
BEYOND EARTH: RETHINKING INTELLECTUAL PROPERTY JURISDICTION AND ENFORCEMENT IN OUTER SPACE

Chandramani Bhaskar, ILS Law College, Pune

ABSTRACT

Intellectual property law is built on the assumption that legal rights stop at a border. Patents, trademarks, and copyrights are granted, held, and enforced within the territory of the state that recognises them, yet the Outer Space Treaty of 1967 rules out exactly the kind of territorial claim on which that system depends. This paper traces how states, space agencies, and international institutions have tried to reconcile these two regimes since the start of the Space Age, from the deeming provision added to United States patent law in 1990 to Article 21 of the International Space Station Intergovernmental Agreement. It then turns to the commercial pressures widening the gap: resource-extraction statutes in the United States and Luxembourg that say nothing about intellectual property, an Artemis Accords framework that defers the question to bilateral side-agreements, and an enforcement doctrine, illustrated by *Microsoft Corp. v. AT&T Corp.*, that resists any extension of national IP law beyond a country's borders. A dedicated section examines India as a case study of a major spacefaring state whose Space Policy of 2023 and pending Space Activities Bill still leave IP ownership and licensing largely unaddressed. The paper argues that a patchwork of unilateral deeming fictions cannot support an era of shared lunar bases, private mining ventures, and orbital manufacturing, and proposes a coordinated response built around the registry-jurisdiction principle already present in Article VIII of the Outer Space Treaty, model IP annexes for mission agreements, and a specialised arbitration track for space-related IP disputes.

I. Introduction

Space law and intellectual property law grew up almost entirely apart from one another. The first assumed that no state could own any part of the heavens; the second assumed that legal protection could exist only because a state chose to grant it within its own borders. For most of the twentieth century this mismatch caused little practical trouble, because very little that happened in orbit looked like commerce. Satellites carried signals, not inventions anyone meant to patent. That changed once astronauts began working inside a shared, multi-module laboratory, and it has changed a good deal more since private companies started designing hardware meant to mine, manufacture, and operate off the planet.

The underlying problem is easy to state and hard to resolve. Article II of the Outer Space Treaty forbids any state from claiming sovereignty over outer space, the Moon, or other celestial bodies, whether by occupation, use, or any other means.¹ Patent, trademark, and copyright protection, by contrast, has always been granted by a sovereign within a defined territory and enforced only there.² An invention made in Germany has no patent protection in Brazil unless Brazil separately grants one. If outer space belongs to no state, an astronaut inventing something on the way to Mars would, strictly speaking, be inventing in a legal vacuum.

States have not accepted that conclusion, and the devices they have used to avoid it are the subject of this paper. The United States legislated around the problem, deeming inventions made aboard American-registered space objects to have been made on American soil.³ Germany reached a similar result through administrative practice rather than fresh legislation.⁴ The states that built the International Space Station negotiated a bespoke regime, Article 21 of the 1998 Intergovernmental Agreement, assigning each module the law of the partner that registered it. These are workable patches for a small number of well-resourced, treaty-bound programmes. They were never designed for the world now taking shape: multinational lunar

¹Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies art. II, Jan. 27, 1967, 18 U.S.T. 2410, 610 U.N.T.S. 205 [hereinafter Outer Space Treaty].

²See Paris Convention for the Protection of Industrial Property, Mar. 20, 1883, as revised, 21 U.S.T. 1583, 828 U.N.T.S. 305; Berne Convention for the Protection of Literary and Artistic Works, Sept. 9, 1886, as revised, S. Treaty Doc. No. 99-27 (1986).

³35 U.S.C. § 105(a) (2018).

⁴European Space Agency, Patents and Space-Related Inventions, https://www.esa.int/About_Us/Law_at_ESA/Intellectual_Property_Rights/Patents_and_space-related_inventions (last visited Aug. 14, 2026).

landers, asteroid-mining ventures, in-orbit manufacturing, and dozens of new national space programmes that have adopted none of these fixes.

This paper surveys that patchwork, tests it against the doctrine governing how far national IP law can reach, and asks what a more durable framework might look like. Part II sets out the structural conflict between IP territoriality and the non-appropriation principle. Part III examines national patent-deeming statutes. Part IV takes the ISS regime as a working case study. Part V considers enforcement. Part VI turns to the commercial pressures outrunning existing legal tools. Part VII assesses the efforts of WIPO and COPUOS. Part VIII uses India as a case study of a major spacefaring state still building its domestic framework, and Part IX sets out proposals for reform.

II. Two Systems Built for Different Worlds

Intellectual property protection has always been territorial. The Paris Convention and the Berne Convention, the oldest multilateral IP instruments, were drafted on the understanding that a patent, trademark, or copyright is a creature of the law of the country that grants it, valid only within that country's borders.⁵ The Agreement on Trade-Related Aspects of Intellectual Property Rights did not disturb that premise; it obliges WTO members to maintain minimum standards of protection within their own territories, not to recognise one another's grants automatically.⁶ A United States patent stops a competitor from making the patented product in the United States. It does nothing to a factory in Vietnam.

Outer space law took the opposite starting point. Article II provides that outer space, including the Moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by use, occupation, or any other means.⁷ Where IP law needs a sovereign territory to attach to, space law is built specifically to deny that one exists there.

The Treaty leaves a narrower door open. Article VIII provides that a state on whose registry a space object is carried retains jurisdiction and control over that object and its personnel while in space, and that ownership of an object launched into space is not affected

⁵See generally Sam Ricketson & Jane C. Ginsburg, *International Copyright and Neighbouring Rights: The Berne Convention and Beyond* (2d ed. 2006).

⁶Agreement on Trade-Related Aspects of Intellectual Property Rights art. 1, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, 1869 U.N.T.S. 299.

⁷Outer Space Treaty, *supra* note 1, art. II.

by its presence there.⁸ This is not territorial sovereignty; commentators describe it as registry-based or quasi-territorial jurisdiction, comparable to the authority a flag state exercises over a vessel on the high seas.⁹ The 1976 Registration Convention supplies the administrative machinery, requiring launching states to maintain a registry and notify the UN Secretary-General of the objects they launch.¹⁰ It is this registry-based jurisdiction, and nothing else, that legislators and negotiators have reached for whenever intellectual property law needed something to attach to. Rather than ask where in space an invention was made, an unanswerable question under Article II, they ask which state's registry the relevant spacecraft is on and apply that state's law by legal fiction. The approach works passably for a single-state mission. It becomes considerably harder once astronauts, contractors, and data from several countries are all working inside the same pressurised module.

III. Patents Off Planet: National Deeming Fictions

The most direct legislative response came from the United States Congress in 1990, which added section 105 to Title 35 of the U.S. Code. Any invention made, used, or sold in outer space on a space object under United States jurisdiction or control is considered to have been made, used, or sold within the United States for patent purposes, unless an international agreement provides otherwise or the object is registered to a foreign state.¹¹ A second subsection lets the United States extend the same treatment to inventions made aboard a foreign-registered object, but only where a specific bilateral agreement says so.¹² The statute is short, but it converts Article VIII's registry-based jurisdiction into an operative patent-law fiction.

Germany appears to be the only other major patent jurisdiction to have made a comparable move, adjusting its interpretation of existing patent law shortly before signing the ISS Intergovernmental Agreement so that inventions made aboard the European Columbus module would fall within German patent jurisdiction.¹³ Beyond these two examples, the position is close to a void; most national patent statutes contain no provision addressing inventions made

⁸Outer Space Treaty, *supra* note 1, art. VIII.

⁹See Divya Persaud et al., *Constraints on Interstellar Sovereignty* (2023), <https://arxiv.org/pdf/2308.11076>.

¹⁰Convention on Registration of Objects Launched into Outer Space, Jan. 14, 1975, 28 U.S.T. 695, 1023 U.N.T.S. 15.

¹¹35 U.S.C. § 105(a) (2018).

¹²35 U.S.C. § 105(b) (2018).

¹³European Space Agency, *supra* note 4.

in space, so there is often no domestic law to apply at all. The European Space Agency's own guidance acknowledges the gap directly, noting that patents are in principle enforceable only within national boundaries and that outer space, like the high seas and Antarctica, cannot be appropriated by any state.¹⁴

The gap is not merely theoretical. The United States operated for decades on a first-to-invent system, under which the place and date an invention was actually made could decide priority between rival claimants, making section 105's fiction more than a formality.¹⁵ Even under the first-to-file regime adopted by the America Invents Act, the fiction remains necessary for a more basic reason: without it, an invention made aboard a spacecraft would arguably have been made nowhere any patent office recognises. There is also a conceptual problem beneath the statutory fix. The traditional boundary separating national airspace from outer space is the so-called Kármán line, set at roughly one hundred kilometres above sea level, a scientific convention rather than a treaty obligation, and one not universally accepted even for aeronautical purposes.¹⁶ A deeming statute like section 105 sidesteps the question by tying jurisdiction to the registered object rather than to any altitude, which is sensible, but it also means the very concept of an invention being made in outer space is doing legal work without ever having been pinned down.

IV. The International Space Station as Working Laboratory

If any part of space law has been tested against daily practice, it is the regime built for the International Space Station. The station is a collection of modules, each registered to, and under the jurisdiction of, the partner that provided it: the United States, Russia, Japan, Canada, and the eleven European states acting collectively as the European Partner through the European Space Agency.¹⁷ Article 5 of the 1998 Intergovernmental Agreement restates the Outer Space Treaty's registry principle for this specific context: each partner retains jurisdiction and control

¹⁴Id.

¹⁵See Space-Related Disputes Part 2 — The Current Landscape and Specific Intellectual Property Aspects, Daily Jus (Dec. 23, 2024), <https://dailyjus.com/world/2024/12/space-related-disputes-part-2-the-current-landscape-and-specific-intellectual-property-aspects>.

¹⁶World Intellectual Prop. Org., Patent Expert Issues: Inventions in Space, <https://www.wipo.int/en/web/patents/topics/outer-space> (last visited Aug. 14, 2026).

¹⁷European Space Agency, International Space Station Legal Framework, https://www.esa.int/Science_Exploration/Human_and_Robotic_Exploration/International_Space_Station/International_Space_Station_legal_framework (last visited Aug. 14, 2026).

over the elements it registers, and over its own nationals aboard the station.¹⁸

Article 21 extends that logic to intellectual property. For the purposes of a partner's own IP law, activity occurring in or on a partner's flight element is deemed to occur only in that partner's territory, subject to a special arrangement for the European Partner, where a single invention could otherwise trigger simultaneous claims across eleven jurisdictions at once.¹⁹ An invention made inside the American segment is treated as made in the United States for patent purposes; the same invention made inside a European module is instead referred to a single European law chosen under the Agreement's internal rules. Article 21 also directs the partners to keep working on unresolved IP issues, a quiet admission that the 1998 text did not settle them completely.

Users who access the station through their national agency, rather than as agency employees, have their rights fixed contractually, so an individual user's IP position depends on terms negotiated with that agency before ever reaching orbit.²⁰ And if an infringement claim does arise, the Agreement creates no new tribunal to hear it; the claim proceeds under whichever partner's law is deemed applicable, in that partner's own courts, using that partner's usual procedure.²¹

The ISS model is often held up as a template for future missions, and there is something to that claim: it shows that a small group of committed, treaty-bound states can build a working jurisdictional regime without a new multilateral IP treaty. But the model depends on every participant negotiating a detailed intergovernmental agreement before launch, on each having a domestic legal system able to receive a deeming fiction, and on the partner group staying small and stable. None of those conditions obviously holds for a lunar Gateway station serving a shifting roster of Artemis Accords signatories, for a privately financed mining consortium, or for a future station built entirely outside both the ISS and Artemis frameworks.

¹⁸Agreement Among the Government of Canada, Governments of Member States of the European Space Agency, the Government of Japan, the Government of the Russian Federation, and the Government of the United States of America Concerning Cooperation on the Civil International Space Station art. 5, Jan. 29, 1998, T.I.A.S. No. 12,927 [hereinafter ISS IGA].

¹⁹ISS IGA, *supra* note 18, art. 21, para. 2.

²⁰*Id.*

²¹*Id.*

V. Enforcement Meets the Presumption Against Extraterritoriality

Even where a state successfully deems an invention to have been made on its own territory, it still has to enforce that right, and enforcement doctrine resists reaching beyond national borders in its own right. In *Deepsouth Packing Co. v. Laitram Corp.*, the Supreme Court refused to treat the export of unassembled components of a patented machine as infringement, holding that the American patent system makes no claim to extraterritorial effect.²² Congress responded with section 271(f), making it infringement to export components of a patented invention for combination abroad.²³ That provision, too, has been read narrowly. In *Microsoft Corp. v. AT&T Corp.*, the Court held that Microsoft's export of master disks of Windows software, copied abroad and installed on foreign-made computers, did not trigger liability, because the copies actually installed were not themselves supplied from the United States.²⁴ The presumption against extraterritorial application, the Court reaffirmed, is a rule of general application that Congress must clearly displace rather than one courts should extend by inference.

Transposed into orbit, this doctrine cuts against any assumption that IP protection simply follows the flag. Section 105 gets an American-registered spacecraft treated as American soil for the narrow purpose of where an invention is made, used, or sold; it says nothing about conduct on Earth that merely has effects in space, or about a foreign-registered object that later re-enters American commerce. The USPTO has confirmed that a process-patent holder can pursue claims when a space object carrying the patented product re-enters a country offering reciprocal protection.²⁵ That answer covers only physical re-entry and leaves untouched the larger category of disputes over software, data, and know-how generated and exploited entirely in orbit.

Copyright and trademark protection sit even further from a settled answer. United States federal law denies copyright protection to works produced by the government itself, so photographs taken by NASA astronauts, including the Earthrise image from Apollo 8, enter the public domain the moment they are taken.²⁶ The European Space Agency and Japan's JAXA

²²*Deepsouth Packing Co. v. Laitram Corp.*, 406 U.S. 518, 531 (1972).

²³35 U.S.C. § 271(f) (2018).

²⁴*Microsoft Corp. v. AT&T Corp.*, 550 U.S. 437, 441 (2007).

²⁵See *An Evaluation of Intellectual Property Rights Protection in Outer Space*, Int'l J. for Multidisciplinary Rsch., <https://www.ijfmr.com/papers/2023/6/11411.pdf> (citing USPTO letter, 2020).

²⁶17 U.S.C. § 105 (2018); see also The Planetary Society, *Making Pictures Based on NASA Imagery*,

instead assert copyright over their own imagery, with more restrictive terms of use than NASA applies to its own.²⁷ A single joint-mission photograph can therefore carry different copyright status depending on which agency's camera fired the shutter, an outcome that would be unusual in any terrestrial joint venture and has become ordinary in orbit.

VI. Commercial Frontiers Outpacing the Law

The deeming statutes and the ISS regime were built for state-run science missions. They are now being asked to support a commercial space economy that neither anticipated, and two pieces of legislation illustrate the gap without closing it. The first is the United States' Space Resource Exploration and Utilization Act of 2015, part of the broader Commercial Space Launch Competitiveness Act, entitling any U.S. citizen engaged in commercial recovery of an asteroid or space resource to that resource.²⁸ The statute answers who owns the material a company extracts; it says nothing about patents covering the extraction hardware, the methods used to locate a target asteroid, or biotechnology developed from returned material.

The second is Luxembourg's Law of 20 July 2017 on the Exploration and Use of Space Resources, declaring that space resources are capable of being owned and creating a licensing regime for operators.²⁹ The law expressly carves out satellite communications, orbital positions, and frequency-band use from its scope, showing that its drafters were alert to at least some adjacent questions.³⁰ Intellectual property is not among the carve-outs, because it is not addressed at all. Commentators have noted a related difficulty: nothing guarantees that other states will recognise an appropriation grounded only in Luxembourg's domestic law, a point equally true of any patent protection Luxembourg might purport to attach to the extraction technology.³¹

<https://www.planetary.org/articles/20120608-rush-copyright-nasa-images> (last visited Aug. 14, 2026).

²⁷European Space Agency, ESA Copyright Notice, https://www.esa.int/About_Us/Law_at_ESA/Intellectual_Property_Rights/ESA_copyright_notice (last visited Aug. 14, 2026).

²⁸Commercial Space Launch Competitiveness Act, Pub. L. No. 114-90, tit. IV, 129 Stat. 704, 720-22 (2015) (codified at 51 U.S.C. § 51303).

²⁹Loi du 20 juillet 2017 sur l'exploration et l'utilisation des ressources de l'espace [Law of 20 July 2017 on the Exploration and Use of Space Resources] art. 1, Journal Officiel du Grand-Duché de Luxembourg, No. 674 (July 28, 2017).

³⁰Id. art. 3.

³¹Space: The Final Frontier — Luxembourg Provides a Legal Framework for the Commercial Exploitation of Space Resources, Lexology (Aug. 22, 2017), <https://www.lexology.com/library/detail.aspx?g=af341604-9dbd-4bd7-ac62-7c141eeb73a3>.

The Artemis Accords follow the same pattern at a larger scale. Led by the United States and signed by seventy states as of mid-2026, the Accords affirm that the extraction of space resources does not inherently constitute national appropriation under Article II of the Outer Space Treaty, and commit signatories to inform the United Nations of their extraction activities.³²³³ That resolves, for signatories, the sovereignty objection that has clouded resource legislation since Luxembourg and the United States first acted. But the Accords deal with intellectual property only by deferring it: bilateral instruments between signatories are expected to contain provisions on liability, intellectual property, and the transfer of technical data, without specifying what those provisions should say.³⁴

The technology is not waiting for the law to catch up. In-orbit and lunar-surface manufacturing is already being tested as a way to produce spare parts without launching them from Earth, which raises an ordinary-sounding but presently unanswerable question: if a printer aboard a lander registered to one state produces a component using a process patented in a second state, from a design file transmitted by a server in a third, whose law has been infringed, and where would a suit even be filed? Microgravity biotechnology raises a parallel problem in an even less settled corner of IP law, since crystallisation and protein-folding experiments conducted in orbit have already produced patentable results with no settled rule for allocating priority when the experiment is designed, hosted, and analysed by parties from three different states. Every one of these scenarios is technically foreseeable today; none of them fits comfortably inside section 105, Article 21, or the promise of a future bilateral instrument.

Trademarks, Branding, and the Off-World Economy

Patents dominate the academic literature on space and intellectual property, but trademark law faces a related and, in some ways, more immediate problem. Trademark rights are even more strictly territorial than patent rights: a mark is protected only in the jurisdictions where it is registered or used in commerce, and the goodwill it represents is understood to be built up among consumers located somewhere identifiable.³⁵ Commercial space tourism, orbital

³²Cong. Rsch. Serv., R48144, Space Resource Extraction: Overview and Issues for Congress 14 (2024).

³³U.S. Dep't of State, Artemis Accords, <https://www.state.gov/bureau-of-oceans-and-international-environmental-and-scientific-affairs/artemis-accords> (last visited Aug. 14, 2026).

³⁴The Artemis Accords, 117 Int'l Legal Materials, <https://www.cambridge.org/core/journals/international-legal-materials/article/artemis-accords/5874DB518591888E52CF2B816E4593F0> (last visited Aug. 14, 2026).

³⁵See Trademarks in Outer Space: Supporting the Off-World Economy, WIPO Mag. (Apr. 2021), https://www.wipo.int/wipo_magazine/en/2021/04/article_0005.html.

hospitality ventures, and branded consumer goods manufactured in microgravity all require a consumer base and a marketplace, yet none of the existing deeming statutes were written with trademarks in mind; section 105 and its German analogue address only patents, and Article 21 of the ISS Agreement does the same. A company that markets a product as made in orbit, or that registers a mark for services delivered aboard a commercial station, currently has no clearer answer than a patent holder does as to which national trademark office, if any, treats that activity as having occurred within its territory.

Industry commentary has already begun treating this as a live commercial question rather than a hypothetical one, observing that the intergovernmental structure built for the ISS offers a workable model for allocating jurisdiction, ownership, and licensing on future multinational missions, provided those arrangements are negotiated before launch rather than litigated afterward.³⁶ That observation applies with particular force to trademarks, since brand value in a nascent industry can be established or lost quickly, long before any treaty body would be in a position to legislate a general rule.

VII. Institutional Efforts and Their Limits: WIPO and COPUOS

The World Intellectual Property Organization has been aware of this problem longer than most commentary suggests. In 1997 it commissioned consultants from Europe, Japan, and elsewhere, and in 2004 published *Intellectual Property and Space Activities*, an issue paper still widely cited in this field.³⁷ WIPO revisited the subject through its Committee on Development and Intellectual Property, producing a further report on intellectual property challenges in outer space activities in 2019.³⁸

Neither exercise produced anything binding, and neither was designed to. WIPO's studies function as an evidence bases rather than a drafting process, and the organisation has no independent mandate to legislate for outer space. Recent scholarship has proposed that WIPO convene a dedicated Conversation on Outer Space, bringing together states, industry, and civil society in the same structured dialogue WIPO already runs on other emerging-technology

³⁶SpaceTech IP: Jurisdiction Issues in Orbit, Invtree (Mar. 12, 2026), <https://www.invtree.com/blog/spacetech-ip-jurisdiction-issues-in-orbit>.

³⁷World Intellectual Prop. Org., *Intellectual Property and Space Activities: Issue Paper* (2004).

³⁸World Intellectual Prop. Org., *Intellectual Property Challenges in Outer Space Activities: Report of the Committee on Development and Intellectual Property* (2019).

topics, a step short of treaty negotiation but more concrete than another issue paper.³⁹ Whether the proposal is taken up remains to be seen, but its existence confirms that the 2004 and 2019 studies have not closed the gap they identified.

The UN Committee on the Peaceful Uses of Outer Space has kept intellectual property at the margins of its own agenda. Its Legal Subcommittee has discussed ISS jurisdictional questions, including IP, as part of briefings on the station regime, but has never opened a standalone agenda item on intellectual property in space, and COPUOS operates by consensus among states with sharply different views on how far commercial activity should be encouraged.⁴⁰ The body with the clearest mandate over outer space law has left intellectual property largely untouched, while the body with the clearest mandate over intellectual property has no independent authority over outer space; each has produced useful background research and no binding instrument.

VIII. India: A Case Study in Regulatory Lag

India is a useful case study precisely because it is not a laggard in space capability, only in space IP law. The government established NewSpace India Limited as ISRO's commercial arm, followed by the Indian National Space Promotion and Authorisation Centre in June 2022 as a single-window licensing body for private operators.⁴¹ The Indian Space Policy of 2023 then set out the government's ambition to open the entire space value chain to private and foreign investment, repositioning ISRO toward research while NSIL handles commercialisation.

What the 2023 Policy does not do is create a statutory foundation for any of this. Reviewers have pointed out repeatedly that it operates entirely through executive guidelines, and that it is silent on intellectual property arising from the technology-transfer arrangements ISRO, IN-SPACe, and NSIL have already signed with private industry, seventy-five such agreements by mid-2025 on one count.⁴² One assessment put the concern directly: the 2023 Policy is silent on

³⁹See Patent Law in Outer Space, in Handbook of Space Law and Emerging Technologies (Springer Nature Singapore, 2026).

⁴⁰U.N. Comm. on the Peaceful Uses of Outer Space, Legal Subcomm., ISS Legal Framework Briefing (2013), <https://www.unoosa.org/pdf/pres/lsc2013/tech-05E.pdf>.

⁴¹Space 4.0: India's Need for a Comprehensive Legal Framework to Regulate Space, Lexology (Oct. 13, 2023), <https://www.lexology.com/library/detail.aspx?g=d3c2bf11-493e-4215-bd3e-62820f970ee5>.

⁴²A New Draft for the Space Activities Bill: Amidst a Sea-Change in India's Space Sector, Ctr. for Aviation & Space L. (June 9, 2025), <https://csdronline.com/blind-spot/a-new-draft-for-the-space-activities-bill-amidst-a-sea-change-in-indias-space-sector/>.

intellectual property aspects and international law obligations, and on the unresolved role of Antrix Corporation, ISRO's older commercial arm, whose prolonged dispute with Devas Multimedia remains the example Indian space lawyers reach for when discussing the cost of legal ambiguity.⁴³ A redrafted Space Activities Bill is reported to address licensing, liability, insurance, and intellectual property more directly, but as of this writing it remains a bill, not a statute.

This matters beyond India's own borders for two reasons. First, India has signed the Artemis Accords, so Indian entities cooperating with foreign partners on lunar missions will be asked to negotiate bilateral IP terms without a settled domestic default to negotiate from, a weaker starting position than partners whose home law already answers where an invention made on a joint mission is deemed to occur. Second, India's own space economy, projected by industry estimates to reach roughly forty-four billion U.S. dollars by 2033, is attracting exactly the kind of venture investment that depends on clear IP ownership rules to price risk.⁴⁴ A start-up unable to tell investors, with reasonable confidence, who will own a patent generated during a joint mission is carrying legal risk that competitors in jurisdictions with a section-105 equivalent do not have to price in.

IX. Toward a Reassessment: Constructive Proposals

None of the foregoing suggests that the current arrangement causes daily chaos; the ISS has operated for a quarter of a century without a reported IP dispute severe enough to reach a court. What it cannot do is scale, and the proposals below address that limitation rather than any crisis already underway.

A. A Model Law Built on the Registry Principle

The most direct step would be to generalise the registry-jurisdiction principal Article VIII already supplies, rather than leaving each state to draft its own version or negotiate a bespoke instrument mission by mission. A WIPO-facilitated model law, built on the section 105 template, would let any state adopt a standard deeming provision without drafting one from

⁴³Promoting Investment in Space Matters, but Having a Law Matters More, Observer Rsch. Found. (May 4, 2024), <https://www.orfonline.org/expert-speak/promoting-investment-in-space-matters-but-having-a-law-matters-more>.

⁴⁴India's Space Laws and VC Push Shaping a New Tech Frontier, India Law Offices (Nov. 27, 2025), <https://www.indialaw.in/blog/regulatory/indias-space-laws-and-vc-push-shaping-a-new-tech-frontier/>.

scratch. Model laws produced by UNCITRAL in adjacent commercial fields show that a well-drafted template can be adopted, with local variation, far faster than a new multilateral treaty could realistically be negotiated.

B. Standard IP Annexes for Mission Agreements

Multinational mission agreements should be expected, as a matter of practice, to include a standard IP annex modelled on Article 21 of the ISS Agreement, addressing which partner's law governs an invention made in a given facility and how simultaneous claims across jurisdictions will be avoided. COPUOS could promote such an annex through non-binding guidelines, in the manner it has already issued guidance on debris mitigation and long-term sustainability, without resolving the deeper sovereignty debate that has stalled treaty-based reform for decades.

C. An Institutional Home at WIPO

The proposed WIPO Conversation on Outer Space deserves to be taken seriously as an institutional home for this work, sitting below the threshold of treaty negotiation.⁴⁵ A structured, recurring dialogue among states, agencies, and commercial operators could build a shared vocabulary and a set of draft model clauses that governments could borrow from when negotiating bilateral instruments under the Artemis Accords or their successors.

D. A Dedicated Enforcement Route

Enforcement needs a forum that does not depend on locating a single national court with an obvious claim to jurisdiction. The Permanent Court of Arbitration's existing optional rules for disputes relating to outer space activities were designed with exactly this kind of problem in mind; extending their scope, or drafting a parallel set tailored to IP disputes, would give private parties and states a route that does not require guessing which country's patent office, if any, would agree to hear the case.

E. Domestic Legislation Where It Is Still Missing

States still building their frameworks, India chief among them on the evidence reviewed

⁴⁵See Patent Law in Outer Space, *supra* note 39.

here, would do well to treat a domestic deeming provision as a first-order priority rather than an afterthought. A single clause in the pending Space Activities Bill, modelled on section 105 but adapted to India's first-to-file patent system, would give Indian entities entering Artemis Accords negotiations a clear default position, rather than a blank space where an IP annex should be.

X. Conclusion

Intellectual property law and outer space law were drafted for opposite premises, one built entirely on territorial sovereignty, the other built to deny that any such sovereignty could exist beyond Earth. For sixty years the gap between them was manageable because so little space activity looked like ordinary commerce. That is no longer true, and the tools states have used so far, deeming statutes, a bespoke station agreement, an Accord that defers the hardest question to future bilateral talks, were built to manage a small, state-led, treaty-bound community of actors, not a lunar economy with dozens of participants, private extraction ventures, and manufacturing that happens in orbit rather than on the ground.

None of these calls for scrapping the registry-jurisdiction principal Article VIII already provides. The argument here runs the other way: that principle has worked wherever states have actually applied it, from section 105 to Article 21 of the ISS Agreement, and the sensible next step is to generalise it rather than replace it. A model law built on that template, standard IP annexes for multinational missions, a genuine institutional forum at WIPO, a workable arbitration route, and domestic legislation in states like India that have so far left the question open would not resolve every dispute the coming decades of orbital and lunar commerce will produce. They would at least ensure that when an inventor works inside a shared module, on a joint mission, using components registered to three different states, there is a rule to point to rather than a gap to litigate.