'; Herbert Smith Freehills Kramer, 'Disputes in space'.

[51] CMS, 'Space & Dispute Resolution'; Herbert Smith Freehills Kramer, 'Disputes in space'; Asian Academy of International Law, 'SpaceBiz Dialogues (October 2025): The Gravity of Law – Arbitration's Role in the NewSpace Era', 31 October 2025, available at https://aail.org/past-event-2025-10-31/.

evidence can be integrated in a disciplined way. Emergency relief and consolidation tools can be built into the rules.[52]

These features are especially valuable in the LEO context. Many disputes will involve parties from different jurisdictions, technical evidence that needs specialist handling, and commercially sensitive data that parties will resist placing in open court. Many will also require procedural flexibility because they will sit across multiple contracts and insurance arrangements.[53]

D. Existing PCA Outer Space Arbitration Model

A Hong Kong initiative might start with consideration of the PCA Optional Rules for Arbitration of Disputes Relating to Outer Space Activities, effective 6 December 2011. Those rules are based on the UNCITRAL Arbitration Rules and were adapted for disputes with an outer-space component involving States, international organisations and private entities. They also provide for specialist arbitrators and scientific or technical experts, confidentiality procedures, technical summaries for the tribunal, and model arbitration clauses.[54]

The proposal should therefore not claim to create the first space-arbitration mechanism. Its contribution would be different: to build a Hong Kong-led, market-facing protocol or institutional overlay for recurring civil and commercial disputes in Asian and cross-border space commerce, drawing on the PCA Rules where useful while remaining compatible with the rules of Hong Kong-based arbitral institutions.[55]

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[52] Pinsent Masons, 'Hong Kong SAR's position as a major centre of arbitration'; HKIAC, '2024 Administered Arbitration Rules'; Herbert Smith Freehills Kramer, 'Disputes in space'; Aceris Law, 'Reaching for the Stars'.

[53] CMS, 'Space & Dispute Resolution'; Herbert Smith Freehills Kramer, 'Disputes in space'; Aceris Law, 'Reaching for the Stars'.

[54] Permanent Court of Arbitration, 'Optional Rules for Arbitration of Disputes Relating to Outer Space Activities', effective 6 December 2011, available at https://docs.pca-cpa.org/2016/01/Permanent-Court-of-Arbitration-Optional-Rules-for-Arbitration-of-Disputes-Relating-to-Outer-Space-Activities.pdf; Permanent Court of Arbitration, 'Panels of Arbitrators and Experts for Space-related Disputes', PCA, available at https://pca-cpa.org/en/about/panels/panels-of-arbitrators-and-experts-for-space-related-disputes/.

[55] PCA, 'Optional Rules for Arbitration of Disputes Relating to Outer Space Activities'; HKIAC, '2024 Administered Arbitration Rules'; CMS, 'Space & Dispute Resolution'.

IV. A Hong Kong-Centric Space Disputes Framework

A. Why Hong Kong

Hong Kong is unusually well positioned to host a specialist framework for space disputes. It has an established reputation as a leading arbitral seat in Asia, a sophisticated common-law system, a judiciary experienced in arbitration support, and a strong international enforcement profile.[56] It also occupies a distinctive institutional position as a neutral forum with close commercial and legal connectivity to Mainland China while remaining deeply embedded in global commercial practice.[57]

That positioning matters in the context of LEO. If the USA and China remain the principal strategic actors in this field, there will be substantial value in a venue that is credible to international parties and also intelligible to Chinese commercial participants.[58] Hong Kong is one of the few places that can plausibly claim that bridging role in a legally sophisticated and commercially practical way.[59]

B. The Proposed Institutional Concept

The proposed framework should be conceived initially as a Hong Kong-led specialist model for "space disputes" arbitration. It could be framed as a draft ruleset, protocol or best-practice instrument suitable for later institutional adoption, refinement or pilot use by one or more Hong

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[56] China Daily Hong Kong, 'Touch base for Hong Kong's space economy'; Pinsent Masons, 'Hong Kong SAR's position as a major centre of arbitration'; Hong Kong Legal Hub, 'Disputes Resolution Services', available at https://www.legalhub.gov.hk/details.php?a=15&v=disputes-resolution-services.

[57] Neoh, 'Hong Kong's Role in Space Commercialisation'; China Daily Hong Kong, 'Touch base for Hong Kong's space economy'; Li, 'Hong Kong should think strategically about space commercialization'.

[58] Julienne and others, 'China in the Race to Low Earth Orbit'; Cheng and Ma, 'China's satellite industry set for rapid expansion'; Neoh, 'Hong Kong's Role in Space Commercialisation'.

[59] China Daily Hong Kong, 'Touch base for Hong Kong's space economy'; Pinsent Masons, 'Hong Kong SAR's position as a major centre of arbitration'; Li, 'Hong Kong should think strategically about space commercialization'.

Kong-based arbitral institutions.[60] That staged approach is preferable because it allows the concept to be socially tested and technically refined before formal institutionalisation.[61]

The framework should not attempt to displace general arbitral rules. Instead, it should operate as a specialist overlay tailored to civil and commercial disputes involving launch services, constellation operations, SSA and STM services, spectrum-related service and interference consequences, insurance, financing, data services, remote sensing, satellite-enabled telecommunications and downstream customer contracts.[62] Its distinguishing value would lie in procedural calibration rather than substantive legislation.[63]

C. Core Procedural Design

A Hong Kong-centred framework should contain several distinctive features. First, it should facilitate the appointment of arbitrators and tribunal-appointed experts with experience in space law, telecoms regulation, aerospace engineering, orbital mechanics, satellite operations and cross-border regulatory practice.[64] Second, it should contain strong provisions on information security, confidentiality and the handling of commercially sensitive or export-controlled material, building on Hong Kong's existing arbitral practice.[65]

Third, it should include expedited and emergency procedures suited to the operational tempo of space activities. A launch window, a conjunction alert or a live interference issue can make time a central variable. Traditional procedural pacing may therefore be inappropriate in certain categories

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[60] Neoh, 'Hong Kong's Role in Space Commercialisation'; HKU Faculty of Law, 'Resolution of Space Disputes in the New Space Age'; HKIAC, '2024 Administered Arbitration Rules'.

[61] HKU Faculty of Law, 'Resolution of Space Disputes in the New Space Age'; AAIL, 'The Gravity of Law'.

[62] CMS, 'Space & Dispute Resolution'; Herbert Smith Freehills Kramer, 'Disputes in space'; Aceris Law, 'Reaching for the Stars'.

[63] CMS, 'Space & Dispute Resolution'; Herbert Smith Freehills Kramer, 'Disputes in space'.

[64] HKU Faculty of Law, 'Resolution of Space Disputes in the New Space Age'; Herbert Smith Freehills Kramer, 'Disputes in space'; Permanent Court of Arbitration, 'Panels of Arbitrators and Experts for Space-related Disputes', PCA, available at https://pca-cpa.org/en/about/panels/panels-of-arbitrators-and-experts-for-space-related-disputes/.

[65] HKIAC, '2024 Administered Arbitration Rules'; Hong Kong Legal Hub, 'Disputes Resolution Services'.

of case.[66] Fourth, the framework should include robust joinder and consolidation tools because constellation disputes often involve multiple contracts, multiple insurers and multiple technical actors.[67]

Finally, the framework should contain evidence-management provisions directed specifically at SSA, STM, telemetry, simulation outputs and other large technical datasets. Without these provisions, the rules would fail to address one of the principal practical difficulties of space disputes: the need to convert complex technical information into legally usable evidence.[68]

[66] HKIAC, '2024 Administered Arbitration Rules'; Herbert Smith Freehills Kramer, 'Disputes in space'.

[67] HKIAC, '2024 Administered Arbitration Rules'; Herbert Smith Freehills Kramer, 'Disputes in space'; Aceris Law, 'Reaching for the Stars'.

[68] HKU Faculty of Law, 'Resolution of Space Disputes in the New Space Age'; Herbert Smith Freehills Kramer, 'Disputes in space'; PCA, 'Panels of Arbitrators and Experts for Space-related Disputes'; Permanent Court of Arbitration, 'Optional Rules for Arbitration of Disputes Relating to Outer Space Activities', effective 6 December 2011, available at https://docs.pca-cpa.org/2016/01/Permanent-Court-of-Arbitration-Optional-Rules-for-Arbitration-of-Disputes-Relating-to-Outer-Space-Activities.pdf.

V. Stakeholder-Specific Dispute Architecture

A. Launchers

Launchers will remain central players in the dispute environment. Their disputes are likely to involve launch failure, delay, payload damage, insertion error, mission redesign costs, indemnity allocation and interaction with insurance recoveries.[69] These disputes are often contract-heavy but technically fact-sensitive, which makes them particularly suitable for arbitration supported by expert determination on discrete engineering issues.[70]

A specialist Hong Kong framework should therefore support detailed contractual risk allocation while also enabling rapid appointment of technical experts and emergency decision-making where launch timing or mission preservation is at stake.[71] It should also facilitate the coordinated handling of claims cascading from one failed or defective launch event into multiple downstream agreements.[72]

B. Satellite Operators

Satellite operators will likely generate the largest volume and the greatest complexity of disputes. They sit at the intersection of conjunction management, manoeuvre responsibility, contractual consequences of interference, debris events, data-sharing obligations, licensing conditions and service commitments. [73] Their contractual landscape is usually multi-layered, involving manufacturing, launch, software, SSA services, insurance, financing and customer agreements.[74]

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[69] IFATCA, 'Space Debris and its Implications for Aviation Safety'; Herbert Smith Freehills Kramer, 'Disputes in space'; Aceris Law, 'Reaching for the Stars'.

[70] CMS, 'Space & Dispute Resolution'; Herbert Smith Freehills Kramer, 'Disputes in space'.

[71] HKIAC, '2024 Administered Arbitration Rules'; Aceris Law, 'Reaching for the Stars'.

[72] Herbert Smith Freehills Kramer, 'Disputes in space'; Aceris Law, 'Reaching for the Stars'.

[73] Hilotin, '100,000 satellites'; IFATCA, 'Space Debris and its Implications for Aviation Safety'; University of Cologne/DLR, 'Cologne Manual on Space Traffic Management'; ESA, 'ESA Space Environment Report 2025'.

[74] Herbert Smith Freehills Kramer, 'Disputes in space'; Aceris Law, 'Reaching for the Stars'.

For operators, a useful dispute architecture must permit both bilateral and multi-party proceedings. It must support urgent interim relief, technical evidence management, joinder, consolidation and nuanced apportionment of causation. A Hong Kong-centred specialist framework could make a particular contribution here by offering procedures that are neither purely commercial in a generic sense nor tied to the slow tempo of public international mechanisms.[75]

C. Customers and Downstream Users

Customers will often not be concerned with orbital mechanics as such. Their focus will be continuity, service quality, latency, coverage, cybersecurity and access obligations.[76] Yet their disputes will increasingly be caused by events in orbit, including conjunction manoeuvres, debris incidents, regulatory shutdowns or interference that affects quality of service.[77]

The dispute architecture for customers should therefore be tiered. Smaller service disputes may still be addressed through ordinary contractual channels or domestic law, but major enterprise, sovereign and infrastructure customers will increasingly require arbitration clauses capable of handling systemic outage claims, force majeure issues and interdependent upstream causation.[78] A specialist framework can help by supplying model clauses and procedural options calibrated to these risks.[79]

D. Insurers, Financiers and Technical Service Providers

Insurers, lenders and SSA or STM service providers deserve explicit attention. In a 100,000-satellite environment, these actors will become structurally important to the risk architecture of the sector.[80]

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[75] CMS, 'Space & Dispute Resolution'; Herbert Smith Freehills Kramer, 'Disputes in space'; Aceris Law, 'Reaching for the Stars'.

[76] Research and Markets, 'LEO Satellite Market Global Forecast Report to 2030'; Grand View Research, 'LEO Satellite Market'; Herbert Smith Freehills Kramer, 'Disputes in space'.

[77] Hilotin, '100,000 satellites'; IFATCA, 'Space Debris and its Implications for Aviation Safety'; University of Cologne/DLR, 'Cologne Manual on Space Traffic Management'.

[78] Pinsent Masons, 'Hong Kong SAR's position as a major centre of arbitration'; CMS, 'Space & Dispute Resolution'; Herbert Smith Freehills Kramer, 'Disputes in space'; Aceris Law, 'Reaching for the Stars'.

[79] CMS, 'Space & Dispute Resolution'; Aceris Law, 'Reaching for the Stars'.

[80] IFATCA, 'Space Debris and its Implications for Aviation Safety'; Herbert Smith Freehills Kramer, 'Disputes in space'.

Insurance disputes may concern disclosure, subrogation, aggregation, exclusions, causation and recovery strategy. Financing disputes may turn on whether operational anomalies constitute default or trigger covenant consequences. SSA and STM providers may become involved where their data, warnings or analytical services are alleged to have been deficient.[81]

A serious specialist framework must therefore accommodate disputes beyond the traditional launcher-operator dyad. It should be capable of joining or coordinating claims involving insurers, reinsurers, lenders, technical vendors and data-service providers, because these disputes will increasingly arise from the same factual matrix.[82]

[81] IFATCA, 'Space Debris and its Implications for Aviation Safety'; Herbert Smith Freehills Kramer, 'Disputes in space'; Aceris Law, 'Reaching for the Stars'.

[82] Herbert Smith Freehills Kramer, 'Disputes in space'; Aceris Law, 'Reaching for the Stars'.

VI. How Hong Kong Can Position Itself

A. Building a Market-Facing Specialist Identity

Hong Kong should position itself not as a substitute for the international law of outer space or for ITU allocation processes, but as the preferred Asian and cross-border forum for the resolution of commercial space-economy disputes and closely related regulatory-facing private claims.[83] That positioning can be built around arbitration, mediation, technical expertise, insurance, finance and professional services.[84]

The first step is reputational and institutional. Hong Kong needs a recognisable "space disputes" offering, backed by credible rules, model clauses, specialist panels and regular public engagement.[85] The second step is ecosystem development, including cooperation among arbitrators, engineers, insurers, academics, telecoms specialists and policy actors.[86]

B. Leveraging Hong Kong's Bridge Function

Hong Kong's distinctive strategic value lies in its bridge function. It can serve as a neutral platform where Mainland Chinese and international actors can transact, negotiate and resolve disputes under procedures that are internationally legible and commercially trusted.[87] In a field likely to be shaped

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[83] Neoh, 'Hong Kong's Role in Space Commercialisation'; China Daily Hong Kong, 'Touch base for Hong Kong's space economy'; Pinsent Masons, 'Hong Kong SAR's position as a major centre of arbitration'; Li, 'Hong Kong should think strategically about space commercialization'.

[84] China Daily Hong Kong, 'Touch base for Hong Kong's space economy'; Li, 'Hong Kong should think strategically about space commercialization'.

[85] Neoh, 'Hong Kong's Role in Space Commercialisation'; HKU Faculty of Law, 'Resolution of Space Disputes in the New Space Age'; AAIL, 'The Gravity of Law'.

[86] HKU Faculty of Law, 'Resolution of Space Disputes in the New Space Age'; AAIL, 'The Gravity of Law'; PCA, 'Panels of Arbitrators and Experts for Space-related Disputes'.

[87] Neoh, 'Hong Kong's Role in Space Commercialisation'; China Daily Hong Kong, 'Touch base for Hong Kong's space economy'; Pinsent Masons, 'Hong Kong SAR's position as a major centre of arbitration'; Li, 'Hong Kong should think strategically about space commercialization'.

by both geopolitical rivalry and deep commercial interdependence, that bridge function has unusual value.[88]

Hong Kong can reinforce that role by aligning its dispute-resolution institutions with broader developments in mediation and cross-border professional services, including the emerging role of the International Organization for Mediation (IOMed) and the territory's strong university and legal communities.[89] This is not merely a branding exercise. It is a way of building institutional density around a category of disputes that will become more technically demanding and commercially significant over time.[90]

[88] Julienne and others, 'China in the Race to Low Earth Orbit'; Cheng and Ma, 'China's satellite industry set for rapid expansion'; China Daily Hong Kong, 'Touch base for Hong Kong's space economy'.

[89] International Organization for Mediation, 'About Us', IOMed, available at https://www.iomed.int/about-us/; China Daily Hong Kong, 'Touch base for Hong Kong's space economy'; Li, 'Hong Kong should think strategically about space commercialization'; HKU Faculty of Law, 'Resolution of Space Disputes in the New Space Age'.

[90] HKU Faculty of Law, 'Resolution of Space Disputes in the New Space Age'; AAIL, 'The Gravity of Law'.

VII. Recommendations for a Hong Kong-Led Initiative

A Hong Kong-led initiative should proceed in stages. The first stage should be the constitution of a working group composed of arbitrators, space-law specialists, engineers, telecoms experts, insurers, financiers and commercial users of satellite services.[91] This group should identify priority dispute categories, benchmark existing arbitral practice, and refine the procedural requirements of a specialist framework.[92]

The second stage should be the preparation of a consultation draft. That draft should include a statement of rationale, a proposed specialist ruleset or protocol, model clauses for different transaction types, and explanatory commentary on the interaction between the framework and existing arbitral rules in Hong Kong.[93] It should be circulated to Hong Kong-based arbitral institutions, industry stakeholders, insurers, telecoms actors, universities and relevant policy communities for comment.[94]

The third stage should be convening and validation. Hong Kong should host a dedicated conference or roundtable to bring together local and international stakeholders to test the framework against real-world dispute scenarios and market needs.[95] This process would help build legitimacy, generate technical buy-in, and position Hong Kong as a serious venue for the next generation of cross-border space disputes.[96]

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[91] HKU Faculty of Law, 'Resolution of Space Disputes in the New Space Age'; AAIL, 'The Gravity of Law'.

[92] CMS, 'Space & Dispute Resolution'; Herbert Smith Freehills Kramer, 'Disputes in space'; Aceris Law, 'Reaching for the Stars'.

[93] Neoh, 'Hong Kong's Role in Space Commercialisation'; HKU Faculty of Law, 'Resolution of Space Disputes in the New Space Age'; HKIAC, '2024 Administered Arbitration Rules'.

[94] Pinsent Masons, 'Hong Kong SAR's position as a major centre of arbitration'; HKU Faculty of Law, 'Resolution of Space Disputes in the New Space Age'; HKIAC, '2024 Administered Arbitration Rules'.

[95] China Daily Hong Kong, 'Touch base for Hong Kong's space economy'; HKU Faculty of Law, 'Resolution of Space Disputes in the New Space Age'; AAIL, 'The Gravity of Law'.

[96] Neoh, 'Hong Kong's Role in Space Commercialisation'; China Daily Hong Kong, 'Touch base for Hong Kong's space economy'; Pinsent Masons, 'Hong Kong SAR's position as a major centre of arbitration'.

The fourth stage should be institutional adoption or piloting. Depending on stakeholder response, the framework could then be adopted formally by one or more Hong Kong-based arbitral institutions, issued as recommended model rules, or used as the basis for pilot clauses in selected sectors such as launch contracting, constellation partnerships, SSA services, remote-sensing data contracts, satellite telecommunications and satellite-enabled infrastructure projects.[97] This staged pathway is more realistic than immediate formal promulgation and better suited to the iterative, technically contingent nature of the sector.[98]

[97] HKIAC, '2024 Administered Arbitration Rules'; Aceris Law, '2024 HKIAC Administered Arbitration Rules', available at https://www.acerislaw.com/2024-hkiac-administered-arbitration-rules/; Aceris Law, 'Reaching for the Stars'.

[98] HKU Faculty of Law, 'Resolution of Space Disputes in the New Space Age'; Herbert Smith Freehills Kramer, 'Disputes in space'.

Conclusion

The expansion of LEO constellations towards a possible 100,000-satellite environment by 2030 is not simply an operational or regulatory issue. It is also a dispute-resolution problem of growing scale and complexity.[99] The foundational treaties of international space law remain necessary, and ITU processes remain central for spectrum-orbit coordination, but neither supplies the procedural specificity or institutional machinery needed for the civil and commercial conflicts that will emerge from a crowded orbital economy.[100]

In that setting, a Hong Kong-centred specialist arbitration framework represents a practical and timely response. It offers a way to manage legal uncertainty, technical complexity and geopolitical sensitivity without pretending to replace treaty reform, debris-mitigation rulemaking or ITU allocation mechanisms.[101] A Hong Kong-led initiative can play a catalytic role by designing the framework, convening the market, and helping position Hong Kong as a leading centre for resolving the private disputes of the new space age.[102]

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[99] ESA, 'Around 100 000 satellites'; IFATCA, 'Space Debris and its Implications for Aviation Safety'; University of Cologne/DLR, 'Cologne Manual on Space Traffic Management'.

[100] UNOOSA, 'Space Law Treaties and Principles'; UNOOSA, 'Convention on International Liability for Damage Caused by Space Objects'; IFATCA, 'Space Debris and its Implications for Aviation Safety'.

[101] China Daily Hong Kong, 'Touch base for Hong Kong's space economy'; Pinsent Masons, 'Hong Kong SAR's position as a major centre of arbitration'; CMS, 'Space & Dispute Resolution'; Herbert Smith Freehills Kramer, 'Disputes in space'.

[102] Neoh, 'Hong Kong's Role in Space Commercialisation'; China Daily Hong Kong, 'Touch base for Hong Kong's space economy'; HKU Faculty of Law, 'Resolution of Space Disputes in the New Space Age'; HKIAC, '2024 Administered Arbitration Rules'.

Annex: Glossary of Terms and Abbreviations

Term / Abbreviation	Definition
Arbitral seat	The legal "home" of an arbitration, which determines the supervisory court and procedural law supporting the arbitral process.
Arbitration	Private dispute-resolution process in which parties submit a dispute to one or more arbitrators whose award can usually be enforced internationally.
Conjunction event / warning	A predicted close approach between two space objects that may require risk assessment, coordination, or avoidance action.
Debris generation / mitigation	Creation of non-functional space objects or fragments, and technical or operational measures intended to reduce debris growth.
Due care	A standard of reasonable care used to assess whether an actor took appropriate precautions in light of foreseeable risks.
Due regard	Outer Space Treaty principle requiring States to conduct space activities with appropriate regard for the corresponding interests of other States.
Emergency relief	Urgent interim measures that may be sought before or during arbitration, for example where timing or operational risk makes ordinary procedure too slow.
Ephemeris	Data showing the calculated or observed position and velocity of a celestial object or artificial satellite over time.
ESA (European Space Agency)	Intergovernmental organisation that coordinates European space programmes and publishes space-environment materials relevant to orbital congestion and debris.
Fault-based liability	Liability that depends on proof of fault or negligence; under the Liability Convention this applies to damage caused elsewhere than on the surface of the Earth.
Force majeure	Contractual concept addressing extraordinary events beyond a party's control that prevent or delay performance.
GSO / non-GSO	GSO refers to geostationary-satellite orbit; non-GSO systems operate outside that orbit and include many LEO constellation systems.
IOMed (International Organization for Mediation)	International mediation institution mentioned as part of Hong Kong's wider dispute-resolution ecosystem.
ITU (International Telecommunication Union)	UN specialised agency whose Radio Regulations and coordination processes govern international use of radio-frequency spectrum and associated satellite-orbit resources.

Joinder and consolidation	Procedural tools that allow related parties or related arbitrations to be brought together where disputes span multiple contracts or actors.
Launching State	A State that launches, procures the launch of, or from whose territory or facility a space object is launched; the term is central to the Liability Convention.
LEO (Low Earth Orbit)	Orbital region close to Earth, commonly treated in the essay as the operating environment for large satellite constellations and congestion-related disputes.
Lex orbitalis	A developing body of transnational norms, technical practices, contract standards, and dispute-resolution expectations for orbital activities and space commerce.
Liability Convention	The 1972 Convention on International Liability for Damage Caused by Space Objects, establishing launching-State liability rules for space-object damage.
Mega-constellation	A very large coordinated network of satellites, often numbering in the hundreds or thousands, typically deployed in LEO to provide communications or data services.
New York Convention	The Convention on the Recognition and Enforcement of Foreign Arbitral Awards, which supports cross-border recognition and enforcement of arbitral awards.
Non-appropriation	Outer Space Treaty principle that outer space, including the Moon and other celestial bodies, is not subject to national appropriation by sovereignty, use, occupation, or other means.
Orbital insertion error	Failure or inaccuracy in placing a spacecraft into its intended orbit, potentially causing delay, mission redesign costs, or other commercial consequences.
Outer Space Treaty	The 1967 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, the foundational treaty of international space law.
PCA (Permanent Court of Arbitration)	Intergovernmental organisation providing dispute-resolution services, including administration under the Optional Rules for Arbitration of Disputes Relating to Outer Space Activities.
PCA Optional Rules for Outer Space Disputes	The PCA's 2011 arbitration rules adapted from the UNCITRAL Arbitration Rules for disputes involving outer-space activities.
Private-law claim	A claim based on private rights and obligations, such as contract, insurance, financing, service, or indemnity obligations.

Public-law allocation	Regulatory or treaty-based allocation of public rights or responsibilities, such as spectrum-orbit coordination or State responsibility, rather than private contractual liability.
Radiofrequency interference	Disruption to satellite communications or services caused by overlapping, conflicting, or harmful use of radio-frequency spectrum.
Registration Convention	The 1975 Convention on Registration of Objects Launched into Outer Space, requiring States to maintain registries and furnish information on space objects.
Remote sensing	Collection of information about Earth or other objects from satellites or other remote platforms, often used in data-service contracts.
Service-level agreement	Contractual commitment defining expected service performance, such as availability, quality, latency, delivery standards, or remedies for failure.
SSA (Space Situational Awareness)	Tracking, characterisation, and prediction of space objects and the orbital environment, including information used for conjunction assessment.
STM (Space Traffic Management)	Technical and regulatory planning, coordination, and operational practices intended to support safe access to, operations in, and return from outer space.
Subrogation	Insurance-law mechanism allowing an insurer that has paid a loss to pursue recovery against a responsible third party.
Telemetry	Measurement data recorded and transmitted from a satellite or spacecraft, often relevant to operational status, manoeuvres, or fault analysis.
UNCITRAL Arbitration Rules	Procedural rules prepared by UNCITRAL for ad hoc arbitration and used as the basis for the PCA Optional Rules for outer-space disputes.