

# Outer Space

## Time to Address the Real-World IP Issues

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Space and space exploration are ever-present parts of human imagination and scientific creativity. Today, the possibilities for the future are exploding around us, and activities in outer space are no longer limited to government exploration. Indeed, there has been a significant migration to private activities in recent years—along with an increased focus on commercial activities and such initiatives as outer space tourism, mining of outer space objects, development of orbiting space hotels, and even potential human settlements on the Moon and Mars. However, the law is out of sync with these evolving commercial uses of outer space. Most of the initial treaties and legislation tied to outer space activities are focused on government activities and national ownership of physical property like satellites and spacecraft. While recent multilateral agreements have recognized an urgency to deal with issues of private rights, none of the existing agreements have successfully bridged the gap by providing comprehensive ownership and enforcement mechanisms for private property back here on Earth.

What happens when commercial activities are undertaken in outer space beyond our understanding of traditional jurisdictional boundaries? What rights do the parties have, and how can they enforce these rights? Although countries have been able to send unmanned flights to outer space since 1957, and humans since 1961, little has been done in the years since then to address private rights that go along with our burgeoning activities. Instead, investors in outer space commercial activities must resort to a patchwork of treaties, agreements, understandings, declarations, and legislation—all mostly outdated and often not accounting for private enterprises or private rights of ownership—to protect intellectual property (IP) owners and consumers. Although some existing treaties recognize the use of private physical properties in outer space, there are no regimes for protecting intangible property including patents, trademarks, and copyrights, despite their commercial value. With the inevitable “when” not “if” we will have IP laws for space, there is an urgent need to account for these rights.

For decades, outer space has been used for exploration and practical purposes including satellite communications and weather surveillance, but now there is a significant uptick in enterprises centered on private ventures and commercial activities. The originators of space travel—the US and the then Union of Soviet Socialist Republics (USSR)—first ventured into space in the late 1950s and 1960s in their early “Space Race.” These countries have since been joined by China, the European Space Agency (ESA), India, Israel, Japan, and others, while new outer space programs are being developed in countries such as Malaysia, Egypt, Indonesia, Pakistan, North Korea, South Korea, Iran, and Saudi Arabia.

Private activities are also on the rise. SpaceX has collaborated with NASA to facilitate transport to the International Space Station (ISS) while maintaining a mission to colonize Mars. Virgin Galactic continues to test pilot suborbital flights designed for space tourism, and Blue Origin has successfully launched a range of rockets designed to accommodate space travel and scientific experimentation. Significant disputes have already arisen in response to increasing space activities, including an allegation of improper access to a bank account initiated from outer space and controversies surrounding private ownership of lunar materials. Given the increased focus on commercial activities and cooperative ventures shared between private and government entities, shouldn't legal infrastructure for IP protection be on a fast track before the related issues become a chaotic challenge?

## Where Does Earth End and Outer Space Begin?

The going consensus is that a demarcation line for outer space exists at 100 kilometers above the Earth's mean sea level. This is known internationally as the "Kármán line," a boundary named after its founder, Hungarian-American physicist Theodore von Kármán. Although this demarcation has not been universally accepted, it is a helpful reference for acknowledging that certain legal rights traditionally held on Earth may not apply once commercial activity crosses into outer space. Another important definition is "Low Earth Orbit" (LEO), generally defined an altitude of up to 2,000 kilometers. Most action for outer space, at least for the twenty-first century, will be confined to LEO, the Moon, and Mars. And there are several different paths we can take to move towards productive action right now.

## Option 1: Amend UN Agreements

The first international space agreements were negotiated through the United Nations (UN) during the Cold War with the current consensus that space activities should benefit all humankind. These agreements generally condemn claims to outer space territories or private property ownership, such as:

- 1967 Outer Space Treaty (acknowledging that government space exploration and research is to be pursued "for the benefit and in the interest of all countries" with outer space being "the province of all mankind"),
- 1968 Rescue Agreement (designed to facilitate the safe return of astronauts and the return of government property that may be rescued or fall from outer space),
- 1972 Liability Convention (permitting states to claim rights over their respective space objects based on the procurement or territory of launch),
- 1974 Registration Convention (a formal deposit and recordation system to track satellites and other objects launched into space), and
- 1979 Moon Agreement (regulating activities on the Moon, other planets, and other space surfaces).

In considering the limited scope of the above agreements, it is no surprise that such legal regimes have been slow to adapt to private or commercial outer space activities.

While these UN agreements do not contemplate the private commercial enterprises evolving today, they are widely recognized and provide a good framework for approaching emerging legal issues. As an example, the 1972 Liability Convention details distinct dispute resolution provisions concerning physical property and permits claims of joint or several liability and contribution claims that resemble traditional common law tort mechanisms for assessing damages. Both the 1974 Registration Convention and 1979 Moon Agreement contain general language that may be useful in resolving jurisdictional disputes.

The latest international response to commercial outer space activities is the 2019 Guidelines for the Long-Term Sustainability of Outer Space Activities adopted by the UN Committee on the Peaceful Uses of Outer Space. The guidelines recognize a growing need for an international consensus to govern and regulate non-state party activities in outer space, but the language is still focused on cooperation and respect rather than the delineation of private rights and obligations. These guidelines, as well as the 1967 Outer Space Treaty's fundamental goals previously mentioned, were recently reflected by the NASA "Artemis Accords" signed on October 13, 2020, a set of general principles on lunar exploration that was executed by multiple governments, with the notable exception of the Russian Federation. These principles acknowledge the participation of non-state actors in contemporary outer space activities, and private parties are generally excluded from state obligations to share scientific data.

One approach might be to amend existing UN agreements to recognize the increased role of private actors in outer space and institute methods for resolving disputes concerning intangible property (such as IP) to complement existing understandings about ownership of physical property and for assessing damages. A 1996 UN "Space Benefits" Declaration promoting peaceful uses of outer space reiterated the need for a cooperative and mutually beneficial framework while conceding that IP rights may need to be carved

out and recognized as private rights and interests. Several of the treaties already mentioned protect physical property and may not need to be freshly negotiated to add “intellectual property” to “physical property.”

However, there have been no amended agreements and little progress in international consensus since this 1996 UN “Space Benefits” Declaration was issued. Amendments to address ownership of IP in space, whether based on its creation or presence off-world, are urgently needed, and could provide at least an interim legal infrastructure. At the same time, both legal and political efforts should be dedicated to creating a new “commercial” space treaty, a global understanding that could take decades to be negotiated, drafted, and recognized.

Although the UN might seem an obvious forum for pursuing such a treaty, there are also drawbacks only some of which are the political gridlock and conflicting views on how IP in general should be treated (given that such IP is protected at the national level under distinct statutes, which are not uniform or sometimes even present in each country). That is why what would seem to be a natural path to create a new treaty specifically for trademarks or other forms of IP, is also unlikely.

## Option 2: Extend the Patchwork of National Laws to Space

Some nations have resorted to their own legislation to address legal ambiguities. The US has traditionally refused to recognize the Kármán line or any other proposed delineations for an “outer space border.” However, the US led the world in the late twentieth century with the Commercial Space Launch Act of 1984 (51 U.S.C. §50901 et seq.) and the Patents in Space Act of 1990 (35 U.S.C. §105). The former statute encouraged commercial use of space and the latter statute extended US national patent protection to govern ownership of outer space inventions “made, used, or sold” in outer space on a “space object or component thereof” under the jurisdiction or control of the US. This extension of national jurisdiction may be a sign of developments to come because Australia and other countries have already recognized a need to reward private innovation in their national legislation updates.

To determine what, if any, IP rights are available, it is first necessary to know what country’s jurisdiction they were in when the IP was created or violated. The development of the ISS and its governing treaty reflected the international cooperation promoted by the UN while acknowledging a need to delineate legal rights. Specifically, the International Space Station Intergovernmental Agreement (ISS IGA) of 1998 creates national “flight elements” that correspond to the individual pressurized modules of the space station managed by specific countries. The ISS IGA was the first international agreement to specify protection of IP as an objective and adopts a traditional understanding of patent, trade secret, and trademark protections.

Although the ISS IGA has been executed by fourteen governments, it should not be mistaken as a template for worldwide cooperation or understanding. The signatories are limited to certain “Group of 20” (G20) nations, namely the US, Canada, Japan, the Russian Federation, and member states of the ESA. Additionally, the ISS IGA permits roles and responsibilities to be established by separate agreements between NASA and each of the other participating space agencies, permits supplemental contracts between the parties, and applies only to activities within or connected to the ISS. Jurisdiction is determined simply by reference to the specific space station pod where activities may take place, and the treaty recognizes that state connection with space station modules can be fluid (i.e., a space station module may be under the control of a nation based on state-sponsored activities that may be undertaken at a given time).

## Option 3: “Launch” WIPO into Space

A particularly attractive option could be to develop agreements through the World Intellectual Property Organization (WIPO), a global body based in Switzerland and focused solely on IP protection. WIPO could begin by educating the public on the need for obtaining governmental support through a series of programs on the subject. WIPO’s excellent 2004 study on IP in space should be updated to include the state of play in space in 2021, which has changed considerably in nearly twenty years. Moreover, the study should include specific suggestions on how to implement a plan of action.

One potential action item would be to expand trademark registration protection into space using the current WIPO Madrid Protocol with 107 members covering 123 countries as of now. A new protocol could be added to the treaty, which would need to amend the accession process in Article 14 of the protocol to allow these areas to be considered “countries” for the purposes of joining the registration system. The protocol could then expand protection to LEO, the Moon, and Mars, which each member could either accept or reject. The expansion might also need to be reflected in the 1883 Paris Convention as well. And another vehicle to extend the protocol would be to have Earth members state that their protection extends off-world (e.g., India declaring that its Madrid Protocol rights extend to an orbiting Indian hotel). This concept has already been adopted for patents by the US in 35 U.S.C. § 105, a statute that essentially extends U.S. jurisdiction to outer space as just detailed. A patent parallel path could be taken by revising the WIPO Patent Cooperation Treaty of 1970.

#### Option 4: Create Space Enforcement Systems

If new rights are created, how can they be enforced? Developing a working court system for space will be a huge task, but several practical solutions can be accomplished in the short term. For Earth territories, a choice-of-law and jurisdiction clause, mediation, and/or arbitration can be included in contracts immediately without any cost or negotiations. Specific space territories might also be added to existing or new agreements. An example would be an agreement which could cover the territory of the US and LEO.

Although some arbitration forums have been created, they have had little support. One such forum is the International Court of Aviation and Space Arbitration in Paris, France. Despite its early establishment in 1993, there is little guidance as to how specific disputes may be treated by this forum. Decisions are not published and there is no guidance as to its benefits or drawbacks for certain types of disputes.

Another example is the bilateral Space Activities Act (SAA) between Australia and the Russian Federation. The SAA focuses on commercial activities and includes mutual understandings governing the acquisition and retention of IP rights related to outer space activities. While the SAA requires disputes to be negotiated through diplomatic channels as a first resort, it governs the formation of an arbitral tribunal to mitigate matters that may prove to be controversial. Of course, the SAA only binds the Australian and Russian governments, and separate bilateral or multilateral understandings between other nations may not reflect consistent principles, understandings, or objectives, creating a proliferation of conflicting national approaches and obligations.

When considering new space enforcement options, it is important to keep in mind that future bodies should not require physical presence. One successful example is the Uniform Domain-Name Dispute-Resolution Policy (UDRP) for domain names administered by the WIPO Arbitration and Mediation Center and others. Interestingly, UDRP is administered through a virtual online panel with no specific country jurisdiction (aside from cyberspace) yet is authorized to decide the fate of disputed domain names.

#### Time to Implement an Off-World IP Infrastructure

As our world on planet Earth is quickly looking further into the Universe, now is the time to have a serious discussion on how to create and implement an off-world IP infrastructure. A legal infrastructure will protect both consumers and owners as it preserves the principle of harnessing and protecting space for posterity. All nations, organizations, and corporations stand to benefit from balanced, well-organized mechanisms for the protection and enforcement of IP in outer space. Space should be a safe investment zone to enhance, not to hamper, humankind's exhilarating journey off its home world into the stars.

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