

IP IN SPACE

A REPORT FROM THE
IP IN SPACE PROJECT TEAM



DECEMBER 2022



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“For the wise man looks into space
and knows there are no limited
dimensions”

Zhuangzi, ancient Chinese philosopher and sage

“The universe is revolving and
it is subject to change”

Saying from the Igbo tribe in Nigeria as translated into English

“If you attack the problem right,
you’ll get the answer.”

Katherine Johnson, NASA mathematician featured in the book and film *Hidden Figures*

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A Message from 2022 INTA President Zeeger Vink

Almost on a weekly basis, reports surface of new and stunning scientific and commercial exploits in space. As the COVID-19 pandemic raged across the globe these past two and a half years, with lockdowns and quarantines in every corner of the planet, the relentless curiosity and entrepreneurship of humanity manifested at the same time in new probes on Mars, the Moon, and asteroids.

Companies scrambled to outcompete each other to send tourists into space. Scientific exploration continued unabated, delivering new images of the universe at its inception—sure to inspire the next generation of space enthusiasts and entrepreneurs, who may also be the first generation of humanity to potentially call space home or, at least, the office!

As the current INTA President, I am pleased to introduce this comprehensive, thought-provoking, yet practical treatment of the issues facing the protection of intellectual property (IP) in space, researched and written by the INTA IP in Space Project Team.

Technology has once again rushed ahead of the law, as commercial plans are regularly announced for new initiatives in space, even though space remains largely a legal vacuum—particularly so in the area of IP. Let's face it—it will take time to create the appropriate legal frameworks for protection of IP off the surface of the Earth. It is therefore imperative that the IP community, and anyone interested in supporting and further developing the legal incentives and protections for entrepreneurial innovation, start planning now how to protect IP in space.

We hope that this report may become a cornerstone in the inevitable debate on how to protect IP in space not just for the near future but for the rest of this century and into the next. The question is not “if” IP protection in space will happen, but “when.” I therefore highly encourage everyone who reads this white paper to study it carefully and think about how they would protect IP in space. By doing so, we, the INTA community, will clearly set forth important thought leadership in this exciting new era of law and practice in space.

Zeeger Vink
2022 INTA President

A Message from INTA CEO Etienne Sanz De Acedo

On behalf of the International Trademark Association (INTA) Board of Directors and global membership, I would like to thank the IP in Space Project Team, led by Co-Chairs Shejā Ehtesham and Clark Lackert, for propelling INTA into outer space!

As an industry thought leader, INTA must think about the future and identify and assess the opportunities and challenges that such a future may bring to brands and consumers. At a time when commercial missions to outer space are becoming more frequent and are receiving worldwide attention, we recognize how important it is that we look at IP in space. This report reviews the current state of play and presents a road map for the creation of a workable IP system in space, with actionable short-, medium-, and long-term goals.

This report also serves as a wake-up call for international organizations, governments, IP authorities, and, indeed, all stakeholders in both IP and space exploration, to identify and develop fair, transparent, and actionable mechanisms to promote innovation and the protection of IP in outer space.

Etienne Sanz de Acedo
Chief Executive Officer

Comments by INTA IP in Space Project Team Co-Chairs Clark Lackert and Sheja Ehtesham

It has been a true pleasure for both of us and our whole team to work on this report. Throughout this document, we have attempted to distill complex and somewhat arcane global treaties and national laws into workable, sensible principles and action plans. Although there are quite a few academic papers on the subject of how international law does or does not affect space, there are few, if any, treatments that provide answers in a concrete, road-map format—particularly in the area of IP. Of course, the issues we discuss will need further review and analysis, but both of us firmly believe that this report is a significant first step for addressing this difficult, yet intriguing, problem.



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EXECUTIVE SUMMARY

In December 2021, the INTA IP in Space Project Team was convened to prepare an extensive analysis of the current legal protection, if any, of IP in “outer space” (delineated by the Kármán Line as anything above 100 kilometers—54 nautical miles, 62 miles, or 330,000 feet—from Earth’s mean sea level), with a focus on trademarks, but also contemplating other forms of IP, such as patents, designs, and copyrights. The need for this review is clear—as it is urgent and important that the recent rapid commercialization of space be examined through the lens of IP law.

This report explores concrete and practical legal approaches to reaching a workable IP system in space between now and the year 2050, by which time we anticipate commercial activities in the Low Earth Orbit (LEO), as well as on the Moon and Mars. The report also includes areas for further study by INTA. A quick note about terminology: in this report, the terms “space” and “outer space” are used interchangeably.

After reviewing current outer space treaties, national laws that relate to outer space, arbitration systems, white papers from the United Nations (UN) and World Intellectual Property Organization (WIPO), law professor and aerospace executive interviews, and other resources, the IP in Space Project Team has proposed the following ten major approaches for further consideration to create a legal infrastructure for IP in space. The ten approaches include seven for the creation of rights, and three for the enforcement of these rights:

TIMELINE VIEW

SHORT TERM (2030)

- 1** **WIPO:** Expansion of the scope of the current Madrid System of international registration of trademarks enabling areas in outer space to become jurisdictions under Article 14 of the Madrid Protocol; creation of a new territory called “Outer Space” that could be designated in an international registration, and/or creation of a new Outer Space Intellectual Property Office (OSIPO) for the receipt of requests for territorial extensions of international trademark registrations. A parallel expansion would apply to the international registration of designs under The Hague System of international registration of designs.
- 2** **National Laws:** Extension of national IP laws to space; these may be modeled on existing legislation already put in place by certain countries e.g., the U.S. Patents in Space Act of 1990. The foundations for this are laid out in the Outer Space Treaty of 1967 and the Registration Convention of 1975, according to which a registering state retains jurisdiction over space objects and personnel that are launched from its territory (“quasi-territories”). It is desirable, though, for this position to be ratified through legislation and perhaps the creation of a model law for that purpose.
- 3** **Contracts:** Using private contracts and agreements with obligations to protect IP, to legally connect parties launching into space, and then specifying venue and jurisdiction for litigation, or alternatively, arbitration and/or mediation centers.
- 4** **Database:** Creation of a voluntary IP registration system database for space that publicly provides legal notice of IP claims (i.e., a new form of “cautionary notice”).
- 5** **Courts:** Use of existing national courts and IP offices for enforcement and dispute resolution to build up a body of court decisions for guidance.
- 6** **Arbitration:** Use of Earth-based arbitration systems such as WIPO’s Arbitration & Mediation Center for enforcement and dispute resolution.

MEDIUM TERM (2040)

7 **Space Treaties Plus:** Expansion of current space treaties to IP (e.g., adding the issue of IP to the Registration Convention of 1975 to include registration of IP as well as current tangible property such as satellites, or creating an Outer Space Treaty of 1967 IP Protocol).

8 **New Arbitration Tribunal:** Creation of a new arbitral tribunal (such as the WIPO UDRP panel system), virtual and/or analog, for the settlement of outer space disputes.

LONG TERM (2050)

9 **Outer Space Treaty Version 2:** Creation of a new IP in space treaty specifically for trademarks, or IP including trademarks, that will fully develop the acquisition of rights and the scope of protection of trademarks used or intended to be used in space and will provide for appropriate enforcement mechanisms to protect trademark owners and consumers from harm.

10 **Outer Space IP Registries and Enforcement:** Creation of local registries for IP, specific to space regions (e.g., Space Station #ABC, Moon Base #23, Mars Colony #1C, etc.) to facilitate public notice rights (a type of outer space “cautionary notice,” or a local registration system), and that will be enforced by local courts and tribunals, e.g., Lunar Court, District 1.

Clearly some of these options can be implemented more rapidly than others, and importantly, they are not mutually exclusive—they can be pursued in parallel. It is the Project Team’s recommendation, at this stage, that the application of IP laws to outer space (rights creation and enforcement) should be achieved via practical and incremental steps and should include solutions that are a mix of short term (by 2030) and medium term (by 2040), and with the goal, finally, to reach a holistic system (by 2050), as suggested above. As additional review is conducted, these recommendations may evolve.

ISSUE VIEW (Creation of Rights ↔ Enforcement of Rights)

Some these approaches affect the creation of rights in space and others focus on enforcement of these rights. We can view these solutions as follows:

Creation of Rights: Approaches 1, 2, 3, 4, 7, 9, and 10.

Enforcement of Rights: Approaches 5, 6, 8, 10.





1. Introduction

Outer space is already crowded. The pioneers of space travel—the Russian Federation and a few of its Commonwealth of Independent States (formerly the USSR) allies, and the United States—ventured into space in the late 1950s and 1960s during the famous “Space Race.” China, the European Space Agency (ESA), India, Israel, Japan, United Arab Emirates, and others have since joined them.

New space programs are being developed in countries such as Egypt, Indonesia, Iran, Malaysia, Pakistan, and Saudi Arabia. Moreover, we are seeing growth in private sector flights into space, through companies such as Virgin Galactic, SpaceX, and Blue Origin. These companies are ramping up activity in collaboration with intergovernmental efforts, such as the International Space Station (ISS) and its possible successors. Science fiction has become science fact.

Why is 2022 different from 1957? There has been a key shift in space development, which was previously undertaken by governments. Later, the private sector and governments initiated conjoined efforts by way of public-private partnerships. Lately, though, significant activities in space programs have been undertaken by private companies alone. In other words, space development has evolved from exploration to commercialization.

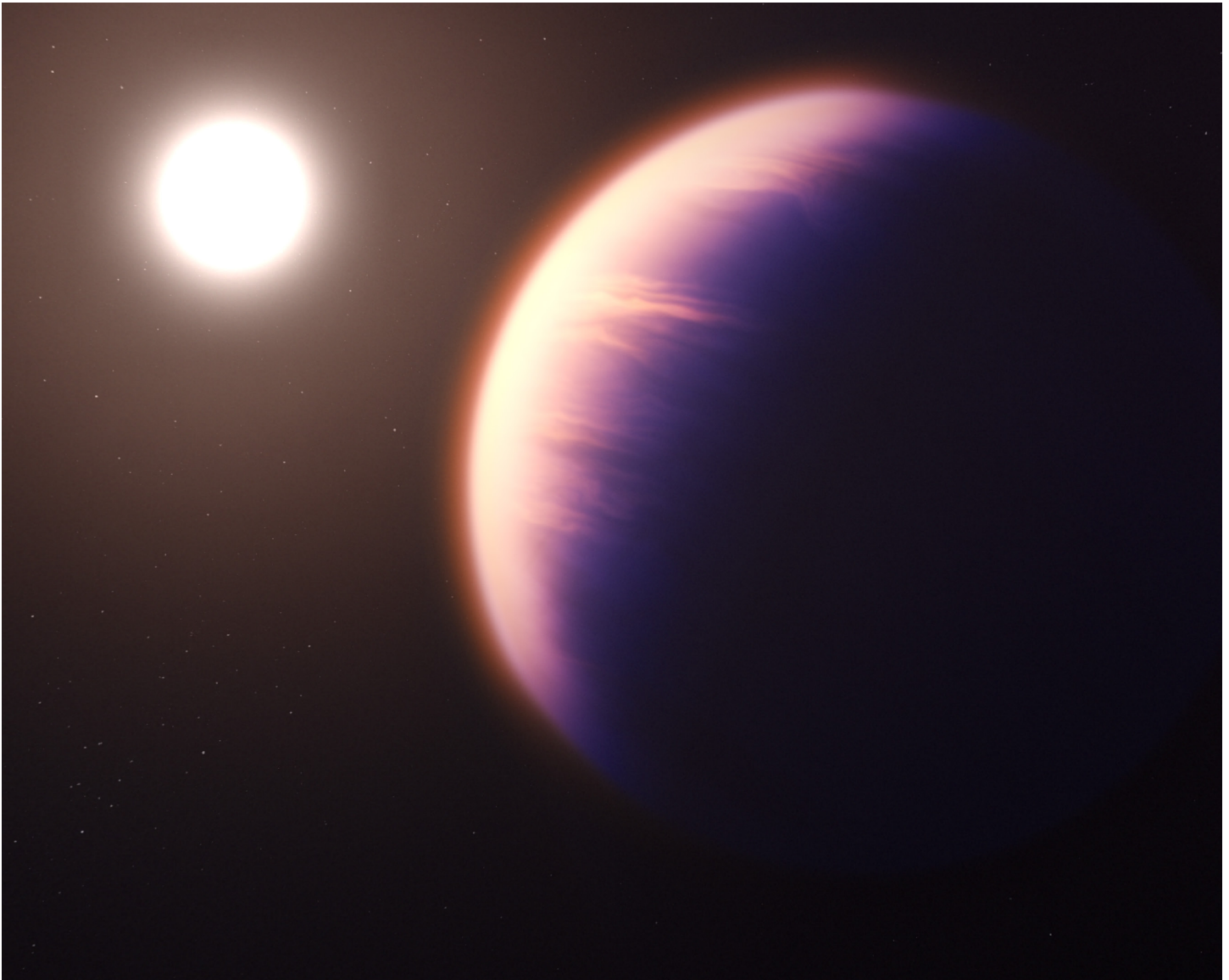
Historically, in the context of space, the rights of countries vis-à-vis one another have been a larger concern for governments than private sector rights. Naturally this needs to change in conjunction with the rapid economic growth in the global space industry, which reportedly may surge to over U.S. \$1 trillion by 2040.

A core principle of the Outer Space Treaty of 1967, regarded as the “cornerstone” of international space law, is that outer space, including the Moon and other celestial bodies, is not subject to national appropriation. There is a significant distinction from this position that has been made in the treaty, however, for objects launched into outer space and personnel on these objects. Article VIII provides that “A State Party to the Treaty on whose registry an object launched into outer space is carried shall retain jurisdiction and control over such object, and over any personnel thereof, while in outer space or on a celestial body....” The obligation for launching states to maintain a registry for space objects flows from Article II of the Registration Convention of 1975. Consequently, the existing

position, over which there can be said to be international consensus, is that the registering State retains both jurisdiction and control over space objects and personnel that are launched from its territory, creating a “quasi-territory” similar to what is currently understood for sea vessels and aircraft. The jurisdiction of the registering State would naturally extend to intellectual property created or carried aboard such space objects, although this avenue has never been overtly explored.

Notwithstanding challenges, so long as all space activity remains confined to registered “space objects” or space stations, this position, at least in principle, holds. The 1967 treaty’s adequacy does come into question, however, when space activity extends beyond the space reality of 1967—i.e., commerce between outer space facilities with no Earth contact at all. This developing environment is called the “Circular Space Economy,” i.e., a closed loop of space activities that *exclude Earth*. In this form of economy, older concepts of legal jurisdiction over space objects from a “launch country” have limited applicability. There is international cooperation on issues such as space debris and an evolving group of outer space business “best practices” that may someday be codified or become “outer space common law.”

Of course, the governments, and corporations, from Earth will continue to explore space, and it is generally understood that space exploration should benefit and be understood as the province of all humankind. However, we can no longer turn a blind eye to what is happening now in space. At this critical threshold of expansion of commercial activity away from the Earth’s surface, the need to fill the void of legal regulation in space is increasing with every launch.



2. Existing International Approaches to Outer Space

The main body of current international space law is contained in several international agreements, conventions, and treaties, as follows:

1

**United Nations
Outer Space
Treaty [1967]**

The Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies (1967) was drafted to address the exploration and research activities of independent countries. Its aim is to ensure that such activities are pursued “for the benefit and in the interests of all countries” and are “the province of all mankind.” This collective spirit is shared by later treaties concerning outer space.

Aside from registering states retaining both jurisdiction and control over objects launched into outer space and the personnel thereof (Article VIII), parameters for property ownership and territorial governance have largely been absent from such agreements. Although the 1967 treaty specifies that outer space is not subject to national appropriation through a claim of sovereignty (i.e., by use, occupation, or other means), it could be adapted to accommodate protection of IP rights, and notably of trademarks. A new agreement echoing this approach can be seen in the “NASA Artemis Accords,” concluded in October 2020, which set out general principles on space exploration.

It is also possible to push for more robust implementation by the party states of the Outer Space Treaty at national levels. This is enabled by Article VI of the Treaty, which places the onus on party states to bear international responsibility for assuring that national activities are carried out in conformity with the treaty. Multiple states have since already enacted national laws in this regard, including Australia, Brazil, Canada, France, Nigeria (see Appendix I), Russia, the United Kingdom, and United States.

The Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (1968) was negotiated to ensure that persons or property of one country will be returned to that state if located by another participating member state. While the agreement is mostly designed to ensure the safe return of astronauts, it also includes provisions mandating the return of property that may (1) be rescued from outer space; (2) fall from outer space and land on the territory of a member state (i.e., space debris); or (3) fall from outer space and be found on the high seas.

2

**United Nations
Rescue Agreement
[1968]**

3

**United Nations
Liability Convention
[1972]**

The Convention on International Liability for Damage Caused by Space Objects (1972) contains distinct dispute resolution provisions *concerning physical property* that could provide groundwork for an IP rights enforcement system to govern outer space activities. Specifically, this agreement ties liability to applicable launching states and specifies that states can claim launching state rights based upon (i) the identity of the state that launches or procures the launching of a space object, and (ii) the territory or facility from which a space object was launched. The treaty allows for multiple states to be classified as launching states for a single object based on shared connections to a particular launch, and it allows for claims of joint and shared liability as well as claims for contributing liability that resemble traditional common law or statutory tort damage mechanisms.

4

United Nations
Registration
Convention [1975]

The Convention on Registration of Objects Launched into Outer Space (1975) provides some clarification on jurisdiction by establishing a formal recording system for *physical* objects launched into space. Whether it is possible to adapt this framework to include trademark registration, since it is a link for jurisdiction issues with the Outer Space Treaty, should be explored.

The Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (1979) focuses on activities on the Moon and other planets or space surfaces. This treaty could provide the framework for regulation and control over the flow of goods or services on the Moon, should such trade ever arise. As an example, jurisdiction would be confirmed upon export (departure from one state's Moon facility) and import (delivery to a different state's Moon facility). Notably, many of the countries that are most active in space, including the United States, Russia, China, Japan, and the member countries of the European Union, have neither signed, acceded to, nor ratified this agreement.

5

United Nations
Moon Agreement
[1979]

6

International Space
Station (ISS) Treaty/
Intergovernmental
Agreement
[1998]

The International Space Station Intergovernmental Agreement (1998) (IGA), also known as the "ISS Treaty," has been signed by the 15 governments currently participating in activities conducted within the International Space Station (ISS). It allows participating nations to extend their jurisdiction to the ISS, thereby creating different national zones that correspond to the separate pressurized modules ("flight elements") of the ISS. The ISS Treaty is the first to specify *IP protection* as a covered activity. Traditional protections for patents, trade secrets, and even marking procedures are specified under Article 21, and for IP generally. Jurisdiction is determined by location of the activity pertaining to the IP, specifically the flight element or specific areas that may be under the control of a nation's particular ISS activities at a given time. Recently, it became known that the Russian Federation may withdraw from the ISS at the end of 2024.

The United Nations Committee on the Peaceful Uses of Outer Space (COPUOS) adopted a set of 21 voluntary consensus Guidelines for the Long-Term Sustainability (LTS) of Outer Space Activities (2019). They address the policy, regulatory, operational, safety, scientific, technical, internal cooperation, and capacity-building aspects of space activities. The Guidelines are voluntary and not legally binding under international law, and only tangentially mention IP (see Appendix II, Section I, Paragraph 19 of the guidelines).

7

UN COPUOS
[2019]
Guidelines



The purpose of the NASA Artemis Accords (2020) (the Accords) is to establish a common vision via a practical set of principles, guidelines, and best practices to enhance the governance of the civil exploration and use of outer space. The principles set out in the Accords are intended to apply to civil space activities conducted by the civil space agencies of each signatory. These activities may take place on the Moon, Mars, comets, and asteroids, including their surfaces and sub-surfaces, as well as in orbit of the Moon or Mars, in the Lagrange points (i.e., points of equilibrium for small-mass objects under the influence of two massive orbiting bodies) for the Earth-Moon system, and in transit between these celestial bodies and locations. The participating parties intend to implement the principles set out in the Accords through their own activities by taking measures (as appropriate) such as mission planning and contractual mechanisms with entities acting on their behalf. There are currently 21 signatories, and NASA has also reached an agreement with the European Space Agency (ESA).

There are other bilateral and multilateral agreements that supplement this foundation.

The legal status of *physical* property (e.g., spaceships or satellites) in outer space has been a recurring topic in United Nations agreements, proclamations of nations and intergovernmental organizations, international commission initiatives, and studies by nongovernmental bodies. However, there has been no international consensus on the status of *intangible* property, specifically, intellectual property.



3. How Are Brands Impacted?

With multiple countries and private individuals currently traveling in outer space, and Earth-orbit hotels, together with Moon and Mars cities planned for the near and not-so-distant future, and the Circular Space Economy approaching, the legal structure for trademarks in outer space should be established on an urgent basis to avoid chaos in space.

The following two case studies and four scenarios demonstrate some of the practical types of issues that right holders can be exposed to because of expanding activities in outer space.

3.1 Case Studies

Case Study 1: Drug Discovery, Development, and Commercialization in Space

Pharmaceutical companies are already conducting research on the International Space Station (ISS). For example, Bristol Myers Squibb recently concluded a month-long experiment on the ISS to find out how monoclonal antibodies crystallize in microgravity, or extremely low gravity. Materials from the experiment and other space studies returned to Earth on a SpaceX spacecraft that splashed down in the Gulf of Mexico in January 2022. Astronauts with backgrounds in microbiology conducted the experiments. This research may impact future directions in drug development and manufacturing and hopefully will provide important benefits to patients.

Pharmaceutical companies will likely soon begin exploring more permanent ways to conduct research and development (R&D) in space, beginning on spacecraft, and eventually on the Moon and other bodies in space. They will also begin commercializing the products derived from their extra-terrestrial R&D efforts. They will seek all forms of IP protection and commercialize their products in all places where patients need medicines.

The above activities raise the issue of the applicable law, jurisdiction (jurisdiction over the space object is not applicable), and enforcement. More specifically:

- ▶ Which jurisdiction(s) would be relevant for clearance of USANs/INNs (United States Adopted Names / International Non-Proprietary Names) created in space or intended to be used in space? Trademark protection is not sought but clearance is needed.
- ▶ Which jurisdiction(s) would be relevant for clearance of naming clinical trials to be conducted in space? Trademark protection is generally not sought, but clearance is needed.
- ▶ When companies seek to file patents covering their discoveries made in space, where should these patents be filed? What freedom to operate searches should be performed?
- ▶ For the foreseeable future, trademarks associated with these new medicines will likely be created by legal and branding teams based on Earth, and thus current clearance and filing frameworks will support those efforts.
- ▶ However, there may be plans to use the trademark in space, as well as on Earth. Where should trademark protection be sought? What framework is the most efficient as a means of extending clearance and protection to brand names and related IP used in space?
- ▶ What sort of database should be created to track use of trademarks in space to determine whether a mark is “available” for use and/or registration in space? Who should maintain this? A government entity? And if so, which one? Should access be free and available to all citizens worldwide?
- ▶ What happens when marketing and legal teams are established on spacecraft and in cities on the Moon or elsewhere off planet? Does that require changes to our current clearance and filing system?

- ▶ What classes of goods should be covered? Will use in space require companies to expand their traditional description of goods and services into new categories? Does the current classification system cover all possible uses?
- ▶ Will regulatory/health authority review of product names in the jurisdiction of space be viewed as under a separate jurisdiction? Will it follow the review procedures of an existing country? Currently, the regulatory review process differs significantly among countries.
- ▶ **Enforcement:** where should action be brought? Existing international and national jurisdictional rules use as a starting point the domicile of the infringer, or the country where the infringing act takes place. These notions presuppose a link to Earth but would seem to be insufficient if the infringing activity is carried out in space.

Case Study 2: Enforceability of Brands in Outer Space

The following hypothetical example further highlights the trademark issues that may arise when commercial activities are carried out on the Moon (under the current IP regime(s) on Earth).

The Indian Hotels Company Limited, established in Mumbai, India, decides to incorporate *The Zillion Stars Hotel* on the Moon. It seeks to have protection for this service mark. Naturally, a basic trademark registration is acquired in India, and, on that basis, an International Registration is made, and protection is acquired in most jurisdictions under the Madrid Protocol, including the EU. These registrations grant protection against infringements in all these jurisdictions.

Then, the Swiss Azimut Hotel Group also decides to establish a hotel on the Moon, with the name *The Million Planets Hotel*.

The Indian Hotels Company is not pleased with this and, claiming that *The Million Planets Hotel* is confusingly similar to *The Zillion Stars Hotel*, wants to get an injunction against all use of this service mark and trade name.

Under national and international jurisdictional rules accepted on Earth, an injunction against publicity for *The Million Planets Hotel* could be granted in all those jurisdictions where *The Zillion Stars Hotel* service mark is protected and where such publicity is made.

This, however, only puts a stop to the publicity on Earth. Let us assume the Azimut Hotel Group continues to use *The Million Planets Hotel* for its hotel on the Moon. This could probably not be forbidden, since the service mark *The Zillion Stars Hotel* is not protected on the Moon, and because the tradename *The Zillion Stars Hotel* is not protected on the Moon either. Terrestrial courts may accept, under general terrestrial rules of tort, an analogous application of Article 6 bis of the Paris Convention providing for the protection of well-known marks. But what would happen if they did not?

This scenario would presumably change if/when a framework is created to protect IP rights to be used on the Moon—e.g., by adding the Moon and other areas in space as jurisdictions covered by the Madrid Protocol. However, the question remains as to where a jurisdiction would lie for purposes of the enforcement of rights on the Moon or elsewhere, unless a new IP Space Treaty were to provide the answer.

3.2 Scenarios Relating to the Creation and Use of IP Rights in Space

Scenario 1: Creation of IP Rights in Space on Spacecraft That Are Currently Subject to Existing Laws/Treaties (e.g., on the International Space Station)

Think about the copyrightable works (writings, pictures), inventions, creation of designs (e.g., surface ornamentation in space through radiation), and trademarks that are created on space vehicles or space

stations. The law of the country that governs the space object, which is deemed to be part of the territory of that country, is applicable, but problems may arise if that country does not have a modern IP system.

The entity operating the space object should enter into contracts with those persons travelling to space and who are capable of creating inventions, producing copyrighted works, etc., providing for the ownership of such rights. Such agreements should contain choice-of-law and choice of jurisdiction clauses. Alternatively, issues arising out of such agreements could be made subject to arbitration.

However, is it feasible to maintain the current approach, if/when new agreements covering future IP rights in space are created? That is, should all space-related IP be addressed in one treaty? Or should the existing regime continue, so that future rights are treated separately?

Scenario 2: Creation of IP Rights in Space in Areas Not Subject to Existing Laws/ Treaties (Example: Settlement on the Moon)

Similar issues would arise in case copyrightable works (writings, pictures), inventions, creation of designs trademarks, and other IP rights, are created on the Moon or elsewhere off planet, that is, in areas not subject to existing laws or treaties. While copyright protection may be linked to the creator/author, no such rule applies to inventions made or trademarks created on Moon or elsewhere.

Scenario 3: Using IP Rights in or on Space Vehicles or Stations That Are Currently Subject to Existing Laws/ Treaties (e.g.. on the International Space Station)

In this scenario, the infringement of rights would be governed by the law applicable to the space object and jurisdiction of courts would be determined by the law applicable to the space object. However, parties may agree to jurisdiction of a court other than that of the country of registration or, perhaps, even resort to arbitration.

Scenario 4: Using IP Rights in Space in Areas Not Subject to Existing Laws/ Treaties (Example: Settlement on the Moon)

Space lacking laws and treaties will need to be addressed from various perspectives in connection with IP rights, namely, avenues to secure IP rights for use in space only and the framework that should be followed, how to defend and enforce IP rights and the relevant law, jurisdiction and remedies, and how the use requirement impacts their maintenance. For example, should use in space be considered an infringement of a mark registered on Earth? Should use on the Moon be sufficient to maintain IP rights in Earth jurisdictions?

The above scenarios demonstrate the need to establish a legal framework that ensures a fair and competitive environment in space that effectively protects IP rights including trademarks. This would encourage the participation of the private sector in space initiatives and would positively influence space research and international cooperation.



4. Future Solutions for IP in Space

As detailed earlier, there is a wide body of existing space physical property law in the form of United Nations agreements and declarations and national government agreements and legislation. These may provide helpful foundations for space IP rights regulation and could be combined with national laws, international custom, international treaties, and dedicated international organizations to establish norms and processes.

Given the growing potential for commercial activity in space, the time is ripe for governments and WIPO to consider a more robust road map for extending IP protection to space. The following avenues may be considered for creating IP rights in space or improving existing protection systems, as well as for the enforcement of such rights. These avenues should not be seen in isolation; combinations are possible and might even be advisable.

4.1 Possible Solutions for Creation of Rights

4.1.1 Amendment of the Current Madrid System

The easiest way to expand trademark protection to space would be to use the Madrid Protocol, which is administered by WIPO and as of this writing has 112 members covering 128 countries. The Madrid Protocol could be amended, or a new protocol could be added to the Madrid Agreement, to allow areas in outer space to become jurisdictions under Article 14 for which protection may be requested by creating a new territory called “outer space,” or prescribed areas, such as the Moon, Mars, or any other potential area in space where trademark protection may become relevant. The same rules for refusal or invalidation would apply to these additional jurisdictions or “territories” as apply to jurisdictions or territories on Earth. The jurisdiction over such extensions could be assigned to a new intergovernmental office, most conveniently attached to WIPO, to administer such extensions (e.g., the Outer Space Intellectual Property Office, or OSIPO). Amending the Madrid System would appear a more promising approach than seeking an amendment of the Paris Convention or of the WTO TRIPS Agreement. The Madrid Protocol amendment approach could also apply to the Hague Agreement on the international registration of designs, and perhaps even to the Patent Cooperation Treaty (PCT).

4.1.2 Creation of a New Treaty for Trademarks/IP in Space

Another option would be to create a new treaty specifically for IP rights more broadly or trademarks specifically. Such treaty could fully develop the exact scope of protection for the use of trademarks and other IP rights in space, and provide appropriate enforcement mechanisms, such as courts or arbitration panel review.

Such a new treaty covering the creation of IP rights in space could be administered by WIPO. Ideally, it should comprise a single and uniform law for the registrations and enforcement of IP rights in space.

The new treaty should be governed by the following principles:

- General principles developed in the United Nations Convention on the Law of the Sea (UNCLOS) (1962) or the Antarctic Treaty (1961) could be used for space. These mechanisms used for legal voids at sea and in Antarctica could prove helpful for a new treaty. The “condominium” concept in Antarctica could be of particular interest: according to this concept, countries assert joint sovereignty, as opposed to carving up the continent into zones of interest. This could apply to outer space in some version.

Contracting parties agree that, for the purposes of the protection of IP rights for which no protection in outer space can be claimed under any national or international law, outer space is one (or more) territories for which IP rights can be claimed.

- In order to ensure that the principles of the Paris Convention, the Berne Convention, and the WTO TRIPS Agreement apply to rights created for or used in outer space under any new protocol or treaty, these

principles should be declared applicable to such new IP rights (this would have the advantage that the principles of the protection of trade names (Art. 8 Paris Convention) as well as of the protection against unfair competition (Art. 10bis Paris Convention) would be safeguarded.

- A choice of “space territories/jurisdictions” may also be considered for the protection of IP rights. An entity could, for example, seek registration for some or all of the following jurisdictions: “Space Objects,” “Outer Space,” “Celestial Bodies/Moons & Planets,” etc., just as the Madrid Protocol offers the choice of registration in one or multiple jurisdictions.
- The definition of a “space object” could include all space objects registered under the UN Registration Convention, broadly defined to including the intangible object of IP rights.
- Similar to ICANN’s policy for domain names, there could be a “sunrise period” to allow right holders (those that hold registered IP rights in a “home jurisdiction”) an advanced opportunity to register IP rights in “space jurisdictions” of their choice, corresponding to existing IP rights before the opportunity becomes generally available to the public.
- To prevent “space-squatting” perhaps a prior application/registration of the desired IP right in one jurisdiction on Earth ought to be a pre-condition for all applications seeking “IP registrations” for space, although in cases where there is no actual or intended use on Earth would create questions for further consideration.

4.1.3 Extension of Current Space Treaties to IP

Another example is the UN COPUOS Guidelines, a 69-page report, in which IP is only mentioned once, as part of an Annex [Annex II - Guidelines of the Long-term Sustainability of Outer Space Activities of the Committee on the Peaceful Uses of Outer Space] and, even then, only to state that implementation of the Guidelines should not infringe other rights, *such as IP*. This is a small first step, but it does not address the complex issues reviewed in this document. There is always the interplay among treaties, which have been essentially written on how governments interact with each other in space, and the current introduction of the commercial use of space. The clear issue now is that space is thought of for all humankind, but that does not mean we cannot have any laws in space addressing IP matters, both from a property perspective and from a consumer protection perspective.

4.1.4 Extension of National IP Laws to Space

The existing position, as derived from Articles VI and VIII of Outer Space Treaty of 1967 read with Article II of the Registration Convention of 1975, is that a registering state retains control and jurisdiction over space objects and personnel launched from its territory. This aligns with the international legal concept of “quasi-territorial” jurisdiction extended to ships, aircraft, and other vessels. In the context of space, the spacecraft is a quasi-territory of the registering state. There may be challenges in implementation of this position in the absence of national legislation.

The Patents in Space Act of 1990 (35 U.S.C. § 105) in the United States is often cited as a model for other countries to protect inventions developed on their flagged space vehicles. Section 105 provides: “Any invention made, used or sold in outer space on a space object or component thereof under the jurisdiction or control of the United States shall be considered to be made, used or sold within the United States for the purposes of this title.” While this is a step forward, it does not address trademarks, copyrights, and other IP, nor does it relate to global rights in general. The only way such a system could become feasible on a global scale is to convince countries to extend their IP laws to space, with venue and jurisdiction left to the home countries. How this would apply to commercial space stations with no flag, such as the proposed *Orbital Reef*, or participants in the Circular Space Economy, remains to be determined.

4.1.5 Using Contracts to Protect IP

Contracts are already the primary way that space commerce is regulated today. The contract model is attractive



NASA, ESA, Hubble

since it can be implemented immediately and without any cost. Companies could now insert “Outer Space” in their contracts, and insert specific enforcement mechanisms, including litigation and/or ADR, into the contract provisions. For example, a franchisee of a fast-food restaurant could agree not to use the licensed trademarks in outer space, or if in outer space, only on a space station and not on the Moon (with enforcement back on Earth).

4.1.6 Creation of a Virtual Voluntary IP Registration System

One quick solution would be to create an informational database that would give notice of asserted rights in space. This approach was suggested years ago to deal with the difficult issues surrounding asserting geographical indication (GI) rights under the WTO TRIPS Agreement; countries would create a database advising everyone else which GIs they protected—the so-called WTO Joint Proposal in 2005. In the immediate term, an informational database, for example, at WIPO, could be created in which claims for rights to distinctive signs and designs to be used in outer space can be entered. The legal effect of such a database and the enforcement mechanisms for protecting these asserted rights would need to be determined at a later date. A searchable database of trademarks for brands operating in the metaverse is reportedly being created; this may be worth examining for usefulness in the context of IP rights in space.

4.1.7 Creation of Local Specific IP Registries

Although sovereignty may be an issue, i.e., different terrestrial countries asserting zones of interest on the

Moon, on Mars, or elsewhere, it is conceivable to create "local registries" such as a unitary LIPO (Lunar IP Office), MIPO (Martian IP Office), etc., which could serve the function of providing public notice rights. If a consensus can be arrived at between countries, such institutions could register and protect local IP, including trademarks, as well as set up related enforcement mechanisms. For example, a company-owned space station may be an easy venue to start with this "local registry" paradigm.

4.2 Possible Solutions for Enforcement of IP Rights In Space

Having suggested several approaches for the creation of IP rights in space or for extending existing IP rights on Earth to space, the different possibilities for enforcing such rights as well as dispute settlement systems are next outlined for consideration.

4.2.1 Use of Existing National Courts for Dispute Resolution

Typically, if an entity from Country A seeks trademark protection in Country B, either directly or under the Madrid System, claims of infringement will be pursued in the courts of Country B.

If an entity from Country A has IP protection for a space object registered by Country B, claims of infringement will be pursued in the courts of Country B, as if the infringement had taken place on Earth in the territory of Country B.

Let us examine a scenario where the Madrid System might be amended to include jurisdictions in space. If a party from Country A obtains trademark protection on a jurisdiction in space, say the Moon, through the Madrid System, and were these rights to be violated by a party from Country B, in theory it would be possible for a choice of jurisdiction to be offered for the dispute to be decided (i.e., Country A or Country B). Offering a choice of jurisdiction is likely to be complicated, though. The danger of parallel litigation exists as well. Alternatives may include a new tribunal or arbitration body (see below).

4.2.2 Creation of a New Arbitral Tribunal or Space Court

The International Law Association (ILA) adopted (at the 68th ILA Conference in 1998) the Final Draft of the Revised Convention on the Settlement of Disputes Related to Outer Space Activities (Draft Convention). The Draft Convention's terms are applicable to private companies and individuals of contracting states, as well as to states themselves, thus tackling issues surrounding private rights versus rights of states in outer space disputes. It provides contracting parties with the option to choose one or more of three possible binding dispute resolution mechanisms, either upon ratification of the Draft Convention or at a later date:

- a. International Tribunal for Space Law, the establishment of which is foreseen by the Convention;
- b. the International Court of Justice (ICJ); or
- c. an arbitration tribunal.

If a dispute arises between parties who have not chosen the same mechanism, and unless they both otherwise agree on a particular method, the default applicable procedure will be arbitration, regardless of whether this was their preferred method.

In light of the above, a new tribunal may be set up such as the newly created EU Unified Patent Court, using its procedural rules as an example. In 1996, the United Nations Office for Outer Space Affairs (UNOOSA) organized a conference session, as part of the 50th anniversary celebrations of the ICJ, proposing that a special chamber of the Court be established to hear disputes related to activities in space. However, only states can bring actions before the ICJ, so this does not hold much meaning for disputes between private parties.

Arbitration is a particularly appealing dispute resolution model, given the inherently international nature of activity in space, together with its highly sensitive scientific character, the neutral appeal of international arbitration, the relative ease of enforcement of arbitration awards under the New York Convention, the procedural flexibility tailored to the individual dispute, the cost-effective and consolidated resolution of complex cross-border IP disputes, the confidentiality of proceedings, and the expertise and technical knowledge of

arbitrators.

An Arbitration Tribunal for the Settlement of Outer Space Disputes could be established. Before it, private companies and individuals could bring claims directly against states and each other, to be resolved via binding arbitration. Of course, arbitration is voluntary and does not involve scenarios such as counterfeiting.

In terms of dispute resolution, a good example of a working arbitration system with no physical presence is the current WIPO UDRP for domain names, in which a virtual online panel with no specific country jurisdiction other than “cyberspace” decides the fate of disputed domain names. This system is based on contractual rights arising from domain name contracts, but it could be adapted to space. It may be possible to put in place a framework for voluntary acceptance of WIPO jurisdiction to settle IP disputes ahead of time similar to the UDRP clauses in a domain name agreement.

Provisions for involving “technical experts” in such a dispute resolution mechanism could also be incorporated.

The approaches followed for the protection of regional IP rights, such as the European Union Trademark, the Community Design, and the Unitary Patent, confirming the principles of existing international IP treaties, could guide the formulation of such a new mechanism.

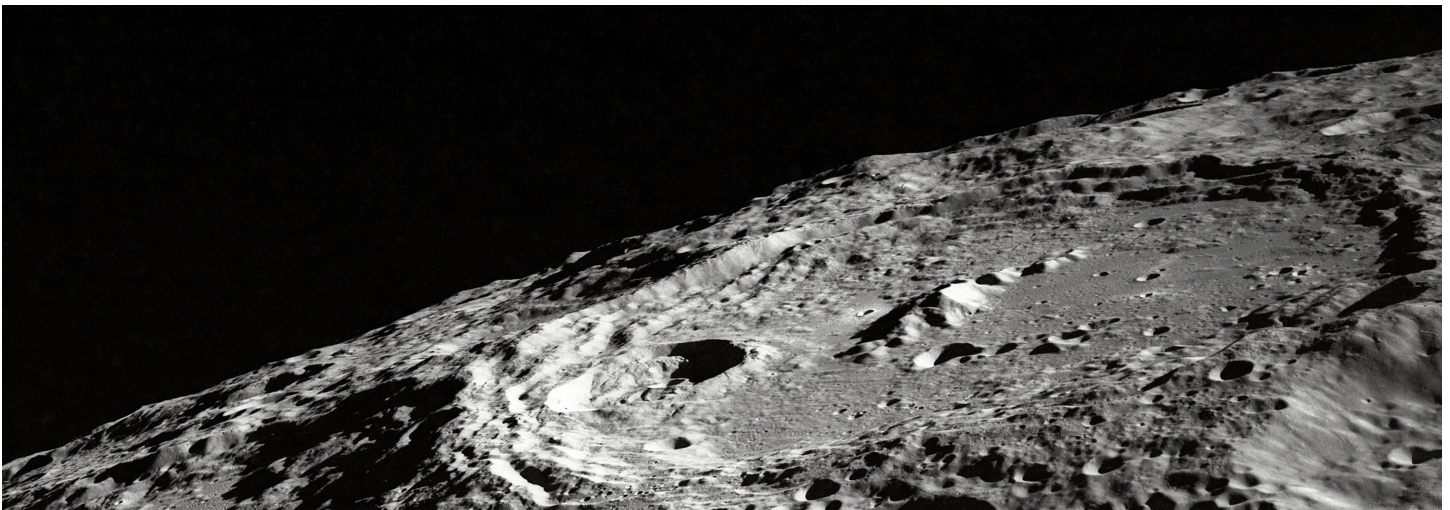
In this regard, Appendix II discusses other existing resources to build on.

The benefits of such a system include comprehensive coverage of issues. A key disadvantage is that setting up a working mechanism could take years, if not decades, lagging far behind commercial reality in space.

Eventually, an enforcement mechanism should be established, such as regional tribunals or courts, virtual fora such as the ICANN-UDRP system, Earth-based arbitration systems such as WIPO (Arbitration and Mediation Center), etc., to enforce these rights.

Here too, as discussed above, an Arbitration Tribunal for the Settlement of Outer Space Disputes could be a solution.

Significantly, if such a mechanism is located outside a new treaty to register/protect rights in space or a system that extends the Madrid Protocol, it would offer the advantage of a broader remit—even non-signatories could submit themselves to the jurisdiction of such a tribunal under private contracts or agreements. It could also work for parties who are not signatories to the UN Registration Convention.



CONCLUSION

There is a strong need for quick action to develop the necessary IP frameworks to address and support the rapid developments in outer space that will only continue to accelerate. The approach should be practical and incremental, taking one step at a time and finally reaching a holistic system by 2050. Most of the “exploration” in this area so far has been scholarly articles, which raise questions but do not provide answers. Each of the proposed possible solutions should be further studied in 2023, not only by INTA but also by WIPO, national governments, and other interested organizations. As has been pointed out above, much needs to be done to begin discussing these issues, and then to work toward solutions in the short term (2030), medium term (2040), and long term (2050). The path will not be easy, since it includes reaching a global consensus on the manner of obtaining and protecting IP rights in space, by a new or extended global outer space treaty beyond what was created in 1967, by possibly reinterpreting the Paris Convention and the Madrid Protocol (created for a planet composed of countries/states and not contemplating space) to allow for protection of IP rights in space; amending national laws to add IP protection when there are so many other pressing social and political issues, etc. Creation of a compendium of best practices shared between states may be a starting point, which incrementally and organically may gain wider and more universal acceptance, at which time attempts to agree on a treaty may meet success.

INTA has a unique opportunity to be a global thought leader on the protection of IP rights in space, and this opportunity should not be missed.



Appendix I

NIGERIA: IP IN SPACE—LAW, REGULATION, TREATIES, AND POLICY

Discussions on the future of Nigeria beyond the Earth's surface led to the establishment of the National Space Research and Development Agency (NASRDA) in 1999 and the formulation of the National Space Policy in 2001. The Nigerian legislators subsequently enacted the National Space Research and Development Agency Act, 2010 (the Act) and established the National Space Council (the Council). In addition to the Act, there is a pending draft Regulation on Licensing and Supervision of Space Activities, 2015.

Given the current expansion in activities in space, it is anticipated that national laws and international treaties will be modelled to create a legal framework for intellectual property (IP) in space.

Highlights of the Nigerian Laws and International Treaties on Outer Space

The objective of the Act is to promote active participation of Nigeria in the activities of the United Nations Committee on the Peaceful Use of Outer Space and to encourage collaboration and capability building in space science technology development, thereby strengthening the human resources development required for the implementation of national space programs. Some of the highlights in Section 6 of the Act include the following:

- The Act establishes a licensing system to enable public sector participation in space activities in Nigeria.
- The Act empowers NASRDA to keep a register of space objects that is open for inspection by any person on payment of a prescribed fee. The register contains particulars of space objects that NASRDA considers appropriate to comply with international obligations.
- It confers on the Council the power to approve the opening of domiciliary accounts for NASRDA to enable it to partner with third parties on space-related activities.
- It also establishes several development centers charged with promoting space science and technology education and space transportation, among others. These centers contribute to the realization of the national space policy. Further, the Act empowers the Agency to appoint consultant technicians to advise it from time to time.

The National Space Policy

The Nigeria national space policy was approved in 2001. According to the policy, Nigeria shall vigorously pursue the attainment of space capabilities as an essential tool for its socio-economic development and enhancement of the quality of life of its people through research, rigorous education, engineering, development, and design and manufacture of appropriate hardware and software in space technology.

Protection of IP in Space

The International Space State Intergovernmental Agreement, 1998, is the first to specify IP protection (patents and trade secrets) as an objective. Given its limited scope on what constitutes IP, there is need for its modification to include all IP rights (e.g., trademarks, designs, and copyrights).

Nigeria can leverage being a signatory to existing international treaties to promote the protection of IP in space. This is more the case, as WIPO has noted in a 2003 report that extant space treaties can form the foundation for the protection of IP in space.¹ Some of these treaties are as follows:

- The Outer Space Treaty, 1967—This treaty provides that the exploration and use of outer space shall be carried out for the benefit and in the interests of all countries and shall be the province of all mankind. The

1 https://www.wipo.int/export/sites/www/patent-law/en/developments/pdf/ip_space.pdf

treaty is the first one relating to space and could be modified to accommodate intangible property in space such as trademarks, patents, and copyrights to help regulate commerce.

- The Liability Convention, 1973—This treaty imposes responsibility on any member party for all space objects launched within its territory that cause any damage to the earth, aircraft, space object, or personnel of another state, regardless of who launched the object in question. This can be amended to extend to damages caused to an IP right.
- The Registration Convention, 1976—This treaty requires state parties to furnish the UN with the information about space objects launched within the Earth’s orbit. This can be amended to require state parties to furnish details of IP in space.

Provisions of the Regulations on the Licensing and Supervision of Space Activities 2015

The Regulation is made pursuant to the Act and is intended to fill the gaps for the Act.

- The Regulation defines “space object” to include the component parts of any object launched or intended to be launched into space, its launch vehicle, and the component parts thereof. It defines “space activities” to include space objects and their control and “the operation, guidance, and re-entry of space objects into, in and from outer space and other activities essential for the launch of, operation, guidance and re-entry of space objects into, and from outer space.” Also, “outer space” is defined as “anything beyond 100 km above sea level.”
- It imposes responsibility on member parties to ensure space objects launched within their territories do not cause damage and to provide insurance (to a sum not exceeding US \$15,000,000) with respect to damages.
- A license shall be granted only where the Council is satisfied that activities authorized by the license will not jeopardize public health or safety or persons, will be consistent with international obligations of Nigeria, and will not impair national integrity.
- It empowers the Agency to issue launch certificates to qualified persons and to appoint inspectors to monitor compliance with the Regulation.

Appendix II

Arbitration as a Mechanism for Dispute Resolution in Space

Many enforcement issues in space can be addressed through arbitration. Of course, arbitration is voluntary between the parties, and does not address violations of law such as counterfeiting, or criminal conduct in the IP sphere. However, arbitration is a valuable tool to enforce rights in a zone that is now essentially “lawless.”

Many commercial arbitrations involving some kind of pursuit in space have already taken place.² The Agreement Relating to the International Telecommunications Satellite Organization (ITSO Agreement), upon which the ITSO is founded, stipulates that all disputes arising out of the ITSO Agreement, either between its 149 contracting states or between those states and the ITSO, must be resolved by arbitration. The European Telecommunications Satellite Organisation (EUTELSAT) also stipulates mandatory arbitration for its 49 member states to resolve disputes arising from the interpretation or application of the EUTELSAT Convention (as amended), should negotiations fail to succeed within one year. The European Space Agency (ESA) Convention also provides for optional arbitration in the event of a dispute and the Intergovernmental Agreement also references it. Thus, arbitration provisions are already prevalent in the space industry.

While recourse may be had to the better-known forums of international arbitration such as the International Court of Arbitration (ICC) and the London Court of International Arbitration (LCIA), it is worth pointing out that two arbitration

2 Though most documented space-related disputes concern satellites. See, for example, https://www.mcgill.ca/iasl/files/iasl/arbitration_of_space-related_disputes.pdf.

institutions have already made concerted efforts to respond to the needs of the commercial space age and the types of disputes that it will generate. To this date, though, it seems that no participants have made use of these developments, and no other arbitration establishments have followed the lead of these two. This may well change over the next decades, as the number of commercial space disputes increases. Perhaps, some procedures could be further extended to enhance their suitability/popularity.

1. The International Court of Air and Space Arbitration (ICASA) was created in 1994 and is based in Paris. It is currently the only arbitration institution in the world that is designed specifically to arbitrate disputes regarding space-related activities. However, its rules call for “absolute secrecy,” a harsh contrast with UN Space Treaties, which simply call for transparency.

2. Optional Rules for Arbitration of Disputes Relating to Outer Space Activities (Outer Space Rules or Rules) of the Permanent Court of Arbitration (PCA). This set of industry-specific arbitration rules was adopted on December 6, 2011, by the PCA and is based extensively on the United Nations Commission on International Trade Law (UNCITRAL) Arbitration Rules of 2010, with several adaptations to include specificities of activity in space. The Rules aim to rectify some of the shortcomings of other dispute resolution mechanisms regarding space disputes, including the lack of recourse for private parties against states and the limitations of the Liability Convention.

The way in which the Outer Space Rules have been tailored to meet the needs of the space industry is extremely encouraging. Unusually, the Rules apply when two or more parties agree to invoke them in any disputes arising between them “in respect of a defined legal relationship,” regardless of whether the relationship is contractual. Moreover, Art. 1.1 affirms that “the characterization of a dispute as relating to outer space is not necessary for jurisdiction where parties have agreed to settle a dispute under these Rules.” This, therefore, immediately does away with the potentially troublesome ambiguity of what may or may not constitute a dispute relating to outer space and makes the question of jurisdiction dependent purely upon the will of the parties. The Rules also specifically acknowledge that their adoption automatically constitutes a waiver of any sovereignty or other immunity that may otherwise be applicable, thus foreclosing any claim to immunity that states or intergovernmental organizations that operate in space may have. The requirements for the Notice for Arbitration are also space specific. Claimants are required to identify “any rule, decision, agreement, contract, convention, treaty, constituent instrument of an organization or agency, or relationship” that has given rise to the dispute. This broad language reflects the abundant sources of law that may give rise to disputes in this sector. The Secretary General of the PCA is obliged by the Rules to maintain optional lists of arbitrators and experts in this field, so as to assist the parties when appointing the tribunal, and to aid both the parties and the tribunal when appointing any experts. Moreover, given the stakes that may be involved in space-related disputes, the Rules provide for a one-, three- or five-member tribunal, should the parties so agree. The Rules have other benefits, such as a “non-technical document” that the tribunal can request from the parties to assist in understanding “scientific, technical or other specialized information,” and a “confidentiality advisor” who can assist a tribunal in determining whether certain documents—which may be so technically complex as not to have any real meaning for the layperson—should be treated as confidential.

Appendix III

Sample Territory & Arbitration Contract Clauses and Issue List

Territory

For illustrative purposes, a sample clause defining “Territory” in an IP / trademark license (choose all areas that apply) is provided below:

The Licensee’s “Territory” for the use of the Licensed Trademarks in “Outer Space” is defined as any area in space above 100 kilometres from the Earth’s surface. The specific areas in Outer Space comprising the Territory herein shall be defined as and composed of the official or commonly recognized boundaries of (a) Space Station “X”, (2) Low Earth Orbit (“LEO”) defined as the area in Outer Space with an Earth orbit between 100 kilometres and 2,000 kilometres above the Earth’s surface, (c) High Earth Orbit (“HEO”) defined as the area in the Outer Space with an Earth orbit above 35,000 kilometres above the Earth’s surface, (d) Cislunar Space defined as the

area in Outer Space with no Earth orbit between Earth orbit and the Moon, (e) Specific zones, cities, or other human developments on the Moon, Mars, asteroids, or other Celestial Objects (defined as naturally occurring Outer Space bodies), and (f) Interplanetary Space defined as the area in Outer Space between Celestial Objects outside of Earth orbit or Cislunar space.

Dispute Resolution

When it comes to resolving space law disputes, the Optional Rules for Arbitration of Disputes Relating to Outer Space Activities (referred to as “Outer Space Rules”) published in 2011 come up frequently. A key advantage they offer is a panel of arbitrators with expertise in space law issues.

A model clause that parties may consider inserting in treaties or other agreements to provide for arbitration of future disputes, and a model clause for arbitration of existing disputes are set forth in the annex to these Rules, which is reproduced below:

“Any dispute, controversy or claim arising out of or relating to this contract, or the breach, termination or invalidity thereof, shall be settled by arbitration in accordance with the PCA Optional Rules for Arbitration of Disputes Relating to Outer Space Activities.

Note—Parties should consider adding:

- (a) The number of arbitrators shall be ... (one, three or five);*
- (b) The place of arbitration shall be ... (town and country);*
- (c) The language to be used in the arbitral proceedings shall be”*

Based on the aforesaid, an illustrative example of a possible arbitration clause is ventured below:

“Any dispute, controversy or claim arising under, out of or relating to this contract, or the breach, termination or invalidity thereof, if not otherwise settled within [insert suitable time limit], shall be settled by [sole or three or five] arbitrator/s in arbitration proceedings to be conducted as per the provisions of the [insert appropriate reference to Rules* etc.], as amended from time to time and shall be conducted in the [insert as appropriate] language. Unless otherwise agreed to by both Parties in writing, the arbitration proceedings shall have its venue and seat in [insert as appropriate]. The arbitral award rendered by the arbitrator/s shall be final and binding on the Parties and may be entered in any court having jurisdiction, for the purpose of judicial enforcement.

The arbitrator/s shall have the authority, in the course of the proceedings, to order any interim, provisional, emergency or permanent relief, remedy or measure (including, without limitation, attachment, preliminary or permanent injunction, or the deposit of specified security) that the arbitrator/s considers being necessary, just and equitable.”

* There are several fora to choose from when it comes to arbitration, which the parties may decide. International Chamber of Commerce (ICC), the London Court of International Arbitration (LCIA), the International Centre for Dispute Resolution (ICDR), and Singapore International Arbitration Centre (SIAC) have been used to resolve several space-related disputes. The PCA Optional Rules for Arbitration of Disputes Relating to Outer Space Activities could also be offered.

Appendix IV

Feedback Questions and Answers from INTA Sources

Three questions were summarized based on these issues.

Question #1: How can we create new territories, zones, or jurisdictions in space when the Outer Space Treaty of 1967 rejects colonization per se?

The Outer Space Treaty of 1967, created during the Space Race of the 1960s, addresses colonization by different countries, which may affect the IP rights in space issue. The relevant articles (I and II—emphasis added) are quoted below:

“Article I”

“The exploration and use of outer space, including the moon and other celestial bodies, shall be carried out for the *benefit and in the interests of all countries*, irrespective of their degree of economic or scientific development, and *shall be the province of all mankind.*”

“Outer space, including the moon and other celestial bodies, shall be *free for exploration and use by all States* without discrimination of any kind, on a basis of equality and in accordance with international law, and there shall be free access to all areas of celestial bodies.”

“There shall be freedom of scientific investigation in outer space, including the moon and other celestial bodies, and States shall facilitate and encourage international co-operation in such investigation.”

Article II

“*Outer space, including the moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means.*”

The short answer is that it is unclear, since this Treaty is more a statement of aspirational general principles akin to the UN Charter than a specific statute or enforceable treaty such as the WTO TRIPS Agreement, which is enforced in the TRIPS Council. For example, a multinational mining company could argue that its proprietary mining operation (without a claim of national “sovereignty”) extracting rare elements from the Moon benefits all countries, as does an European Space Agency lunar base doing medical experiments to cure certain diseases, etc. Moreover, since outer space is the “province of all mankind,” “mankind” could decide it was in its best collective interests to allow certain practices for the “benefit of all countries” including allowing IP rights to be created and enforced in outer space. The Treaty does not say that outer space should be lawless, with everyone doing whatever they would like. Ultimately, this Treaty is difficult to enforce and will need to be amended or superseded.

Question #2: Since IP law in general is very deadline focused, how could we measure time and deadlines in space?

This issue of time measurement has arisen in connection with the inevitable IP deadlines in outer space. Currently, the approved general denominator for time in Earth-based uses, including for aviation, for the International Space Station, and for the Internet (in terms of “Network Time Protocol” or “NTP”), is “Coordinated Universal Time” / “Temps Universel Coordonné” (“UTC” is the approved acronym). UTC is measured at 0 degrees longitude, akin to the old Greenwich Mean Time. For Mars, a parallel system has been proposed called “MTC” since Mars has a different length of its “day” (on Mars, longer days are called “sols” to avoid confusion with Earth “days”). The same rational holds for the proposed Lunar Standard Time (“LST”) due to the longer length of its “day”. Thus, deadlines could be determined by UTC, MTC, and LST, or a random appointment of a time denominator, e.g., the time in Geneva, Switzerland, on Earth, namely, Central European Time (“CET”). Of course, there are many other possibilities, but there should be a practical solution available that can achieve consensus.

Question #3: IP practitioners are already burdened with protecting and policing IP in around 200 countries, on the Internet, and soon in the metaverse, so why would we want to create more jurisdictions in space to add to the burden?

Ultimately, the answer lies in history and technology. Whether we like it or not, humankind is moving into outer space and off of Earth. When we do this, we will need to protect IP in the new areas in space in which we find ourselves. In 1900, there were about 80 countries and now there are almost 200. IP practitioners needed to address the breakup of the Soviet Union, Yugoslavia, and other countries, and also address former colonies becoming independent countries. In technology, we needed to address the explosion of the Internet in the 1990s, creating new vistas of infringement on websites and in domain names. Now, in the 21st Century, we need to address outer space. Every practitioner and company will need to determine the extent to which they will address and cope with these new challenges.

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Appendix VI

Acknowledgments

- Thank you to the following space law experts for the helpful feedback for this report:
- Dr. Catherine Doldirina, PhD (Space Law and IP Law, McGill University); Legal Counsel, D-Orbit SpA, Italy (a space logistics company)
- Prof. Michelle L. D. Hanlon, LL.M (Space Law, McGill University), Co-Director of the University of Mississippi Space Law Center; Editor-in-Chief, *Journal of Space Law*; Editor-in-Chief, *Journal of Drone Law and Policy*
- Prof. Charles Stotler, LL.M (Space Law, McGill University), Co-Director of the University of Mississippi Space Law Center

Appendix VII

Team Member Biographies

Co-Chairs:

Sheja Ehtesham (India)

Listed among the world's leading trademark law practitioners, Sheja Ehtesham is the Managing Partner of ALG India Law Offices LLP. Her practice covers enforcement, prosecution & strategy within India and internationally. She advises clients in strategizing negotiations carried out with adversaries and on structuring successful and profitable settlements. She works with her clients to create and execute effective enforcement and lawsuit strategies. She has successfully represented several domestic and international clients in domain name administrative proceedings under the UDRP and INDRP.

A long-standing INTA member, she also serves on INTA's Leadership Development Committee and India Global

Advisory Council. She has been invited as a speaker and India-expert at various national and international fora including IPO, FICPI, CIPAM, etc., and co-chaired the *INTA Bulletin's* Asia Pacific region and served on the editorial board of *The Trademark Reporter*.

Clark Lackert (United States)

Clark Lackert is consistently placed in the top ranks of IP lawyers globally, currently acting as Deputy General Counsel of the World Trade Centers Association and previously a partner at law firms such as King & Spalding and Reed Smith. He has been very active in INTA over the years, serving on the Executive Committee of the Board of Directors, and chairing a number of INTA committees. Clark has been an active speaker at conferences at the WIPO, WTO, EUIPO, various national IP associations, and law schools such as Yale, NYU, and USC. Clark has also published a number of articles, and been interviewed for them, on the cutting edge issue of protecting IP in space, as well as speaking on a NASA webinar and at Florida Space Day for aerospace executives on the subject.

Team Members:

Elisabeth Stewart Bradley (United States)

Elisabeth Stewart Bradley is Vice President, Innovation Law: Trademarks, Copyrights, and Brand Protection at Bristol Myers Squibb Company, a global biopharma company, and is based in their Princeton, N.J. offices. She joined Bristol Myers Squibb in 2011, following eight years as in-house trademark counsel in the consumer products industry.

Prior to Bristol Myers Squibb, Ms. Bradley was in private practice in New York City for several years, handling both litigation and IP matters for a diverse range of clients. She graduated from The University of Virginia School of Law and holds a B.A. from The College of William & Mary.

Ms. Bradley currently serves as 2022 INTA Vice President, is a member of the Executive Committee of the Board of Directors, and is Group Officer of the Resources Group.

Ken Chia (Singapore)

Ken Chia is a member of the Firm's IP Tech, International Commercial & Trade and Competition Practice Groups. He is regularly ranked as a leading TMT and competition lawyer by top legal directories, including Chambers Asia Pacific and Legal 500 Asia Pacific. Ken is an IAPP Certified International Privacy Professional (FIP, CIPP(A), CIPT, CIPM) and a fellow of the Chartered Institute of Arbitrators and the Singapore Institute of Arbitrators.

Gustavo Giay (Argentina)

Gustavo Giay is a partner at the Argentine firm Marval O'Farrell Mairal. He specializes in Trademarks, Intellectual Property and Information Technology. He has more than 25 years of trademark litigation experience, and advising businesses and individuals in matters related to trademarks, intellectual property, and Internet Law, including the assessment on legal and contractual questions in new and developing technologies. He also has extensive experience advising clients on licensing, franchising, and commercial agreements.

He graduated as a lawyer from the Universidad de Buenos Aires in 1994 with a concentration in business economics and in 1997 he earned his LLM degree from Northwestern University in Chicago, Illinois. In 2002 he completed a postgraduate course on Intellectual Property at the Universidad de Palermo in Buenos Aires.

He is a frequent lecturer on intellectual property law and currently serves as Professor on Advanced Trademark Law, Internet Law and IP Contracts at the Center of Intellectual Property of the Universidad Austral in Argentina, which offers a Master of Laws focusing on IP

He is a licensed intellectual property agent, and a domain name panelist of the World Intellectual Property Organization Domain Name Center. He is a former member of the Board of Directors of INTA. He is currently president of Licensing Executive Society Argentina (LES Argentina), member of the Argentine Association of Industrial Property Agents (AAAPI), and member of the International Association for the Protection of the Industrial Property (AIPPI), and the Interamerican Association of Intellectual Property (ASIFI).

Charles Gielen (The Netherlands)

Professor Charles Gielen, PhD, holds a law degree from Tilburg University and a doctorate degree from the University of Utrecht, the Netherlands.

After having been a partner of the Benelux law firm NautaDutilh (www.nautadutilh.com), he now is of counsel to this firm and in particular to the intellectual property practice group. He is retired professor of IP law at the University of Groningen and currently extraordinary professor of IP law at the University of Stellenbosch, South Africa. Charles specializes in intellectual property law, and he used to handle patent, trademark and design litigation. In trademark matters Charles acted for Diageo Plc., L’Oreal, the LVMH Group, Intel, Coca-Cola, BMW, Burberry, and Lego. He was co-counsel for Samsung in the litigation against Apple on the alleged design right infringement. In patent matters he handled litigation for Pharmacia, Aventis Pharma, Medtronic, and Global Biochem Technology.

On November 8, 2006, Charles received INTA’s President’s Award for outstanding service to the International Trademark Association. On October 6, 2007, the Council of Presidents of AIPPI appointed him Member of Honour of AIPPI for outstanding contributions to and an extraordinary engagement for the fulfilment of the aims of the Association.

Huang Hui (China)

Dr. Huang Hui is a Partner at Wanhuida Intellectual Property and a Member of the firm’s Management Committee. Dr. Huang is a multi-faceted intellectual property counsel with stellar academic credentials on China’s trademark legislation and practice and a veteran lawyer who represents clients in all levels of Chinese courts up to the Supreme People’s Court in a wide variety of intellectual property litigations, some of which have become landmark cases. Ever since joining the private practice in 2002, Dr. Huang has been prosecuting and litigating IPRs, fighting for the clients in their most intricate matters before the nation’s IPR administrative agencies and judiciary, protecting and defending client’s interests, and helping advancing China’s legal fronts.

Bisman Kaur (India)

Associated with Remfry & Sagar since 2002, Bisman handles all media outreach, communications, and publishing activities at the firm. She is editor of the firm’s newsletter—ensuring clients and associates are kept updated on the latest IP news from India as well as happenings at the firm’s office. She is also the point of contact for events and conferences that the firm participates in throughout the year, including its own “Remfry’s IP Seminar” and the BRICS IP Forum.

A trademark attorney, she has extensive experience in advising clients on the adoption and protection of brand names and strong knowledge of the finer nuances of assignment and licensing of trademark rights. Her awareness of trademark law and policy aside, the dual aspects of her practice lend her broad knowledge of developments across the entire IP spectrum.

Over the years, Bisman has authored numerous articles on varied IP subjects. She also attends IP events and conferences often—in India and overseas.

Dana Northcott (United States)

Dana Brown Northcott is Vice President and Associate General Counsel for Amazon’s Intellectual Property team, where she leads the attorneys and legal professionals who support Amazon’s valuable brands and growing portfolio on trademark, domain name, gTLD, copyright, and content protection efforts. Ms. Northcott devises Amazon’s intellectual property strategies and policies across the business globally, partnering closely with Amazon’s Marketing, Security, and Public Policy teams on brand protection, anti-counterfeiting, advertising, marketing, Internet governance and litigation. She also represents Amazon on the Governing Board of Directors for the Alliance for Creativity and Entertainment.

Prior to Amazon, Ms. Northcott was Legal Counsel for Agilent Technologies, and an Attorney for Howrey LLP in Menlo Park, California, and London, England. She has a Diploma in Intellectual Property Law and Practice from the University of Bristol in England, a Juris Doctor from University of San Francisco Law School, and Bachelor of Arts degree from Stanford University. Ms. Northcott serves on the Board of the Pacific Northwest Chapter of ChIPs,

the Board of Directors of Seattle's Museum of History and Industry, is an Ambassador for the Bellevue Schools Foundation, coaches youth soccer, and takes every opportunity to be on a ski hill with her husband and two kids.

Ms. Northcott currently serves on the Executive Committee of the Board and is the Group Officer of the Advocacy Group.

Uche Nwokocha (Nigeria)

Uche Nwokocha, Harvard alumni (2019), joined the firm Aluko & Oyebode in 2003 and was admitted to partnership in 2008. She represents numerous well-known brands with Master Franchise Agreements (MFA) Technical Service Agreements (TSA) and licensing with NOTAP. Advises clients on product/trademark registration with NAFDAC and TMO respectively and consumer related issues with Federal Competition & Consumer Protection Commission (FCCPC) and Nigeria Customs Services (NCS). She served as a board member of INTA from 2018 to 2020 and was assigned to the finance committee for 2020.

Uche currently serves as a board member at Global Anti-Counterfeiting Group (GACG) and the Secretary of Anti-counterfeiting Collaboration (ACC) Nigeria.

Davidson Oturu (Nigeria)

Davidson is a partner at AELEX, a full service commercial and dispute resolution law firm with offices in Nigeria and Ghana. He has an LL.M in International Business Law and an MBA from Queen Mary University of London. His areas of special interest include financial technology (fintech), business regulatory compliance, intellectual property, international business, securities, and corporate finance.

He has over fifteen years experience in advising established businesses and start-ups in intellectual property, fintech, data protection, cybersecurity, blockchain technology, digital assets, telecommunications, and business regulatory compliance.

He led the team that drafted the Nigeria Startup Bill and was also a member of the Securities & Exchange Committee that was set up to craft a framework for the use of fintech in Nigeria's capital market.

He is also a chartered arbitrator (CI Arb UK) with experience in local and international arbitration and handles Intellectual Property, telecommunications, and technology disputes.

He writes in different journals, texts, and publication platforms and is a frequent speaker at local and international events.

He is consistently ranked in leading directories such as Chambers & Partners Global Fintech Guide, Legal 500, Who's Who Legal, WTR 1000, IP Stars and Chambers Global.

Darani Vachanavuttivong (Thailand)

Darani Vachanavuttivong is a formidable enforcer of intellectual property rights (IPR), including trademarks, copyrights, and patents. Regarded as "a brilliant, hands-on lawyer who works extremely hard for her clients" (*WTR 1000*), Darani is currently recognized as a top IP practitioner by such publications as *Asialaw Leading Lawyers* (since 2003), *The Legal 500 Asia Pacific* (since 2003), and *Chambers Asia-Pacific* (since 2008). She has been named as one of the most accomplished female IP practitioners in the world by *Managing Intellectual Property* magazine, which includes Darani in its list of the "Top 250 Women in IP."

Darani helps clients protect IPR in some of the toughest jurisdictions in the world—Thailand, Vietnam, Cambodia, Laos, and Myanmar. Darani previously headed the firm's trademark registration group and is well-versed in writing patents, having represented numerous patent clients and having attended several high-level courses on drafting patent specifications, including the South East Asian Patent Drafting Training Course and the Patent Agent Training Course organized by the Department of Intellectual Property, Bangkok.

A leading IP attorney and a leader in the IP field, Darani is the managing director of the Tilleke & Gibbins intellectual

property group, which is consistently recognized as the preeminent IP practice in Southeast Asia. Darani is actively engaged in the global intellectual property community and currently sits as President of the ASEAN Intellectual Property Association (AIPA) and chair of the Asia-Pacific Sub-Committee of INTA's Global Advisory Council. She has also served terms as President and Vice President of the Thailand group of the Asian Patent Attorneys Association; and as President of the Intellectual Property Association of Thailand.

Alexander von Mühlendahl (Germany)

Education: University of Munich, Germany, Dr.iur.; Northwestern University, Chicago, Illinois, USA, J.D., LL.M. (1970).

1966–1979: Academic research at the Max Planck Institute for Intellectual Property Law, 1979–1994: Official in the German Federal Ministry of Justice; 1994–2005: Vice-President of the Office for Harmonization in the Internal Market (Trade Marks and Designs) (OHIM) (now European Union Intellectual Property Office—EUIPO); since 2005 member of the Munich bar and senior consultant with BARDEHLE PAGENBERG Partnerschaft mbB in Munich, Germany.

Visiting Professor, Queen Mary University of London, Centre for Commercial Law Studies

Honorary Member of ECTA (European Communities Trademark Association); Honorary Member of the Hungarian Trademark Association; Honorary Member of APRAM (Association des Praticiens du Droit des Marques et des Modèles); inductee in the IP Hall of Fame.



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