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Interaction between Diverse Sources of Law Applicable to Legal Challenges Caused by Commercial Space Activities

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The purpose of this paper is to consider different sources and branches of law (existing and under formation) that might be able to provide appropriate solutions to diverse legal challenges that are already caused by commercial space activities and will be more further preconditioned as commercial development in outer space gathers pace.
In particular this paper provides a general analysis of the following sources and branches of law as applied to commercial space activities:
– International Law (IL);
– International Space Law (ISL);
– National Space Legislation (NSL);
– Private International Law (PIL); and
– Private International Space Law (PISL) – a new branch of law under formation.

The aforementioned branches and sources of law are analyzed in view of diverse criteria such as: main "purpose" and specific features, applicability to commercial space activities, effectiveness of legal regulation, main problems regarding their pertinence, interaction and correlation (where appropriate) between each other, etc.
Furthermore in view of finalization of the Protocol to the Cape Town Convention on Matters Specific to Space Assets a special focus is made on the issue of formation of PISL, as the author presumes that this instrument may be considered:
(a) as one of the first efforts at the international level to create legal norms directly and adequately applicable to commercial space activities with due attention to legal effects of globalization; and
(b) as the first specific private international legal source of PISL that takes into account both the private nature of such activities and specific features of ISL.

Finally on the basis of overview and analysis of the aforementioned issues the author makes conclusions regarding the tendencies and perspectives of creation of a strong legal framework for comprehensive regulation of commercial space activities.

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The author believes that due efforts of the legal community might help to secure that space science and technology are for the needs of all.

1 Actuality

As of today such tendencies of development of space activities as globalization, commercialization and privatization are not newly-observed[1]. Lawyers, on their part, continue to face diverse legal challenges. Many issues related to private space activities such as property rights (in particular, transfer of ownership of space objects), intellectual property rights, liability of non-governmental entities, insurance, legal status of space tourists and others require adequate legal regulation. Some legal solutions were proposed, and some of them were implemented by regulators and used by actors in this field. But nevertheless it should be admitted that open issues still exist.

Increasing participation of private actors in space activities and, correspondingly, the need for appropriate legal actions is stressed again in the latest report of the Legal Subcommittee of the United Nations Committee on the Peaceful Uses of Outer Space (hereinafter "UN COPUOS")[2].

Nowadays when private space activities have already passed some milestones (somewhere successfully, somewhere not) and legal solutions have shown their viability, a new glance should be given to applicable to this type of activities both existing and potential sources of law, particularly to their interaction and correlation (where appropriate) between each other.

Such an analysis might help in making conclusions regarding tendencies and perspectives of creation of a strong legal framework for comprehensive, coherent and effective regulation of commercial space activities.

2 Sources of Law Applicable to Commercial Space Activities

This part of the paper provides an overview of the existing and potential sources of law[3] applicable to private space activities. Such a general review, paying most of the attention to the issues of applicability and effectiveness, makes possible to pass to specific conclusions regarding interaction, correlation (where appropriate) between these sources of law; tendencies and perspectives of legal regulation and some other related conclusions in the following parts of the paper.

1 See more about it: UN Document A/CONF.184/6. Report of the Third UN Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III) Vienna, 19-30 July 1999 (P. 25)
2 UN Document: A/AC.105/1003 (P. 39)
3 In view of the main purpose of this research and the fact that all of the theoretical issues cannot be covered within the limits of the established paper volume, this paper does not provide detailed definitions of notions and terms of the existing branches and sources of law. Corresponding details are provided only with regard to a new branch of law under formation – PISL.

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2.1 International Law

Legal sources of International Law (hereinafter "IL"), otherwise known as Public International Law, are one of the main that all space activities shall comply with. It is confirmed in the first of the United Nations (hereinafter "UN") Treaties on outer space, c'est-a-dire in Article III of the Treaty on Principles Governing the Activity of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (hereinafter "the Outer Space Treaty"): "States Parties to the Treaty shall carry on activities in the exploration and use of outer space, including the Moon and other celestial bodies[4], in accordance with international law, including the Charter of the United Nations, in the interest of maintaining international peace and security and promoting international cooperation and understanding.".

Moreover because of the growth of commercial space activities important and of help, at least in understanding of an issue, are specific rules of International Human Rights Law (in view of space tourists' legal status), International Environmental Law (space debris problem), International Trade Law etc.

IL does not give an answer to every open issue (it is to be mentioned that IL, by its substance and according to its purpose even do not have to provide it) and its effectiveness in view of political and economical realia causes various legal debates, but nevertheless it shall be admitted that complying with the established rules and principles of IL remains the starting point in providing of "international peace and security". This condition is relevant to any field of human activities, particularly to commercial space activities, that have received detailed regulation by the below-mentioned sources of law.

2.2 International Space Law

According to Prof. Dr. Bin Cheng: "General international law as applied to outer space provides only the basic ground rules, which need to be supplemented with additional and detailed norms as the need arises."[5]

Such norms were partially created under International Space Law (hereinafter "ISL").

United Nations Treaties on outer space: the 1967 Outer Space Treaty; the 1968 Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (hereinafter "the Astronauts Agreement); the 1972 Convention on International Liability for Damage Caused by Space Objects ("the Liability Convention"); the 1975 Convention on Registration of Objects Launched into Outer Space ("the Registration Convention"), and the 1979 Agreement Governing the Activities of States on the Moon and Other Celestial Bodies ("the Moon Agreement"); and most of the other

4 Following the Treaty, "outer space" will here always be used to include the moon and other celestial bodies, unless otherwise stated.

5 Prof. Dr. Bin Cheng. Studies in International Space Law. Clarendon Press Oxford, 1997, P. 642

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relevant legal sources of ISL[6] were developed at the times when states were the only actors in the space activities and those activities were carried on mostly in strategic and scientific purposes.

However commercial space activities were not excluded from the scope of UN Treaties on outer space. The most relevant provision is the Article VI of the Outer Space Treaty, according to which "the activities of non-governmental entities in outer space , including the moon and other celestial bodies, shall require authorization and continuing supervision by the appropriate State Party to the Treaty". It is envisaged in the same article that States Parties shall bear international responsibility for all national activities in the outer space.

Under Article VI of the Outer Space Treaty, unlike in any other field of commercial activities, States bear direct State responsibility. Keeping in mind Article III of the Treaty, this means that contracting States have a duty to control and supervise private national space activities in order to ensure that these activities conform to their obligations under the Treaty, under IL, and in particular under the UN Charter.

As to issues under ISL that might help in creating a clearer regulation of space activities, including the commercial ones, the following are at least to be mentioned: the need to clarify a number of terms and concepts (such as "space object", the meaning of peaceful purposes[7]); the need of definition and delimitation of outer space[8]. Moreover a better "understanding" both by states (provided by appropriate legal actions) and private actors in this field of: the issue

6 It is at least to be mentioned that these legal sources include: international custom, five sets of principles adopted during 1980s and 1990s, the statutes and acts of international intergovernmental space organizations and numerous agreements on international cooperation in this field. See more on this issue:
- Prof. Dr. Vladimir Kopal Origins, Present Status and Perspective Development of International Space Law//United Nations Workshop on Space Law "Status, Application and Progressive Development of International and National Space Law", Kyiv, Ukraine, 6-9 November 2006, P. 3-10 of the original paper presented at the Workshop or P. 26-30 at the Proceedings of the Workshop in Russian: Статус, применение и прогрессивное развитие международного и национального космического права (Материалы Симпозиума (Практикума) ООН-Украина по космическому праву), Киев, <<Аттика-Н>> (2007);
- Международное космическое право под редакцией проф. Жукова Г. П., проф. Колосова Ю. М., М., <<Международные отношения>>, 1999. С.10-13; 36-47; and other relevant researches of the honorable scholars.

7 See more about it: Prof. B. Cheng. Supra, note 5. P. 649-658.

8 This issue remains for many years at the agenda of the UN COPUOS Legal Subcommittee. See more about it: UN Document: A/AC.105/1003 (P. 12-15); and the Report of the Chair of the Working Group on the Definition and Delimitation of Outer Space (P. 34-36).

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of jurisdiction of states over space objects[9]; the problems related to transfer of ownership over space objects[10] and international legal effects for corresponding States[11] – is important in bringing ISL in line with contemporary tendencies of space activities' development.
Prof. Dr. Stephan Hobe notes on this issue that "the international legal order for space activities should be flexible enough to enable private actors to become active and to invest in outer space activities in order to make this, often called, *last frontier* beneficial, not only for private entities, not only for States, but for all mankind"[12].
Prof. Dr. Vladimir Kopal adds that "it is evident from international space treaties and judicial decisions, and recognized by specialized writers, that the present International Space Law cannot be viewed as a complete system"[13].
Let's see how the below reviewed sources of law can be of help in completing the system.

2.3 National Space Legislation[14]

According to Prof. Dr. Frans G. Von Der Dunk: "International Space Law itself then firstly calls for the establishment of national space legislation; secondly, it provides for the outlines of such legislation as to its scope; and thirdly it provides for a few broad rules as to its contents. In short, a State will have to exercise any available jurisdiction primarily vis-à-vis those particular categories of private activities in respect of which it can be held accountable

9 See more on this issue:
- Bin Cheng. Supra, note 5, P. 655-658;
- Prof. Ricky J. Lee. Reconciling International Space Law with the Commercial Realities of the Twenty-first Century/Singapore Journal of International and Comparative law (2000), P. 210-213.

10 Within the framework of the fifty-first session of the UN COPUOS Legal Subcommittee the International Institute of Space Law (IISL) and the European Center for Space Law (EISL) held a symposium on the theme "Transfer of ownership of space objects: issues of responsibility, liability and registration". See more on this issue: <www.unoosa.org/oosa/COPUOS/Legal/2012/symposium.html>.

11 This issue is addressed by a specific conclusion below in the paper.

12 Prof. Dr. Stephan Hobe "Current and Future Development of the International Space Law"// Proceedings of the United Nations Brazil Workshop on Space Law: Disseminating and Developing International and National Space Law: The Latin America and Caribbean Perspective. - ST/Space/28 – United Nations, 2005. P. 15

13 Prof. Dr. Vladimir Kopal. Comments and Remarks to "Current and Future Development of the International Space Law" by Prof. Stephan Hobe, Supra, note 12. - ST/Space/28 – United Nations, 2005. P. 25

14 It is to be noted that National Space Legislation is analyzed again below in the paper as a specific source of Private International Space Law.

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internationally"[15]. "International accountability" of states is predetermined by Articles VI and VII[16] of the Outer Space Treaty.

States adopted and will continue to adopt national legislation regulating primarily issues of licensing, insurance and export control in this field. Corresponding national regulatory frameworks represent different legal systems with either unified acts (e. g. in Norway, in the United Kingdom) or a combination of national legal instruments (e. g. in the Russian Federation, in the United States of America). National space legislation shall be in full conformity with obligations of states under ISL and IL on the whole.

A state shall provide fulfillment of undertaken international obligations on the whole national territory and by all entities under national jurisdiction[17].

Concerning the issue of national space legislation (hereinafter referred to as "NSL") of interest are some provisions of the "Revised draft set of conclusions of the Working Group on National Legislation Relevant to the Peaceful Exploration and Use of Outer Space" presented at the fifty-first session of the UN COPUOS Legal Subcommittee. Emphasizing "the importance of appropriate means of ensuring that outer space is used for peaceful purposes and that the obligations under international law and those specifically contained in the United Nations treaties on outer space are implemented", with due attention to the increasing participation of private actors in space activities and, correspondingly, the need of "appropriate action at the national level" the Working group proposed some elements that could be considered by states when enacting regulatory frameworks for national space activities , in particular related to the following issues: scope of application, authorization and licensing, safety, continuing supervision of activities of non-governmental entities, registration, liability and insurance, and transfer of ownership and control of space objects in orbit[18]. Moreover, the Draft set of conclusions contains examples of corresponding UN treaties and principles on outer space, related General Assembly resolutions and other guidelines[19], that might be of help for states in understanding the issues of *interconnection between effectiveness of corresponding national mechanisms and ensuring fulfillment of undertaken international obligations*.

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15 Prof. Dr. Frans G. Von der Dunk. Current and Future Development of National Space Law and Policy/Proceedings of the United Nations/Brazil Workshop on Space Law: Disseminating and Developing International and National Space Law: The Latin America and Caribbean Perspective. – ST/Space/28 – United Nations, 2005. P. 35.

16 Article VII of the Outer Space Treaty provides that States are "internationally liable for damage to another State <…> or its natural and juridical persons", if such damage is caused by their space objects.

17 Международное право/ под редакцией проф., д.ю.н. Колосова Ю. М., проф., к.ю.н. Кривчиковой Э. С.// М.- <<Международные отношения>>, 2003. С. 9

18 UN Document: A/AC.105/C.2/L.286 (P. 2-4)

19 UN Document: A/AC.105/C.2/L.286 (P. 5)

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It can be seen by the analysis of legal sources at international and national levels that *in providing legal certainty* in commercial space activities' regulation *of high importance is finding of a legal balance and providing effective interaction between ISL and corresponding provisions of national legislation*. This conclusion bases on the general interaction and correlation of IL and national legislation.

2.4 Private International Law

In view of the globalization tendency, in particular of participation in space projects of different actors under diverse jurisdictions (this means relations involving a "foreign element"), a few words should be also said about applicability of Private International Law (hereinafter "PIL") rules and principles to commercial space activities' regulation.

Some of the legal sources both at international and national levels of PIL are applicable to regulation of private space activities (in particular concerning the issues of intellectual property rights, private property rights etc.)[20], problems appear while regulating corresponding activities carried on right in the outer space.

Let's see what kind of legal sources might be able to take into account the legal specificity (established by the provisions of ISL) of space-related property and personal non-property relations involving a "foreign element". Below attention is paid to the issue of formation of a new branch of law - Private International Space Law.

2.5 Private International Space Law

The importance of each of the sources of law reviewed above cannot be denied but it should however be recognized that neither of them (IL, ISL, NSL or PIL) provides (and according to their substance and subject of legal regulation even do not have to provide) comprehensive and coherent regulation of increasingly developing commercial space activities in view of the above-mentioned tendencies. There is a significant lack of an "element" (analyzed below) that might be able to complete the existing legal framework.

For several years international lawyers specializing in the field of space law have been discussing the issue of formation of Private International Space Law

20 For a detailed analysis of the issue of PIL legal sources applicability to the regulation of commercial space activities (and a detailed analysis of the issue of PISL formation and diverse aspects of legal regulation of commercial space activities) please see the author's PhD thesis: Юзбашян М. Р. Международно-правовые основы решения экономических проблем использования космоса. Диссертация на соискание ученой степени кандидата юридических наук:12.00.10/МГИМО, Москва, 2009. Also see on this issue: Intellectual Property and Space Activities/ Issue paper prepared by the International Bureau of WIPO. <www.wipo.int/patentlaw/en/developments/pdf/ip_space.pdf.>

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(hereinafter "PISL")[21]. This discussion has been also supported by a number of states' official delegations at the UN COPUOS Legal Subcommittee's sessions.

2.5.1 Definition of PISL

PISL could be defined as *a set of substantive legal rules and rules of conflict of laws governing space-related property and personal non-property relations involving a "foreign element"*.

As any other branch of law PISL is characterized by its specific *subject of legal regulation* comprising involving a "foreign element" space-related property and personal non-property relations of entities under PIL (states and international organizations, individuals and corporations).

"Foreign element" can be distinguished by subject in a relationship, subject-matter or juridical act on grounds of which legal relationship arises, changes or terminates.

To this subject of legal regulation applicable are the following *methods of legal regulation:* substantive law method (direct regulation of relations), method of conflict of laws (referral to national law), as well as international and national methods of legal regulation.

Existence of these objective preconditions (specific subject and methods of legal regulation) allows raising the issue of formation of a new branch of law - PISL - that could be able to fill in the legal "vacuum" in regulation of commercial space activities.

2.5.2 Legal Sources of PISL

As any other branch of law PISL shall have its own legal sources. A general brief analysis of the status of potential and existing legal sources both at international and national levels is as follows:

Protocol to the Cape Town Convention on International Interests in Mobile Equipment on Matters specific to Space Assets

One of the forms of commercial space activities is transfer of rights on mobile equipment. On this issue the Convention on International Interests in Mobile Equipment (hereinafter "Convention") was prepared in frames of

21 See.: - Международное космическое право/ Отв. редакторы проф., д.ю.н. Жуков Г. П. и проф., д.ю.н. Колосов Ю. М.. - <<Международные отношения>>. – М., 1999 г., С.133;
- Кунц О. Международное космическое право и международное частное право/Новое в космическом праве (на пути к международному частному космическому праву)// Отв. ред. проф. Верещетин В. С. – М., 1990. – С.13;
- Ж. Монсеррат Фильо Правовые аспекты коммерческой деятельности в космосе/Статус, применение и прогрессивное развитие международного и национального космического права. Материалы Симпозиума (Практикума) ООН-Украина по космическому праву. 6-9.11.2006 г. Киев, Украина. – Актика-Н, 2007. – С. 201;

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the International Institute for the Unification of Private Law (hereinafter "UNIDOIT") and opened to signature at the diplomatic Conference, held in Cape Town, under the joint auspices of UNIDROIT and International Civil Aviation Organization, at the invitation of the Government of South Africa, on 16 November 2006. The Convention entered into force on 1 March 2006[22].
The *aim* of the Convention is to increase the efficiency of financing high value mobile equipment (e.g. aircraft objects, space objects, railway rolling stock, etc.), because such equipment moves from jurisdiction to jurisdiction, and because not all jurisdictions provide equivalent recognition of creditor's rights, creditors face higher risks and this increases the cost of obtaining credit.
The Convention establishes a sound, *internationally-applicable legal regime for security, title-retention and leasing interests:* this will reduce the risks faced by creditors and thereby reduce the costs of financing high-value mobile equipment. Financiers will be able to assure themselves that their proprietary interests in a financed asset are superior to all potential competing claims against that asset, and upon default will be able to promptly realize the value of that asset. In particular, the Convention provides for remedies in Contracting State jurisdictions to be capable of expeditious enforcement, and creates a regime for the priority of creditors' interests to be determined by reference to an electronic, notice-based *International Register,* with priority to be established on a "first-in-time" basis[23].
In course of the work on the draft Convention it was decided that the Convention would contain general rules applicable to all categories of high value mobile equipment and separate protocols would contain *specific rules* applicable to each particular category of mobile equipment and associated rights. In accordance with Article VI of the Convention, the Convention and the corresponding Protocol shall be read and interpreted together as a single instrument (1); and, to the extent of any inconsistency between the Convention and the Protocol, the Protocol shall prevail (2).
The first developed protocol that was opened to signature and entered into force on the same date with the Convention is the Protocol to the Convention on International Interests in Mobile Equipment on Matters specific to Aircraft Equipment[24]. The Luxembourg Protocol to the Convention on International Interests in Mobile Equipment on Matters specific to Railway Rolling Stock was opened to signature at the diplomatic Conference held in Luxembourg on 23 February 2007 and has not yet entered into force[25].

22 For the Status of the Cape Town Convention see: <www.unidroit.org/english/implement/i-2001-convention.pdf>.
23 International Interests in Mobile Equipment – Study LXXII/ Convention: Objectives and Key Features: <www.unidroit.org/english/workprogramme/study072/main.htm>.
24 For the Status of the he Protocol to the Convention on International Interests in Mobile Equipment on Matters specific to Aircraft Equipment see: <www.unidroit.org/english/implement/i-2001-aircraftprotocol.pdf>.
25 For the Status of the Luxembourg Protocol to the Convention on International Interests in Mobile Equipment on Matters specific to Railway Rolling Stock see: <www.unidroit.org/english/implement/i-2007-railprotocol.pdf>.

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Another protocol – the Protocol on Matters specific to Space Assets (hereinafter referred to as "Space Protocol") was finally adopted by a diplomatic Conference held in Berlin, at the invitation of the Government of the Federal Republic of Germany, from 27 February to 9 March 2012.

The Space Protocol represents the coordinated efforts of both the Governments and the commercial space sector to render asset-based financing more accessible to an industry that is presently searching for innovative ways to obtain start-up capital for space-based services. By introducing a uniform regimen to govern the creation, perfection and enforcement of international interests in space assets, notably satellites, it is envisaged that the cost of financing will be reduced as a result of the increasing level of transparency and predictability for financiers, thereby making financing more widely available to a greater number of players in the commercial space sector. These efforts were upheld at the recent diplomatic Conference where the majority of negotiating States expressed their support for the Space Protocol and its objectives. 25 negotiating States signed the Final Act of the diplomatic Conference, three such States - Burkina Faso, Saudi Arabia and Zimbabwe – signing the Space Protocol itself [26].

Under Article XXXVIII[27] of the Space Protocol for entry into force it needs deposit of 10 instruments of ratification, acceptance, approval or accession[28]. The diplomatic Conference has been also of the view that an additional requirement should be laid down for the entry into force of the Protocol, namely that the Supervisory Authority of the International Registry for space assets must deposit a certificate confirming that the International Registry is fully operational. Given the uncertainty regarding the identity of the body that would be assuming the functions of the Supervisory Authority, the Conference resolved to establish, pending the entry into force of the Protocol, a Preparatory Commission to act with full authority as Provisional Supervisory Authority for the establishment of International Registry for space assets, under the guidance of the General Assembly of UNIDROIT[29].

The Protocol represents a balanced approach for the interests of both the public and private sector.

In particular, the Protocol preserves the powers of contracting States and does not affect their ability to exercise its authority over space assets in accordance

26 See more on the preparatory work of the Space Protocol at: <www.unidroit.org/english/workprogramme/study072/spaceprotocol/conference/background.htm>.

27 References are made to the text of the Space Protocol as it was adopted by the diplomatic Conference. See Annex I to the Final Act of diplomatic Conference for the adoption of the Space Protocol: UNIDROIT 2012-DCME-SP-Doc.43.

28 For the status of the Space Protocol please see: <www.unidroit.org/english/implement/i-2012-spaceassets.pdf>.

29 See Annex II to the Final Act of diplomatic Conference for the adoption of the Space Protocol: UNIDROIT 2012-DCME-SP-Doc.43 (P. 27-28).

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with its domestic laws and policies[30]. Under p.3. of Article XXVI of the Space Protocol: "Nothing in this Protocol shall be construed so as to require a Contracting State to recognize or enforce an international interest in a space asset when the recognition or enforcement of such interest would conflict with laws or regulations concerning: (a) the export of controlled goods, technology, data and services; (b) national security".

It is also to be noted that the concept of "related rights" (that has been causing diverse concerns during the preparatory period) was ultimately left out of the Space Protocol because of the potential for interference with State policies and domestic laws.

UN COPUOS Legal Subcommittee considered examination of the draft Space Protocol for the first time as item for discussion at its fortieth session in 2001. This work continues and this item still remains on the agenda. Interesting views were expressed at its fifty-first session, held in Vienna from 19 to 30 March 2012, such as that the Space Protocol, "being the first space law treaty adopted in more than three decades and the first international private law agreement in the field of commercial space activities, was important for completeness of the international regulation of space activities"[31].

Although there are various opinions on the potential economic impact of the Space Protocol, in case of its entry into force, together with the Convention as a single instrument, it may become *first specific private international legal source of PISL* and could serve as first example of instrument of this kind taking into account both the private nature of regulated activities and specific features of ISL.

Moreover the system of International Registry, envisaged by this instrument, may become *third system of registration* in the field of space activities' regulation (taking into account the two existing systems: under the Registration Convention and the other one within the frames of the International Telecommunication Union (ITU).

The view was expressed at the forty-ninth session of the UN COPUOS Legal Subcommittee that the Space Protocol "was intended not only to regulate the financing of space assets but also to bring space law in line with the developing trends in space activities without undermining the current legal regime governing outer space[32].

Adoption of the Convention and the Space Protocol could be considered as one of the first efforts at the international level to modernize space law to adapt it to increasingly developing commercial space activities, on one hand, and as one of the important preconditions for formation of PISL, on the other hand.

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30 Martin J. Stanford (UNIDROIT Deputy Secretary-General). Transfer of possession and control under the Protocol to the Convention on International Interests in Mobile Equipment on Matters specific to Space Assets. (P. 8-9)/ <www.unoosa.org/oosa/COPUOS/Legal/2012/symposium.html>.

31 UN Document: A/AC.105/1003 (P. 18).

32 UN Document: A/AC.105/942 (P. 16).

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National Space Legislation

In this part of the paper national space legislation is reviewed again as currently the most widespread legal source of PISL.

Besides the details mentioned above of importance is the issue of extension of national laws to outer space. As is well known, Article II of the Outer Space Treaty provides: "Outer space, including the moon and other celestial bodies, is not subject to appropriation by claim of sovereignty, by means of use or occupation, or by any other means." There is no territorial sovereignty or territorial jurisdiction in outer space. The only jurisdictions permitted in outer space are quasi-territorial ones of States of registry of space objects and the personal ones of national States of individuals or corporations. According to Prof. Dr. Bin Cheng: "For the purpose of furthering commercial development in outer space, it will be necessary to urge, and, if possible, to bind States to extend not only their criminal law, but also the scope of their laws on, for instance, intellectual and industrial property to works, products, and inventions produced in outer space. The United States has already taken a lead in this direction. <…> Other areas where an international effort to encourage the extension of national laws to outer space would be highly desirable may well include taxation, employer's liability, safety regulations, product liability, experiments on live animals, and so forth."[33]

This issue has been profoundly analyzed by the honorable scholars. Without getting into details, it seems important to outline the main conclusion regarding the issue under consideration: *analysis of practical activity of subjects of PISL* (individuals and corporations, states and international organizations) on sale and exchange of space-related goods, technologies and services *allows stating the tendency of parallel and in some cases "overdue" adoption of national legislation for private space activities regulation*. Well timed elaboration of adequate legal basis, specifically at national level, is certainly necessary for stable development, in particular, of this type of activity.

Agreement on the International Space Station

The legal framework regulating activity related to the International Space Station (hereinafter "ISS") is built on the following three levels:

1. *The International Space Station Intergovernmental Agreement* (hereinafter "IGA") signed on 29 January 1998 by the primary nations involved in the ISS project (the United States of America, Canada, Japan, the Russian Federation, and 10 Member States of the European Space Agency (Belgium, Denmark, France, Germany, Italy, The Netherlands, Norway, Spain, Sweden and Switzerland). In accordance with Article 1 of IGA, this international treaty establishes "a long term international cooperative framework on the basis of genuine partnership, for the detailed design, development, operation, and utilization of a permanently inhabited civil Space Station for peaceful purposes, in accordance with international law".

33 B. Cheng. Supra, note 5, P. 664.

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It is important to note that the IGA regulates issues of diverse legal nature, such as e.g. Registration; Jurisdiction and Control (Article 5), Cross-Waiver of Liability (Article 16), Customs and Immigration (Article 18), Intellectual Property (Article 21), Criminal Jurisdiction (Article 22).
2. *Four Memoranda of Understanding* (hereinafter "MOUs") between the National Aeronautics and Space Administration ("NASA") and each co-operating Space Agency: European Space Agency ("ESA"), Canadian Space Agency ("CSA"), Russian Federal Space Agency ("Roscosmos"), and Japan Aerospace Exploration Agency ("JAXA").
These MOUs regulate principally technical issues and describe in details the roles and responsibilities of the agencies in the design, development, operation, and utilization of the ISS.
3. *Code of Conduct for International Space Station Crews* approved on 15 September 2000 by the Multilateral Coordination Board, the highest-level cooperative body established by the MOUs. This document contains a set of standards (rights and obligations) agreed by all Partners to govern the conduct of ISS crew members, starting with the first expedition crew launched from Baykonur in Kazakhstan on 31 October 2000.

Documents of all of the above-mentioned three levels of legal obligations have *dual character and could serve as an example of a balanced comprehensive solution of legal problems related to regulation of space activities*: on one hand - they contain direct reference to provisions of the UN Treaties on outer space, on the other hand - various private law relations involving a "foreign element" are regulated under these documents.
This system shows how within the frames of international space projects are actually regulated, in particular, involving a "foreign element" space-related property and personal non-property relations. Some of the time-proved corresponding provisions may be taken into account in case of future elaboration of necessary international legal framework.

Space Law Cases and Arbitration Practice
With development, relevant court and arbitration practices become another widespread legal source of PISL. At present, when a relevant case is considered by court, practice on analogous in substance cases is taken into account[34].
In due course, as corresponding court and arbitration practices develop, *specific principles and doctrines, applicable for space law cases consideration, will be formulated.*

2.5.3 Subjects of PISL

Involved in commercial space activities individuals and incorporated persons, as well as states and international organizations are considered as subjects of PISL.
Relations of subjects of PISL are predetermined by provisions of articles VI and VII of the Outer Space Treaty. In their activity these entities are obliged to comply with relevant international and national law provisions.

34 See, e.g.: Pigott v. Boeing Company (Supreme Court of Mississippi, 1970 Miss. 240 So.2d 63); Smith v. United States (Supreme Court, 1989).

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In view of increase in a number of private actors carrying out space activity, of special interest is the issue of application of the concept of the "launching State". The term "launching State" means: a State which launches or procures the launching of a space object; as well as the State from whose territory or facility a space object is launched (the term "launching" includes attempted launching). These four categories are mentioned in Article VII of the Outer Space Treaty (although the term "launching State" itself is not mentioned), in Article I of the Liability Convention and Article I of the Registration Convention.

Recognition of a State as "launching State" involves certain legal implications. A launching State shall register a space object in accordance with the Registration Convention; and the Liability Convention identifies those States which may be liable for damage caused by a space object and which would have to pay compensation in such a case.

With adoption of the *Resolution 59/115 "Application of the concept of the "launching State"* by the UN General Assembly on 10 December 2004, attention of the international community was turned to the main legal problems resulting from participation of subjects of PISL in space activity, as well as main directions for their solution were proposed.

These recommendations to States include, inter alia: "enacting and implementing national laws authorizing and providing for continuing supervision of the activities in outer space of non-governmental entities under their jurisdiction"; "conclusion of agreements in accordance with the Liability Convention with respect to joint launches or cooperation programmes"; and submitting of information to the UN COPUOS "on a voluntary basis on their current practices regarding on-orbit transfer of ownership of space objects". It appears that *commercialization of space activity has caused to some extent "extension" of the concept of the "launching State"*.

In view of the subject under consideration, if not analyzed, at least should be mentioned also the following issues:

Tendencies of commercialization and privatization have influenced the legal status of major International Satellite Communications Organizations. Most of them were privatized[35].

Another issue of interest is the legal status of space tourists. Development of space tourism determines various legal problems such as applicability of provisions of UN Treaties on outer space to space tourists[36], responsibility, insurance,

35 See: - Жуков Г.П. 40 лет Договору о принципах деятельности государств по исследованию и использованию космического пространства, включая Луну и другие небесные тела. – В кн.: Современные проблемы международного космического права. Под ред. Г.П. Жукова, А.Я. Капустина. М. 2008. С. 87.
- Volosov M. E., Kolodkin A. L., Kolosov Y. M. International Maritime Satellite Communication System: History and Principles Governing its Functioning/Ocean Yearbook. I. Chicago & London. 1978. P. 253.

36 See: Prof. Dr. Frans G. Von der Dunk Space for Tourism? Legal Aspects of Private Spaceflight for Tourist Purposes/ International Astronautical Congress (IAC) Proceedings 2006, Valencia, Spain. DVD. – P.2.

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certification, civil and penal jurisdiction, export of information, reexport of equipment etc. Legal problems related not directly to tourist but to manned space flights on the whole were already considered by lawyers in the early 90s of the past century[37]. Till now only the United States have adopted relevant national legislation: Commercial Space Launch Amendments Act, 2004, and Federal Aviation Administration Human Space Flight Requirements for Crew and Space Flight Participants, 2007.
On the whole it is to be noted that development of commercial space activities determined appearance of new subjects. Legal status of these subjects might require regulation within the framework of a new branch of law - PISL. Relevant legal solutions shall be found both at national and international levels.

3 Specific Conclusions

Some brief conclusions on specific issues, related to formation of PISL[38], interaction and correlation of the above reviewed sources of law, are as follows:

3.1 Prevailing Character of ISL and IL on the Whole

Both ISL and PISL are aimed at regulation of connected with space activity relations. However corresponding subject and methods of legal regulation, as well as subjects of ISL and PISL, are not identical.
On the basis of analysis of correlation of ISL and PISL a conclusion is made on *the prevailing character of ISL and IL on the whole*. Thus, in particular, in accordance with Article XXXV of the Space Protocol (Relationship with the United Nations Outer Space Treaties and instruments of the International Telecommunication Union): “The Convention as applied to space assets does not affect State Party rights and obligations under the existing United Nations Outer Space Treaties or instruments of the International Telecommunication Union”.
A potential situation should be considered when a state having become Party to the Convention and the Space Protocol (or to an other future PISL instrument) is not participating in any of the UN Treaties on outer space. Although in this case international custom and UN General Assembly Resolutions remain applicable, it is still desirable that compliance with ISL would be assured on a treaty basis. In this respect a recommendation could be given on including in such an instrument of provision stating that the necessary condition of participation in it is participation of corresponding State in the Outer Space Treaty of 1967. It appears that *being Party to the Outer Space Treaty is a necessary and sufficient condition for becoming a Party to a PISL instrument*.

37 See draft Convention on Manned Space Flights at: Верещетин В. С. Правовое регулирование полетов человека в космос (опыт международного сотрудничества ученых)/ В. С. Верещетин, Э. Г. Жукова, Е. П. Каменецкая// Советский журнал международного права. 1991. No 1. – С.76-81.

38 For a detailed analysis of all of the raised issues please see the aforementioned author’s PhD thesis.

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3.2 Distinctive Correlation of Public and Private Law Matter

On the basis of overview and analysis of systems of export control as related to space activity at national and international levels the following conclusion is made: commercial space activity, pursuant to the specificity of corresponding relations, requires distinct legal regulation. Although this type of activity is commercial in substance, stricter legal regulation as compared to regulation of other types of commercial activity is unavoidable, as long as it affects interests of not merely involved private actors, but also those of the whole international community. *There will always be a distinctive correlation of public and private legal aspects in commercial space activities' regulation*, predetermined, in particular, by Articles VI and VII of the Outer Space Treaty.

3.3 Interconnection between Change of Relations under PISL and International Legal Effects for States

Analysis of legal problems arising in connection with on-orbit transfer of ownership of space objects[39], allows determining a *certain interconnection between change of relations subject to PISL regulation and international legal effects for corresponding states*. Obviously this reflects specific features of space activities, and, correspondingly, testifies to the necessity of distinctive legal regulation.

3.4 Formulation of Specific Rules of Conflict of Laws Applicable within the Framework of PISL

In accordance with Article VIII of the Outer Space Treaty: "Ownership of objects launched into outer space, including objects landed or constructed on a celestial body, and of their component parts, is not affected by their presence in outer space or on a celestial body or by their return to the Earth". This provision is the international legal basis for enforcement of relevant rights by different owners of space objects.

The expression "ownership of objects launched in outer space <…> is not affected" might assist in solution of matters of conflict of laws while determining these rights and their specific content under the law of place of origin (accrual of the right) (e.g., in case of international on-orbit sale of space hardware, when traditional connecting factor rule of the place of settlement of the transaction cannot be applied, and connecting factor rule of the seller's law does not resolve all of the issues). The following conclusion is reached accordingly: *Interpretation of norms of ISL could lead to formulation of specific rules of conflict of laws applicable within the framework of PISL.*

4. General Conclusions

It is an admitted fact that there should be further progressive development of space law to bring it in line with current challenges caused, in particular by the increasingly developing commercial space activities.

39 Such as reregistration, jurisdiction, control, liability and other related issues.

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Formation of *PISL*[40]*, defined as a set of substantive legal rules and rules of conflict of laws governing space-related property and personal non-property relations involving a "foreign element",* could be a step forward on this way as long as it *is most effectively able to take account of both the private nature of commercial space activities and the specific features of ISL and International Law on the whole*. But it will not be enough.

To provide comprehensive legal certainty, in particular in this field of human activities, efforts (and actions) are needed not in a one destination (e.g. in changing and modernizing ISL; or trying to find corresponding solutions in IL or PIL; or developing national legislation, or relying only upon PISL). Ac*tions are needed at all of the legal levels* of commercial space activities' regulation *with due regard to the issues of correlation and efficient interaction in between applicable sources of law*.

In particular, besides those of urgent need having been discussed for many years and until now by the official delegations of states at the UN COPUOS Legal Subcommittee's sessions and others stressed by honorable scholars, through some of the above-mentioned legal levels also actions in the following ways would be desirable:

- Maintenance of the work under auspices of UNIDROIT (or other relevant organizations, including regional ones) on drafting of instruments representing a balanced approach for both the private and public space sectors (i. e. drafting of more necessary specific international legal sources of PISL). It may concern such issues as intellectual and industrial property rights etc., in other words those issues to which legal sources of PIL cannot be always applied because of specific features of space law and space activity. Some alternatives to PISL international conventions might also be useful, for instance: specific model rules, standard forms and terms, specific lex mercatoria rules etc.;
- Not merely acceptance, but also implementation of conventions by states is required by effective international law. This general rule is of high importance in the considered field too;
- Finding of a legal balance and providing of effective interaction and coherence between corresponding international rules and principles and national legislation. More attention shall be paid to well timed elaboration of necessary national laws and mechanisms able to provide commercial space activities with effective regulation at this level. For instance, in some states where appropriate legislation still do not exist it would be possible to focus on enacting of a unified act regulating all of the specific issues of commercial space activities' regulation under national jurisdiction. The issue of extending the scope of national laws on, for instance, personal non-property rights to works, products and inventions produced in outer space, continues to be relevant. As to other issues of importance at national level it should be also mentioned that there is also a strong need to provide national commercial

40 It should be also noted that in case of developing PISL both experience of comparable sectors and experience of actual space law application shall be also taken into account.

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space activities with due regulation as to the issues of export controls, certification, liability. Present practice testifies to the lack of necessary norms restraining development of actual private space projects;
- Formulation of specific principles and doctrines, applicable for space law cases consideration, while corresponding court and arbitration practices are developing;
- Formulation of specific rules of conflict of laws applicable within the framework of PISL, basing on interpretation of norms of ISL;
- Developing of corresponding doctrine; and
- International judicial cooperation, as well as regional and international cooperation on these issues, with participation of both the public and private sector representatives.

All of these efforts and actions shall be coherent among them and shall be carried on without undermining the current legal regime governing the outer space. Such actions will lead either to providing the present legal system for space with the lacking element - PISL (presuming that there are already enough objective preconditions for raising the issue of formation of a new branch of law; and that logically and legally it is needed for stable regulation of commercial space activities with a foreign element), or the whole legal system for space will remain incomplete, but will be completed as much as possible. Some way or other any of these potential results might be effective in providing of legal certainty, in particular in overcoming the existing excessive dependence of law on political and economical realia, and in securing that *space science and technology are for the needs of all.*