

Intellectual Property Protection, a Financial Aspect of the ISS

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Abstract

This paper analyzes, on the one hand, the legitimate expectations and needs of the industries in terms of intellectual property protection for outer space research, as they need to be protected against violations and be free to grant exploitation licenses. On the other hand, it investigates if the use and exploitation of outer space and celestial bodies is carried out for the benefit and in the interest of all countries.

The key issue of the protection of inventions in accordance with national and international regulations will also be addressed in the paper.

The paper will start from a combined analysis of art. 5 of the IGA, establishing that each Partner shall retain jurisdiction and control over the elements it registers, and art. 21 of the IGA, which regulates intellectual property based on the quasi-territorial principle, and sets out that the regulations of the State in whose registered modules the invention occurs shall apply. The paper aims to examine national intellectual property protection regulations, highlighting possible conflicts of applicable national laws with respect to the place where the invention occurs and inventor nationality, but also regarding the recognition of the different patent systems adopted by ISS Partner States. European Partner States enjoy a privileged position, as set forth by paragraph 2 of art. 21 of the IGA.

As the unique environment of the ISS calls for quick recognition of intellectual property licenses obtained in other Partner States, the paper will analyze the different Partners' national legislation, existing International Conventions on the matter, such as the TRIPS Agreement, and European patent regulations, which streamline procedures and introduce stringent minimum protection standards in all the areas of intellectual property.

1. **A Dichotomy between the free exploration of outer space and the benefit and interest of mankind**

Article I of the 1967 Outer Space Treaty (OST) ¹ contains a key provision that encourages widespread disclosure of the findings of research carried out

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1 For the text of the UN Treaties on Outer Space, see United Nations Treaties and Principles on Outer Space, New York 2000, A/AC.105/572/Rev.3, BOCKSTIEGEL-BENKO (ed.), *Space Law Basic Law Documents*, vol. I, part A, Principal Instruments, A,I; see also: www.unoosa.org/pdf/publications/STSPACE11E.pdf

in outer space for the benefit and in the interest of all countries. This commitment to data disclosure is confirmed in art. XI of the OST, requiring that the Secretary-General of the United Nations be informed of any scientific research carried out.

This requirement seems to be in contrast with the principle of free exploration and use of outer space, but, most of all, it seems to be in contrast with intellectual property rights, which, instead, entail a highly competitive system that provides a temporary monopoly to the owner.²

The commercialization of at least part of the station and the increasing number of private companies entering the space sector, which also allows for the continued implementation of the initial project, is a fact. Back in 1998, the US decided to enable privates to carry out research in their space labs, a policy that was clearly stated in section 101 of the Commercial Space Act of October 28, 1998.³

The distribution, on an equitable basis, of the benefits deriving from the exploration of outer space is to be intended not only in a purely economic sense, i.e. the distribution of goods, but the term should acquire a broader interpretation. Once the manufacturer has gained profit, others may also benefit from the same product, by buying the derived products. On the other hand, it would be unrealistic to consider research financed by private or public companies without a return on investment that is compatible with the financial risk assumed. Profit is only possible by giving exclusive rights, which, being limited in time and space, are not considered “appropriation”. The distribution of benefits is necessary, but only those who generated them may decide when and what benefits to distribute.

The second provision contained in article I of the OST – which establishes the free use and exploration of outer space and celestial bodies by all States, without any discrimination and in accordance with international law – doesn’t, however, preclude the use of outer space resources, which often entails a joint project carried out by several States. The use of resources, especially as regards research, is increasingly addressed by private companies, requiring that their interests be adequately protected, in accordance with national and international law. This phenomenon, which is expanding rapidly, must also take into account other rules of space law regulating, in a special manner, the relations between States and privates in space (e.g. authorization and supervision of the launching State, liability for activities

2 For a comprehensive overview of the matter, see CATALANO SGROSSO, *International Space Law*, Florence 2011, p. 245 ff.

3 Commercial Space Act, «Public Law» 105-303, 10th Congress, October 28, 1998, Proc. Of the Project 2001- Workshop on Legal SSI issues of Privatizing Space Activities, Vienna 19 July 1999, p. 147.

carried out by non-governmental entities, jurisdiction of the launching State and enforcement of its legislation in its space modules).

These rules, which are by now considered guidelines governing the activities of States in outer space, must also apply to research conducted in the orbiting labs of the International Space Station.

The recognition of intellectual property rights would make the private industry more competitive as regards future contracts and prevent the use of innovations by third parties. A patent or any other form of intellectual property protection would protect innovations from possible infringements, also enabling the holder to grant, and obtain from other parties, licenses for exploitation.

Similar conclusions have been drawn at the Technical Forum on Intellectual Property held in July 1999 in Vienna, during the third UN Conference.

2. ISS Utilization and commercialization

Each Partner may select users for its allocations for any purpose relating to research that is consistent with the object of the IGA and the provisions set forth in the MOUs and implementing arrangements. However, there are two exceptions: the first is that any transfer of ownership shall require prior notification of the other Partners and consensus among all Partners. The second is that the contemplated use of the element must be for peaceful purposes. Each Partner State must grant to the other Partners access to and use of the ISS modules it owns, based on the relevant shares of utilization.

As regards confidentiality of information, it must be noted that, in accordance with the provisions contained in the ISS Crew Code of Conduct, crew members are required to protect classified information. States, instead, shall take measures to ensure the confidentiality of utilization data passing through the Space Station Information System, including ground communications, which shall be considered confidential. Article 13 of the IGA establishes some provisions on the matter, setting out, first of all, that the United States and Russia shall provide the two primary space and ground communications networks.

The four Memoranda of Understanding between NASA and the Space Agencies of the other four Partner States (Canada, Japan, Europe and Russia) outline the detailed design, development, operation and utilization of the Space Station.

The MOUs, moreover, establish each Partner State's share of utilization for the laboratory modules (art. 8.3.b). Art. 9 of the IGA⁴, actually, specifies that

4 The Intergovernmental Agreement among all the ISS Partner States (IGA), was signed in Washington on September 29, 1988. See: *Journal of Space Law* 16,1988, p. 220 ff. The IGA was reviewed and a new agreement was signed in Washington on January 29, 1998. For the documentation on the International Space Station in general, see:

Partners which «provide resources to operate and use the Space Station, which are derived from their Space Station infrastructure elements, shall receive in exchange a fixed share of the use of certain user elements».

Specifically, art. 8.3.b of the MOUs sets out that:

- NASA will retain the use of 97.7% of the user accommodations on its laboratory modules, and of the use of its accommodation sites for external payloads. It will also have the use of 46.7% of the user accommodations on the European pressurized Columbus laboratory, and the same percentage of the user accommodations on the Japanese lab;
- RSA, the Russian Space Agency, will retain the use of 100% of its infrastructure elements;
- ESA and the Japanese Space Agency will retain the use of 51% of the user accommodations on the European and Japanese pressurized laboratories, respectively, and the remaining 49% will be allocated to the other Partners providing other infrastructure elements;
- CSA, the Canadian Space Agency, will have the use of the equivalent of 2.3% of the Space Station's non-Russian provided user accommodations.

3. The quasi-territorial principle

The negotiators of the IGA identified some common principles and art. 21, dedicated to intellectual property, seems to establish a connection based on the so-called “quasi-territorial” principle. For purposes of intellectual property law, each State shall consider inventions made in its registered elements as having occurred within its territory, while for ESA-registered elements, any European Partner State shall deem the activity as having occurred within its territory.

Paragraph 3 of the same article establishes that if the inventor is not a national or resident of the State in whose element the invention occurred, he/she may subsequently file a patent application in another Partner State. This solution is inferred from the context of the article, which mainly deals with the secrecy of information. While, on the one hand, the “quasi territorial” State cannot, for secrecy reasons, prevent the filing of a patent application in another State, on the other hand the latter must provide for protection of the secrecy of patent applications containing information that is “classified” or otherwise protected for national security reasons, preventing the subsequent filing of applications in other States.

Space Law – Basic Legal Documents, BÖXKSTIEGEL - BENKÖ - HOBE (eds.), vol. 2/1, DII.4 with continuous installments.

In accordance with the criteria adopted to identify the rule governing intellectual property, *the regulations of the State in whose registered modules the invention occurs shall apply.*⁵

Art. 21 of the IGA only partly addresses and resolves possible conflicts of jurisdiction. For instance, it establishes that the sole participation of a Partner State, its cooperating agency or related entities in an activity occurring in or on another Partner State's flight element does not alter or affect the latter's jurisdiction over the activity and any inventions made in the module. Therefore, if an invention is made by an astronaut who is not a national of the State of Registry of the element in which the invention occurred, he/she shall, first of all, file a patent application in the element's State of Registry.

The ISS Crew Code of Conduct also contains provisions on intellectual property protection. Crew members shall protect registered data and avoid the diffusion of any non-protected technical data, which shall only be used in the performance of their duties.

However, the patent systems adopted by States participating in the ISS differ, and this could cause difficulty obtaining protection in different States. For example, the US establishes priority based on the "*first to invent*" principle. Whoever can prove he/she was the first to invent an invention may obtain a patent, even if someone else has already registered it. This entails that the inventor is required to keep updated, solid and verifiable records of his/her work, and until the patent procedure is concluded, a patent interference may arise, i.e. another inventor may claim the same invention. The system tends to ensure that the inventor reaps the benefits of his/her invention and to discourage research espionage.

Europe and Japan, instead, follow the "*first to file*" principle to determine priority. The system undoubtedly offers greater certainty in determining who has priority, however it requires that research be carried out with great discretion, to prevent others from gaining access to the information before the invention is registered.

As the parties have agreed upon the application of their national laws, it is worth mentioning a brief overview of the different Partner States' national regulations on the matter.

5 This solution is in line with the United States' 1990 Patents in Space Act. See: The Patents in Space Act, S.459, November 16, 1990 as Public Law 101-580, 35 U.S.C.105. Title 35 of the United States Code governs all aspects of the American patent legislation and so does title 37 of the Code of Federal Regulations. See: SANDEEPA BATH, Inventions in Outer Space: need for Reconsideration of the Patent Regime, 36 Journal Space Law (2010)

4. Intellectual property protection in the United States

Apart from the Commerce Clause of the Constitution, establishing that inventions be protected through patents and copyright, several regulations on intellectual property protection have been issued in the US.⁶ There are two main types of patents in the United States: *utility patents* (covering the creation of a new or improved - and useful - product, process or machine); and *design patents* (protecting the aesthetic appearance of a product).

An invention may be patented provided that it is original, i.e. not known or used by others in the United States or abroad, that it has not been patented elsewhere or described in any printed publication available in any country worldwide, and that it hasn't already been invented by others. An invention is useful if it has a recognizable benefit and use capability.

Ideation is a key stage in patent application. However, an idea must have practical use.

A US patent prevents others from manufacturing, selling, using or distributing the patented invention. Patented products shall be marked with the patent number.

Remedies for patent infringement include monetary damages, injunctions and attorney fees.

A US utility patent can claim priority to an international or foreign patent application. Utility patents are granted for 20 years from the date that the patent application was filed.

A trade secret is defined as information that is "sufficiently secret to derive economic value, actual or potential, from not being generally known to other persons who can obtain economic value from its disclosure or use and is the subject of efforts that are reasonable under the circumstances to maintain its secrecy or confidentiality".

Patent, trademark and copyright holders are entitled to specific rights and may take legal action to protect their intellectual property rights.

5. Intellectual property under Russian law

On February 25, 1992, Presidential Decree No. 185 on Space Activities Administration Structure in the Russian Federation was issued, establishing the Russian Space Agency (Roscosmos)⁷.

The first Russian space law, instead, was issued in 1993, and was subsequently amended several times, the latest amendment dating back to

6 For a comprehensive overview of US regulations, see: <http://www.lombardiapoint.it/files/USA.pdf>

7 For a comprehensive overview of the evolution of Russian space law, see: Malkova and Doldirina, Regulation of space activities in the Russian Federation, in: http://www.aerohelp.com/sites/default/files/sergey_p._malkov_catherine_doldirina_space_activities.pdf

2006. The breadth of Russian space regulations is quite ample, as it also includes the Civil Code, the Air Code, the Land Code of the Russian Federation, and so on.

The 1993 Law of the Russian Federation on Space Activities⁸ aims to ensure the legal regulation of space activities for the purpose of developing the economy, science and technology, strengthening the defense and the security and furthering the international cooperation of the Russian Federation.

Article 16 sets out that the legal protection of the results of intellectual activity obtained in the development of the space hardware and of space technologies shall be granted in conformity with the Civil Code of the Russian Federation.

International cooperation is comprehensively regulated by the 1998 Draft Federal Law No. 97803666-2 on the collaboration with foreign and international organizations.⁹

The Draft Federal Law takes into account the civil law relationships arising from international cooperation in the development and use of outer space for scientific and economic purposes.

Intellectual property entails that exclusive rights are granted to holders on the results of their intellectual activities, including scientific work, inventions, industrial design, utility models and trademarks, computer and database software, service marks, trade and business names, or any other means used to identify a product or a service.

Interaction, which is an integral part of the international cooperation of the Russian Federation, shall be implemented in compliance with Russian regulations and shall entail mutual benefits for the parties (based on the mutuality principle).

Specifically, article 12 of the Draft Federal Law establishes that the objects created by the subjects of space activities as a result of the interaction with foreign and international organizations may enjoy intellectual property protection and the use of the exclusive rights granted to the objects of intellectual property.

The ISS is viewed from a unique and original standpoint as a single space object, regardless of the fact that a single national jurisdiction seems to be

8 - Law of the Russian Federation no. 5663-1 of August 20, 1993 on space activities (with the Amendments and Addenda of November 29, 1996, January 10, 2003, March 5, August 22, 2004, February 2, December 18, 2006)

https://www.wto.org/english/thewto_e/acc_e/rus_e/WTACCRUS58_LEG_375.pdf

- Statute on Licensing Space Operations no. 104, National Space Law Collection: Russian Federation – unoosa. February 2, 1996

www.unoosa.org/.../spacelaw/nationalspacelaw/russian.../decree

9 N.97803666-2 Introduced by deputies of the State Duma of the Federal Assembly of the Russian Federation by A.A.Pomorov, I.Sh. Saifullin, G.S.Titov, V.I.Iver, RUSSIAN FEDERATION Federal law about the legal regulation of interaction the subjects of space activities with foreign and international organizations.

lacking and that the Intergovernmental Agreement establishes a uniform regulatory framework for all the station's segments.¹⁰

Russian intellectual property regulations are constantly evolving, also due to the Russian Federation joining the WTO and signing the TRIPS Agreement (The Agreement on Trade Related Aspects of Intellectual Property Rights), which serve as two powerful drivers of change. In fact, a specialized Court was set up following Russia's participation in the WTO. On the matter, article 71 of the Constitution of the Russian Federation sets out that the relevant discipline falls within the exclusive jurisdiction of the Russian Federation. The TRIPS Agreement was promoted by the WTO itself in order to set uniform minimum standards with respect to intellectual property protection. In Russia, intellectual property protection is regulated by Federal Constitutional Law No. 4FKZ of December 6, 2011 and further strengthened by the recent amendments to the Civil Code of the Russian Federation.

The amendments to the intellectual property framework introduced by the Russian legislator with the changes of Part IV of the Civil Code came into force on October 1, 2014.¹¹

As regards intellectual property protection, Russia adopts the *first to file* principle: the first to file a patent application has the right to the grant of a patent.¹²

6. Intellectual property under Japanese law

The regulatory framework on intellectual property protection in Japan is extremely comprehensive and frequently updated.

The first two articles of the 2002 Intellectual Property Basic Act¹³ illustrate the meaning of the terms “intellectual property” – i.e. the inventions and other property produced through creative activities by human beings – and “intellectual property right”, which is any right stipulated and protected by laws and regulations (e.g. patents, utility models or design rights, copyright, etc.)¹⁴.

10 SAFYANOV, SAFRONOV, International Space Station, Reshetnev Siberian State Aerospace University, in Actual problems of aviation and astronautics – 2015. Tom 2 UDC 340.1, In[3](Intellectual property rights in international space projects [Electronic resource]. URL: <http://www.irbis.vegu.ru/repos/11286/HTML/126.htm> (application date: 30.03.2015).

11 For the changes introduced in the intellectual property framework, see: <https://www.studiozunarelli.com/2014/11/15/proprietà-intellettuale-federazione-russa/15-nov-2014> -

12 For a comprehensive overview of the reform of the Russian Federal law, see: Guida pratica sulla Proprietà intellettuale nella Federazione Russa of the Italian Trade Agency in: <http://www.uibm.gov.it/attachments/Guida%20pratica%20sulla%20Proprietà%20Intellettuale%20in%20Russia.pdf>

13 Intellectual Property Basic Act (Law No.122 of 2002) <https://www.filodiritto.com/articoli/2006/08/legge-quadro-sulla-proprietà-intellettuale-giappone>

14 LEONARDI, Il diritto di proprietà intellettuale giapponese e le regolamentazioni

The Japanese Agency for Cultural Affairs recently signed an agreement with other 11 countries on the so-called Trans-Pacific Partnership (TPP). Among other things, the TPP extends copyright to the life of the author plus 70 years (the same term set in many countries, including the US and Italy), from the current 50.

Over the past years, the Japanese law has been amended several times, the latest amendment dating to June 2012.¹⁵

An idea may be patented in Japan if it complies with three key principles: industrial applicability, meaning that an invention shall be susceptible to industrial application, i.e. that it shall be made or used in any industry. The second criterion is *novelty*, i.e. when filing a patent application, the invention shall be new and not known to the public in Japan and in the rest of the world. Lastly, the third patentability requirement is the so-called *inventive step*. A Japanese design patent is effective for 20 years from the registration date and includes the right to license; patent holders shall pay annual fees to maintain their patent.

The Japanese Intellectual Property Strategic Program encourages law harmonization on IP rights with respect to other countries worldwide, specifically promoting the strengthening of relationships with the US and European patent offices, which, together with the JPO, deal with approximately 80% of patent registrations worldwide. Japan has already done it in the past, promoting cooperation with the US and the EU, and continues to do it today.¹⁶

A great innovation in the Japanese institutional framework was the creation of the Intellectual Property High Court.

7. Uniform intellectual property protection regulations in the European module

ISS European Partner States resolved the issue of the application, grant and protection of patents for inventions made in the ESA-registered elements by harmonizing their national regulations and introducing a specific provision in the IGA.

internazionali, Il Partenariato Trans-Pacifico e le sue future implicazioni, graduation thesis, 2016, Ca' Foscari University of Venice, See the following link: <http://hdl.handle.net/10579/7616> See also the article by Nihon Nikkei Shinbun, June 2012: http://www.nikkei.com/article/DGXNASFK2102W_R20C12A6000000)

15 The original language version of the text of the law is available on the National Diet Library website: http://law.e-gov.go.jp/cgi-bin/idxselect.cgi?IDX_OPT=3&H_NAME=&H_NAME_YOMI=%82%a0&H_RYAKU=1&H_CTG=1&H_YOMI_GUN=1&H_CTG_GUN=1&H_NO_GENGO=S&H_NO_YEAR=45&H_NO_TYPE=2&H_FILE_NAME=S45HO048

16 See the website Consulting Blog, December 2014: <http://webconsulting1.com/archives/310>

Paragraph 2 of art. 21 of the IGA sets out that any European Partner State, for purposes of intellectual property law, shall consider any activity occurring in the ESA-registered elements as having occurred within its territory. However, since a European-wide patent law hasn't yet been issued – although national regulations on the matter are quite uniform – the recognition of patents in the different designated European countries and the exploitation of products may only take place after the filing of a single and centralized application, in accordance with the Munich Convention or European Patent Convention (EPC).

Where the same act of infringement in or on an ESA-registered element gives rise to actions by different intellectual property owners by virtue of more than one European Partner State deeming the activity to have occurred in its territory, a Court may grant a temporary stay of proceeding in a later-filed action pending the outcome of an earlier-filed action, thereby favoring whoever has filed the earlier action. The principle of the “*first to claim*” rules out the possibility of subsequently claiming compensation on the same grounds. Furthermore, EU countries undertake to recognize licenses for intellectual property exploitation, provided that they are granted in accordance with the regulations of a European Partner State.

In an attempt to harmonize and coordinate EU national regulations, ESA issued a set of resolutions on the matter, such as the ESA Council Resolution entitled “Rules Concerning Information, Data and Intellectual Property” of 2001¹⁷, which empowers participating States to regulate data access, use and disclosure.¹⁸

In particular, article 4.2 of the “Regulations of the European Space Agency”, Staff Regulations of 2014¹⁹, sets out that the Agency may obtain protection for any Raw and Calibrated Data produced in its module and that the States and the individuals that fall within their jurisdiction may have free, non-exclusive and non-commercial access to data. The Director General decides whether to confer a prize to the inventor or authorize him/her, upon request, to exploit the rights in competition with the Agency or waive such rights in favor of the inventor.

17 Resolution adopted by the Council, ESA/C/CLV/Res.4 (Final of December 2001)

18 ESA/REG/007, Paris 27 February 2014

For a critical investigation of the issues related to IPR, with particular focus on the status of the ESA, see: TRIMARCHI, International Space Station: A focus on Intellectual Property Rights: Main Emphasis on the ESA Perspective, *Zeitschrift für Luft- und Weltraumrecht*, 2016 Volume: 65 Folder: 4 p.533 ff.

19 ESA/REG//007, Paris 27 February 2014

See BALSANO, WHEELER, The IGA and ESA Protecting Intellectual Property Rights in the context of the ISS activities, in VON DER DUNK, International Space Station, Commercial Utilisation from a European Legal Perspective, 2006, p. 68 ff.

8. International Conventions on IP protection

There are several existing International Conventions on the matter²⁰, however, for the sake of brevity, we will highlight just a few of the most important.

The three pillars of the 1883 *Paris Convention* (later revised many times) are the following: *National Treatment*, meaning that nationals of any country of the Union shall enjoy the same intellectual property protection as nationals of all the other countries of the Union. *Right of Priority*: any person who has duly filed an application for a patent, or for the registration of a utility model, or of an industrial design, or of a trademark, in one of the countries of the Union, or his successor in title, shall enjoy, for the purpose of filing in the other countries, a right of priority, provided that they subsequently file an application in any of the other countries of the Union within 12 months, effective from the date of filing of the first application. *Common Rules*: this principle, which is a key aspect of the harmonization process, requires that all member States comply with the general rules of the Union by amending their national regulations, if necessary.²¹

Greater harmonization has been achieved by the *Patent Cooperation Treaty* (PCT), which was signed in Washington on June 19, 1970, but entered into force in 1978 and was subsequently revised several times. The PCT aims to constitute a Union for cooperation in the filing of international applications for patents, known as the International Patent Cooperation Union. The Treaty sets out that any person who is a national or a resident of a Contracting State may file an international application, containing the designation of the Contracting State or States in which protection for the invention is desired, with its national office, thus avoiding having to file multiple applications and having to face costly procedures and his/her application undergoing a preliminary examination in all the various States.

It has to be noted, however, that the PCT does not result in an “international patent”, as the grant of patents is a prerogative of the so-called designated

20 For the chart of Member States, see the link: http://www.wipo.int/treaties/en/ShowResults.jsp?treaty_id=15

The Conventions are the following: the Paris Convention of March 20, 1883; the Berne Convention for the Protection of Literary and Artistic Works of September 9, 1886; the Madrid Agreement Concerning the International Registration of Marks of April 14, 1891; the Hague Agreement Concerning the International Deposit of Industrial Designs of November 6, 1925; the Patent Coop. Treaty, of June 19, 1970; the Budapest Treaty of April 28, 1977; the TRIPS Agreement of April 15, 1994; the Trademark Law Treaty of October 27, 1994; the WIPO Copyright Treaty, of December 20, 1996; the ACTA Agreement of October 1, 2011.

21 For an interesting dissertation on the harmonization process, see NAKAGAWA Junji, *International Harmonization of Economic Regulation*, Oxford, Oxford University Press, 2011, p. 2 ff.

office. Substantially, the PCT is more of an international archiving system than a registration system.

The *TRIPS Agreement* (Agreement on Trade-Related Aspects of Intellectual Property Rights, including Trade in Counterfeit Goods)²², was signed on April 15, 1994 on the occasion of a ministerial meeting held in Marrakesh. The meeting had two main outcomes: firstly, GATT was replaced by the World Trade Organization (WTO), whose members represent approximately 97% of world trade. Secondly, the TRIPS Agreement²³ – defined by the WTO as “the most comprehensive multilateral agreement on intellectual property” – was signed.

The TRIPS Agreement, which came into effect on January 1, 1995, sets specific minimum standards in terms of IP rights that member States shall comply with before the expiry of a general period of one year following the date of entry into force of the Agreement. However, developing country Members are entitled to delay for a further period of four years the date of application of the provisions of the TRIPS Agreement.

Lastly, apart from the National Treatment principle – already set out in the Paris Convention – article 4 of the TRIPS Agreement establishes the principle of the “most-favored nation treatment”.

The Agreement drew a significant reaction from the APEC. The Asia-Pacific Economic Cooperation, as defined by the Cooperation itself, is a key “economic region” and a forum, established in 1989, for 21 Pacific Rim member States that promotes free trade throughout the region. Following WTO’s example, APEC decided to introduce such themes in the 1995 Osaka Action Agenda.

Although the TRIPS Agreement requires all signatory States to adopt a uniform definition of trademark and a common term of protection, in the 1990s the various countries’ trademark registration, alteration and renewal procedures still differed greatly.

The objective was to harmonize such procedures so that all member States’ Patent Offices would fall under the scope of common regulations.²⁴ The TRIPS Agreement grants Members a quite lengthy transitional period to implement the provisions of the Agreement into their national framework, as this not only entails reviewing national legislations but also setting up the relevant offices.

22 The text of the agreement is available on the WTO website: https://www.wto.org/gatt_docs/English/SULPDF/90960212.pdf

See also K. SELL, *Private Power, Public Law. The Globalization of Intellectual Property Rights*, Cambridge, 2003, p. 53 ff.

23 <https://www.diritto.it/articoli/europa/policella.html>

See the WTO website: https://www.wto.org/english/tratop_e/trips_e/intel2c_e.htm

24 ONO Nahoko, *Japan’s Approach to FTAs and IP*, in *Intellectual Property and Free Trade Agreement in the Asia Pacific Region*, London, Springer, May 2014

9. European Conventions

The *Munich Convention, or European Patent Convention (EPC)* of October 5, 1973 aims to strengthen cooperation between European States by harmonizing their national regulations on certain key points, such as the patentable subject matter, patentability requirements (novelty and originality) and the identification of the individuals entitled to patent rights²⁵; it also establishes a new system of law for the grant of patents.

The European Patent, which is granted by the European Patent Office, however, is not a unitary right (like the unitary patent, whose implementation is still ongoing), but a group of essentially independent nationally-enforceable, nationally-revocable patents subject to the regulations of the different Member States where protection has been requested and where the relevant administrative procedures have been filed.

The enforcement of European Patent rights and jurisdictional protection, thus, still fall under the scope of the contracting States.

Notwithstanding the disadvantages resulting from the lack of a unitary effect and jurisdiction, the European Patent is still a huge step forward for the protection of inventions in EPC contracting States.

Since the 1970s, endless attempts have been made on various occasions to establish – alongside the European Patent created by the EPC Convention – a truly independent *European patent with unitary effect*.

However, the latter has yet to be implemented; its history goes back to 1975, when the Convention for the European Patent for the Common Market was signed in Luxembourg by a number of States. The Convention, however, never came into force as it was not ratified by enough countries. The most controversial topics were the unitary jurisdiction and the language regime.²⁶

In the year 2012/13, there was an acceleration in the implementation of a real unitary patent with the entry into force of two EU regulations: the Regulation of the European Parliament and of the Council implementing enhanced cooperation in the area of the creation of unitary patent protection and the Council Regulation concerning the applicable translation arrangements, both approved on December 17, 2012.

The Agreement establishing a Unified Patent Court for the settlement of disputes relating to European patents with unitary effect, instead, was signed on February 19, 2013 (by 23 Member States, excluding Spain, Poland and Rumania).²⁷

25 See the following link: https://it.wikipedia.org/wiki/European_patent_convention

26 BIANCHI, Brevetto Unico Europeo: una storia travagliata, see link: <http://www.ilprogettistaindustriale.it/brevetto-unico-europeo-una-storia-travagliata/>
POLICELLA. La proposta di regolamento sul brevetto comunitario, see link: <https://www.diritto.it/articoli/europa/policella.html>

27 -Regulation (EU) No. 1257/2012 of the European Parliament and of the Council of 17 December 2012 implementing enhanced cooperation in the area of the creation of

The Agreement aims to set up a *Unified Patent Court* for all European Union member States, having exclusive jurisdiction and unitary effect not only as regards European patents but also with respect to those granted under the European Patent Convention. According to its provisions, the entry into force of the agreement shall be subject to its ratification by at least 13 member States (including the UK, France and Germany, which are the countries hosting the Court's central divisions).

All the issues pertaining to substantive law shall be governed by the abovementioned Regulation (EU) No. 1257/2012 of the European Parliament and of the Council of 17 December 2012 implementing enhanced cooperation in the area of the creation of unitary patent protection.

With reference to the European patent, the Court's decisions shall be valid in all the member States in which the patent is valid. As regards the European patent with unitary effect, governed by the aforesaid Regulation No. 1257/2012, the effectiveness of the decisions made in the territory of the member States originates directly from the unitary effect of the patent itself.²⁸

In June 2010, the Commission adopted a new draft Regulation of the Council on the translation regime for the European patent. The draft regulation, which was based on a three-language system (English, German and French), encountered fierce opposition from Italy and Spain at a Competitiveness Council meeting. Unanimity was therefore not attained and the EU hit a deadlock; to overcome it, certain Member States requested and obtained the authorization to proceed with enhanced cooperation in the area of the creation of unitary patent protection. Italy and Spain, instead, filed an appeal with the European Court of Justice against the use of the enhanced cooperation procedure. On April 16, 2013 the Court of Justice rejected the appeal, confirming the legality of the enhanced cooperation procedure.²⁹

Other important initiatives were carried out to promote the creation of the European patent with unitary effect.³⁰ The EPUE will be granted by the European Patent Office (EPO) and will enable patent holders, through the payment of a single renewal fee to the EPO, to enjoy patent protection in all the participating EU Member States (currently 26 countries).³¹

unitary patent protection;

- Council Regulation (EU) No. 1260/2012 of 17 December 2012 implementing enhanced cooperation in the area of the creation of unitary patent protection with regard to the applicable translation arrangements.

- Agreement on a Unified Patent Court of February 19, 2013.

28 For a comprehensive overview of the Court, see: GUARNIERI, Corte unificata dei brevetti, 2 April 2013, <https://www.diritto.it/corte-unificata-dei-brevetti/>

29 Judgment of the Court (Grand Chamber) Cases C-274/11 and C-295/11, See: brevettinews.it/brevetti/brevetto-unitario/

30 For more information on the European patent with unitary effect (EPUE) see: <http://www.uibm.gov.it/index.php/brevetti/brevettare-all-estero/brevetto-unitario>

31 The countries are the following: Italy, France, Germany, United Kingdom, the

The unitary patent will not replace patent protection at the national (e.g. the Italian Patent and Trademark Office) and the European level (EPO), but will stand alongside it. The unitary patent will come into effect following the entry into force of the Unified Patent Court Agreement (UPCA) and of the Protocol to the Agreement on a Unified Patent Court on provisional application.

This is expected to happen no earlier than mid-2019, given the current delays to the ratification of the UPCA and of the Protocol by certain EU countries, including Germany.

10. Conclusions

The exercise of jurisdiction is set forth by paragraph 2 of art. 5 of the IGA. In full compliance with art. VIII of the 1967 Outer Space Treaty (OST) A State's territorial sovereignty also extends to the space objects it registers and launches into outer space. However, in addition to the "quasi-territorial" jurisdiction that each State shall retain over its own flight elements, the IGA also sets out that States shall hold jurisdiction over personnel who are their nationals in or on the Space Station or elsewhere. Art. VIII of the Outer Space Treaty, instead, establishes that each State Party shall retain jurisdiction over any personnel who are in or on the elements it registers, without adopting a "nationality" principle with respect to other places. While individuals who are not nationals of any Partner State undoubtedly fall within the jurisdiction of the State of Registry of the module they are in, conflicts of jurisdiction could arise as regards nationals of Partner States with respect to various issues, such as the identification of the applicable intellectual property law, and especially in case of joint projects.³²

Following an analysis of the different national regulatory frameworks and international conventions on the matter, it appears that there are basically three universally accepted requirements for the patentability of inventions:

- Advancement of research with respect to the previous state-of-the-art;
- Novelty compared to inventions that are already known and in use;
- Industrial applicability.

Netherlands, Belgium, Luxemburg, Poland, Malta, Cyprus, Greece, Sweden, Denmark, Finland, Estonia, Latvia, Lithuania, the Czech Republic, the Slovak Republic, Slovenia, Portugal, Austria, Rumania, Bulgaria, Hungary, Ireland.

Italy officially joined the enhanced cooperation in the area of the creation of unitary patent protection in September 2015 and deposited its instrument of ratification of the Protocol to the Agreement on a Unified Patent court on provisional application in March 2017.

32 For an in-depth analysis of the matter, see CATALANO SGROSSO, *International Space Law*, cited in note 2, p. 240 ff., chap. III, and p.325 ff.

However, some countries are less strict than others, imposing less stringent patentability standards (e.g. Japan). Furthermore, the timing required by different countries as regards public disclosure, commercial application of research and granting of compulsory licenses for commercial use, often differs, thus creating further problems. It must not be forgotten that the unique environment in which space labs are located has different features with respect to the Earth environment, making it harder to identify certain requirements for patentability. The novelty or non-obviousness requirement itself could acquire peculiar features in space or require that a patent application be filed for a procedure for developing a new material before the latter is developed, although it is a technical procedure which, as such, doesn't meet the concreteness requirement.

In some countries (e.g. Japan) it is possible not only to file an application for a design, but also for a partial design, i.e. a detailed part of a design. This could give rise to a potential conflict of laws, should research initiated in a Japanese module – for which an application for a partial design has been filed in Japan – continue being conducted in a non-Japanese lab.

Therefore, although the law harmonization process – which, over the past years has been promoted by several organizations, such as GATT, WTO and WIPO – would deliver clear benefits, it also entails significant concerns. Apart from the decision-making debate per se, where the disputes between States are more or less bitter depending on the issues addressed, a constant problem is the risk of violations of the principle of territorial sovereignty of a State, meaning the risk of making significant errors, such as the attempted abuse of authority of a government that applies different methods and timelines which are not met.

To resolve these specific issues, which are also related to the unique environment in which inventions are made (i.e. outer space) and considering that the creation of a specific Convention appears to be unfeasible, we suggest extending the scope of art. 21 of the IGA. The Agreement could be reviewed by implementing the relevant revision procedure, so as to extend the single patent application, automatic recognition and first to claim principles to all Partner States, rather than only to European members. This would harmonize regulations, also taking into account the ISS' unique environment, and streamline procedures.

As a final remark, it must be noted that if we observe how the States are addressing the problems arising on the matter, we see that they tend to resolve these issues by setting out common rules. Some countries (e.g. the Russian Federation and Japan) establish unitary, exclusively competent jurisdiction, while others opt for the creation of unified institutions, such as the European Unified Patent Court, which was set up in 2013. With this remark, we wish to underline the uniqueness of the matter, which requires specific skills and competences, and, as regards the EU, calls for the implementation of a single court judgment, that shall be automatically

recognized by all the participating States. The significant benefits delivered by this regime could also be enjoyed by all the ISS member States should they decide to review the IGA in order to extend, to all the Partner States, the validity and automatic recognition of the decisions of the Partners' national Courts or of the European Unified Patent Court of Justice.