

The Implementation of TCBMs in Outer Space Activities

From the OST Principles to the International Space Governance Action

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Abstract

Transparency and confidence-building measures (TCBMs) are sets of instruments designed by international diplomacy to influence States' responsible behavior, strengthen information-sharing among them, and increase transparency in international affairs. Although TCBMs first appeared for 'terrestrial' international affairs, their relevance for outer space exploration and exploitation was soon recognized, signaling the start of a rapid creation of dedicated measures. In fact, nowadays there are many examples of TCBMs in outer space activities, and these instruments provide a political framework in which States can cooperate trying to preserve outer space security, safety, and sustainability. Their importance is particularly remarkable considering the difficulties associated both with modifying and updating the existing legal framework, and the creation of new binding norms. The Outer Space Treaty (OST) contains provisions that can be categorized as TCBMs: Articles V, IX, and XI, inter alia, provide a valid example, contributing to the implementation of several principles at the heart of international space law (ISL): the freedom of access and use, non-appropriation etc. Although in that respect the OST can be seen as a precursor of those measures in connection to outer space, it is important to say that there are some weaknesses, among which the most important is absolutely the lack of provisions establishing pragmatic mechanisms to enhance and supervise the implementation of those measures. This is why the current development of the TCBMs can be seen with favor, filling the lacunae of ISL. In light of the aforementioned considerations, the paper will analyze some recently adopted TCBMs pertaining to outer space activities, explaining their foundation in the OST and assessing their relevance, both in principle and in practice, in contributing to outer space security, safety, and sustainability. Moreover, the role that International Governmental Organizations (IGOs), especially United Nations (UN) specialized agencies, play in that context will be shown, examining the TCBMs implemented by them, and emphasizing their connection with ISL principles established by OST. In particular, given its role of *primus inter pares* among the UN specialized agencies

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involved in international space governance, a special importance will be accorded to the International Telecommunication Union (ITU). Specifically, implications of Resolution 186 ‘Strengthening the role of the ITU with regard to transparency and confidence-building measures in outer space activities’, adopted at Busan by the ITU Plenipotentiary Conference in 2014, will be discussed in depth.

Keywords: International Space Law, TCBMs, International Telecommunication Union, IGOs, space security, space safety.

1. Background and Preliminary Issues

Since the entry into force, fifty years ago, of the *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies*,¹ more simply known as the *Outer Space Treaty* (hereinafter, OST), the situation in outer space, its perception as well as the exploitation of space-based applications on Earth have abundantly changed.

The popularity of space-based applications grew particularly among private operators, who generated a huge amount of investments in the last decades, particularly for commercial and civil purposes; nevertheless, military investments in outer space failed to disappear, being most of satellites dual-use.

As satellites and generally space-based technology are vital for every activity carried out on Earth, the international community has developed a dependence on them at all levels (satellite networks are part of numerous national critical infrastructure’s protection strategies); simultaneously, privates and public actors are becoming more vulnerable to malfunctions or, in the worst scenario, interruptions of satellites’ activity. Moreover, space assets can be target of a deliberate attack, and outer space could easily become a battle-field as a continuation of a terrestrial conflicts, rising probable devastating consequences.

With the precise intention to preserve the peacefulness of outer space realm, immediately following the start of space exploration in 1957, States started the conception of a complex body of law which is normally referred to as *corpus iuris spatialis (internationalis)* or International Space Law (hereinafter, ISL). The evolution of this normative production, albeit fruitful, has not been regular through the years.

As it has been authoritatively pointed out, it is possible to discern four phases in the history of the creation of the ISL.² If the first three phases are

1 Treaty on Principles governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, 610 UNTS 205 (1967) (Outer Space Treaty).

2 F. von der Dunk, International space law, in F. von der Dunk, F. Tronchetti (Eds.), Handbook of space law, Cheltenham, 2015, pp. 29-126.

characterized by the exclusive governmental contribution and the uniformity of the normative production's outcomes – legally binding treaties or classic soft law instruments such as United Nations General Assembly (hereinafter, UNGA) Resolutions or Declarations of Principles, the fourth phase, not very distinguishable in time from the others, is by contrast marked by the involvements of non-governmental entities in the creation of norms, and the variable configuration of these new instruments.

Transparency and Confidence-Building Measures (hereinafter, TCBMs) are undoubtedly developing throughout this fourth phase. In fact, on the one hand, these measures aren't exclusively created by governments as the initiative is often taken by non-governmental entities such as academia, think-tanks and scientific communities.³ On the other hand, they take the form of Guidelines, Norms of Behavior, Rules of the Road, Code of Conduct and Best Practices.⁴

Even if it is not possible to provide an agreed definition, TCBMs can cover a variety of fields, such as information, observation, verification, communication and declaratory guarantees aiming at ensuring, on a voluntary basis, transparency and build mutual trust among space actors, avoiding misperception and skepticism on the reciprocal activities, in particular military activities.⁵ Originally discussed and introduced during the Cold War, TCBMs first appeared for terrestrial activities, especially for disarmament purposes, but they immediately showed their importance for outer space activities: besides, the space race was one of the main fields of confrontation between East and West. Above all, even if several "terrestrial measures" impacted on space activities, from the 90s, dedicated measures started to be set forth precisely for space.⁶

Many of these TCBMs can also be found in the OST, as well as in the other four major space treaties. Nevertheless, even if the OST rendered them legally binding, it failed to establish any verification mechanism to check up on States' abidance. Likewise, TCBMs-related recent initiatives are not able to monitor States' conduct. If the respect of legally and politically binding commitments are left in the hands of governments, one could argue the worthlessness of TCBMs as a whole. But we can observe that the ever-growing interest of International Governmental Organizations (hereinafter,

3 J. Robinson, Transparency and confidence-building measure for space security, in *Space Policy*, 2011, pp. 134-144.

4 B.L. Hart, Transparency and confidence-building measures: treaties, national legislation, national policies, and proposals for non-binding measures, in J. Robinson, M. P. Schaefer, K.-U. Schrogl, F. von der Dunk (Eds.), *Prospects for transparency and confidence-building measures in space*, 2010, ESPI Report 27.

5 Z. Lachowsky, Confidence-Building Measures, in *Max Planck Encyclopedia of Public International Law*, 2006.

6 J. Robinson, *supra*, note 3.

IGOs) in space activities is being recently accompanied by their engagement in the promotion of these norms of behavior, even endorsing them in their activities, influencing States' policies.

Many things have been said about the history of TCBMs or their importance for space activities,⁷ the criteria that can be used to identify suitable measures *ex ante*, and how to verify their usefulness *ex post*.⁸ Little to no attention has been dedicated to the role of IGOs in their implementation. This paper wants to contribute to the filling of this research gap. In examining the role of IGOs in the implementation of TCBMs in outer space activities, special attention will be paid, due to its role of *primus inter pares*, to the International Telecommunication Union (hereinafter, ITU). In fact, in the very last years, it started to develop new mechanisms and regulatory tools which can effectively contribute, *inter alia*, to outer space security, safety and sustainability.⁹

2. The OST as a Precursor: TCBMs as Binding Requirements

As mentioned above, the OST contains several TCBMs, as all outer space treaties do.¹⁰ This is to be attributed to the fact that both TCBMs and outer space treaties are a product of the Cold War, well-known period of political tensions among USA and USSR, the two first spacefaring nations. As a result, the normative contamination was inevitable. Nevertheless, with respect to the development of dedicated TCBMs for outer space activities, the OST can be considered as a precursor. Below, TCBMs which can be found the OST are analyzed, underlying their connection to major principles of ISL enshrined in the so-called 'Magna Carta of Space'.¹¹ As it is going to be exposed, none of these measures is well-defined in its content, and even the word choice is often vague, as the repetition of terms such as 'potentially', 'reasonable' and

7 For further information, see R. Jakhu, Transparency and Confidence-Building Measures for Space Security, in A. Lele (Ed.) Decoding the International Code of Conduct for Outer Space Activities, New Delhi, 2012, pp. 35-46; J. Robinson, Space Transparency and Confidence-Building Measures, in K.-U. Schrogl, P.L. Hays, J. Robinson, D. Moura, C. Giannopapa (Eds.), Handbook of Space Security. Policies, Applications and Programs, New York, 2015, pp. 291-297.

8 P. Martinez, R. Crowther, S. Marchisio, G. Brachet, Criteria for developing and testing Transparency and Confidence-Building Measures (TCBMs) for outer space activities, in Space Policy, 2014, pp. 91-97.

9 R.A. Williamson, Assuring the sustainability of space activities, in Space policy, 2012, 154-160.

10 Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space, 672 UNTS 119 (1968); Convention on International Liability for Damage Caused by Space Objects, 961 UNTS 187 (1971); Convention on Registration of Objects Launched into Outer Space, 1023 UNTS 15 (1975); Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, 1363 UNTS 3 (1979).

11 F. Lyall, P. Larsen, Space Law. A Treatise, Farnham, 2009.

‘appropriate’, or the verb ‘would’ clearly show. Additionally, neither a verification mechanism nor a clear framework facilitating the fulfillment of the mandatory provisions has been established, leaving States free to decide means and results of their conduct.

2.1 Information Sharing

Reading the OST in its integrity, the first TCBM encountered is contained in Article V, related to astronauts, envoys of mankind.¹² According to its last paragraph, States Parties to the Treaty have a reciprocal obligation to provide information, also through the Secretary-General of the United Nations, on “any phenomena they discover in outer space, including the Moon and other celestial bodies, which could constitute a danger to the life or health of astronauts”. It is a clear example of legally binding obligation for transparency, applied to the humanitarian element purported by that treaty.

2.2 International Consultations

Carry on reading the OST, Article IX provides the second relevant TCBM which corresponds to the duty of international consultation to avoid “potentially harmful interference with activities of States Parties in the peaceful exploration and use of outer space, including the Moon and other celestial bodies”. This consultation shall be performed prior to the commencement of an activity or experiment by the responsible States, or may be requested by the potentially affected States at any time.¹³ Article IX, which is the longest and the more complex article of the entire treaty, setting forth this measure provided States with a practical tool to implement two founding concepts of the entire ISL, recalled in the opening sentence of the same Article. These are the principle of *due regard* and the principle of *cooperation and mutual assistance*: their respect and implementation lead up to the fulfillment of the *freedom of exploration and use* principle.¹⁴ The latter, enriched by the *1996 Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefits and in the Interest of All States, Taking into Particular Account the Needs of Developing Countries*,¹⁵

12 F. von der Dunk, G. M. Goh, Article V, in S. Hobe, B. Schmidt-Tedd, K.-U. Schrogl (Eds.), *Cologne Commentary on Space Law. Volume I: Outer Space Treaty*, Köln, 2009 pp. 94-102.

13 M. C. Mineiro, FY-1C and USA-193 ASAT Intercepts: an Assessment of Legal Obligations under Article IX of the Outer Space Treaty, in *Journal of Space Law*, 2008, p. 321 ss.

14 M. C. Mineiro, Article IX’s Principle of Due Regard and International Consultations: an Assessment in Light of the European Draft Space Code of Conduct, presented at the 5th E. Galloway Symposium on Critical Issues in Space Law, Washington D.C. 2010.

15 S. Hobe, V. S. Mani, H. Zhao, F. Tronchetti, *The 1996 Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in the Interest of All States, Taking into Particular Account the Needs of Developing*

implies the conduction of an organized actions among States, regardless of their economic and scientific level of development, with the intention to pursue a common goal which could not be realized unilaterally. In addition, the former refers to the States' obligation to conduct their activities taking into account other States' rights in their exploration and use of outer space: in other words, it means that the freedom of one State ends when the freedom of another begins.

It should be underlined that the anticipatory nature of this article with respect to the subsequent TCBMs has been authoritatively pointed out. In fact, it has been observed that in "more general terms, Article IX should be considered as a precursor of transparency and confidence building measures (TCBMs) which are an important tool for ensuring the peaceful uses of outer space as well as the safety and security of outer space operations".¹⁶

2.3 Space Objects' Flights and Facilities Observation

The voluntary visit to space launch sites and facilities is another clear example of TCBM which can be found twice in the OST.

Firstly, Article X specifies that States Parties to the Treaty, in order to promote international cooperation, "shall consider on a basis of equality any requests by other States Parties to the Treaty to be afforded an opportunity to observe the flight of space objects launched by those States".¹⁷

Secondly, Article XII affirms that on a reciprocal basis, States Parties to the Treaty shall render available to the visit of other States stationary facilities and installations on the Moon and other celestial bodies; this possibility is also subject to the criterion of advanced notice and consultation. As happened for Article IX, it has been said that "given the lack of immediate State practice, Article XII should therefore be interpreted in the light of the concept of confidence-building measures".¹⁸

Additionally, it should be highlighted that both measures contribute to the implementation of another funding principle of the ISL, i.e. to carry out research on outer space for the benefits of all countries.

Countries, in S. Hobe, B. Schmitt-Tedd, K.-U. Schrogl (Eds.), *Cologne Commentary on Space Law. Volume III: DBS Principles, RS Principles, NPS Principles, SB Declaration, LS Resolution, RegPract Resolution, NatLeg Resolution, COPUOS SDM Guidelines*, Köln, 2015, p. 299 ss.

16 S. Marchisio, Article IX, in S. Hobe, B. Schmidt-Tedd, K.-U. Schrogl (Eds.), *Cologne Commentary on Space Law. Volume I: Outer Space Treaty*, Köln, 2009 pp. 169-182.

17 A. Kapustin, Article X, in S. Hobe, B. Schmidt-Tedd, K.-U. Schrogl (Eds.), *Cologne Commentary on Space Law. Volume I: Outer Space Treaty*, Köln, 2009 pp. 183-188.

18 L. J. Smith, Article XII, in S. Hobe, B. Schmidt-Tedd, K.-U. Schrogl (Eds.), *Cologne Commentary on Space Law. Volume I: Outer Space Treaty*, Köln, 2009 pp. 207-214.

2.4 Information to the Public

Article XI, explicitly devoted to the promotion of international cooperation for peaceful purposes, provides for the disclosure of information concerning the nature, conduct, location and results of outer space activities.¹⁹ This measure is a graphic example of transparency as the information is to be divulged not only among States but also to ‘the public and the international scientific community, to the greatest extent feasible and practicable’.

3. Recent Initiatives for TCBMs in Outer Space: Strengths and Weaknesses

The abovementioned fourth phase of ISL normative production is characterized by the heterogeneity of both actors contributing to the creation of the norms, and the outcomes generated: TCBMs are an example of what this phase is actually producing.

Now, it is worth mentioning the most relevant initiatives falling under the TCBMs category. Bottom-up proposals include: the *Inter-Agency Space Debris Coordination Committee (IADC) Space Debris Mitigation Guidelines*; the *Stimson Center’s Model of Conduct for Responsible Spacefaring Nations*;²⁰ the *International Association for the Advancement of Space Safety (IAASS) Manifesto for Safe and Sustainable Outer Space*;²¹ the *Satellite Industry Association (SIA) 2015 White Paper on Responsible Space Operations*;²² the 2016 joint statement of SIA and the Global VSAT Foundation (GVF) on *Core Principles for Cybersecurity*.²³

Top-down proposals, on the other hand, include (or have included): the *Draft Treaty on the Prevention of Placement of Weapons in Outer Space and of the Threat or Use of Force against Outer Space Objects (PPWT)*; several UNGA Resolutions on TCBMs and the 1993 and 2013 Reports of the Groups of Governmental Experts on TCBMs established by the UNGA;²⁴ the

19 J.-F. Mayence, T. Reuter, Article XI, in S. Hobe, B. Schmidt-Tedd, K.-U. Schrogl (Eds.), *Cologne Commentary on Space Law. Volume I: Outer Space Treaty*, Köln, 2009 pp. 189-206.

20 *Stimson Center’s Model of Conduct for Responsible Spacefaring Nations*, <https://www.stimson.org/model-code-of-conduct-for-responsible-space-faring-nations>, (accessed 20.11.17).

21 *International Association for the Advancement of Space Safety (IAASS) Manifesto for Safe and Sustainable Outer Space*, <http://iaass.space-safety.org/>, (accessed 20.11.17).

22 *Satellite Industry Association (SIA) 2015 White Paper on Responsible Space Operations* www.sia.org/wp-content/uploads/2015/08/SIA_Responsible_Space_Operations_White_Paper_2015_08_Final.pdf, (accessed 20.11.17).

23 *The 2016 joint statement of SIA and the Global VSAT Foundation (GVF) on Core Principles for Cybersecurity* <https://gvf.org/images/pdf/SIAGVFCybersecNov16.pdf>, (accessed 20.11.17).

24 For a technical discussion, see C. Johnson, *The UN Group of Governmental Experts on Space TCBMs*, A Secure World Foundation Fact Sheet, April 2014,

EU Draft International Code of Conduct for Outer Space Activities;²⁵ the *Long-Term Sustainability Guidelines*.²⁶

An accurate analysis of the recalled initiatives goes beyond the scope of the present research. But what is particularly relevant is that in all of them it is possible to find traces of TCBMs contained in the OST, concerning information-sharing, international consultation, launch and facility observation as well as public divulgation, even if with some differences, depending on the purpose addressed.

For this specific reason, the question poses itself whether the creation of additional non-binding instruments should be considered opportune when a wide range of TCBMs already exists in mandatory instruments. The answer has to be positive if new measures are consistent with treaty obligations and other politically-binding instruments, avoid redundancy and are not cost-prohibitive.²⁷

Moreover, the intrinsic features of TCBMs can help their success: being 'only' politically-binding, they are a flexible tool which can easily meet States' requirements, promoting universal adherence to the OST and, more generally to the ISL principles, and at the same time paving the way for their consolidation as part of customary international law.

As it will be shown in the next session, the realization of these goals is facilitated by the IGOs which are supporting States in the implementation of TCBMs.²⁸

https://swfound.org/media/109311/swf_gge_on_space_tcbms_fact_sheet_april_2014.pdf (accessed 20.11.17); J. Monserrat-Filho, Governance with Transparency and Confidence in the Sky as well as on Earth, in Proceedings of the International Institute of Space Law, The Hague, 2014, pp. 345-364.

25 For an assessment, see, for example, J. M. Beard, Soft Law's Failure on the Horizon: the International Code of Conduct for Outer Space Activities, in University of Pennsylvania Journal of International Law, 2017, pp. 335-427; S. Marchisio, The Legal Dimension of the Sustainability of Outer Space Activities: The Draft International Code of Conduct on Outer Space Activities, in Proceeding of the International Institute of Space Law, The Hague, 2012, pp. 3-22; J.-F. Mayence, The European Union's Initiative for a Code of Conduct on Space Activities: A Model of Soft Law for Outer Space?, in I. Marboe (Ed.), Soft Law in Outer Space: The function of non-binding norms in the international space law, Wien, 2012, pp. 343-360; J. Su, K. Lixin, The European Union Draft Code of Conduct for outer space activities: An Appraisal, in Space Policy, 2014, p. 34-39.

26 J. Wolny, The UN COPUOS Guidelines on the Long Term Sustainability of Outer Space Activities, A Secure World Foundations Fact Sheet, July 2017, https://swfound.org/media/205929/swf_un_copuos_lts_guidelines_fact_sheet_july_2017.pdf (accessed 20.11.17); G. Brachet, The origins of the "Long-term Sustainability of Outer Space Activities" initiative at UN COPUOS, in Space Policy, 2012, pp. 161-165.

27 B. L. Hart, *supra*, note 4.

28 Z. Lachowsky, *supra*, note 5.

4. The Role of IGOs in Implementing TCBMs in Outer Space Activities

As it has been observed,²⁹ none of the IGOs currently operating in the space arena is specifically mandated with space security, safety and sustainability or military issues concerning outer space: given the delicate nature of these topics, it is easy to guess why such an organization doesn't exist. At the same time, outer space inevitably crossed the path of many IGOs already existent with diverse and multiple mandates. As a result, nowadays many IGOs are involved in space activities, being them 'regulatory', such as the ITU, the International Civil Aviation Organization (ICAO) or the International Maritime Organization (IMO), or 'operational', such as INTELSAT, EUTELSAT or INMARSAT, just to name a few.³⁰

Coherently with their principal mandate, IGOs can promote norms of behavior or regulatory provisions which pave the way to the implementation of TCBMs. In particular, the credibility they acquired throughout the years is an added value for the relaunch of broad adherence to the OST. Moreover, their expertise in a given sector, e.g. telecommunications and radiofrequency spectrum management as the case of the ITU, can render more effective generally-formulated TCBMs, adapting their content to actual needs. Additionally, IGOs can offer their institutional framework as a mean to coordinate actions among States on a given topic e.g. adding its discussion in the agenda of their meetings, or receiving reports or notifications on it. In this perspective, IGOs can become a valid forum to monitor both States' adherence and commitment, too.

The importance of IGOs in supporting the implementation of TCBMs has been also highlighted in the 2013 Report of the GGE on TCBMs. In fact, in its Conclusions the GGE recommends

“States and international organizations, on a voluntary basis and without prejudice to the implementation of obligations deriving from existing legal commitments, consider and implement the transparency and confidence-building measures described in the present report. [...] The Group encourages relevant international intergovernmental and non-governmental organizations to consider and implement the proposed [...] measures as appropriate and to the greatest extent practicable. [...] The GGE recommends that the Secretary-General of the United Nations circulate the present report of the Group to all relevant entities and organizations of the United Nations system in order that they may assist in

29 T. Hitchens, *Space-Security Relevant International Organizations: UN, ITU an ISO*, in K.-U. Schrogl, P.L. Hays, J. Robinson, D. Moura, C. Giannopapa (Eds.), *Handbook of Space Security. Policies, Applications and Programs*, New York, 2015, pp. 507-520.

30 F. von der Dunk, *International organizations in space law*, in F. von der Dunk, F. Tronchetti (Eds.) *Handbook of Space Law*, Cheltenham, 2015, pp. 269-330.

effectively implementing the conclusions and recommendations contained within it.”³¹

Several IGOs started to follow these recommendations, especially in the United Nations family: this is the case of the Office for Disarmament Affairs, the World Meteorological Organization (WMO) and the ICAO, just to mention a few.

In the next session, recent initiatives undertaken by the ITU under the auspices of the Resolution 186 adopted by the Plenipotentiary Conference in 2014 are discussed in depth.

5. The Role of the ITU in the Implementation of TCBMs in Outer Space. Legal and Practical Implications of Resolution 186 Adopted by PP-14 at Busan

The reason why it is important to analyze the role played by the ITU in the implementation of TCBMs for outer space activities is easily explicable by referring to its functions, which are relevant for the realization of any outer space activity. In fact, the mandate of the ITU is to assure the rational, efficient, economic and equitable use of the radiofrequency spectrum and orbital slots (when relevant), limited natural resources which enables any activity carried out in outer space. Additionally, its mandate provides a clear legal framework for guaranteeing an interference-free environment to let radiocommunications function properly, without interruption, to the maximum possible extent.³²

In relation to TCBMs, the ITU treaties can also be considered as a precursor, as they provide for several notifications, advance publication information, and continuous communications on the status and operational parameters of their satellite networks to be performed by States, and also envisage the maintenance of the Master International Frequency Register (MIFR).³³ An important example of these measures, mandatory in nature, is the so-called

31 See points 68, 74 and 75 Report of the Group of Governmental Experts on Transparency and Confidence-Building Measures in Outer Space Activities, UN Doc A/68/189*, 29 July 2013, www.un.org/ga/search/view_doc.asp?symbol=A/68/189 (accessed 20.11.17).

32 F. Lyall, *International Communications: the International Telecommunication Union and the Universal Postal Union*, Farnham, 2009; D. Westphal, *International Telecommunication Union (ITU)*, Max Planck Encyclopedia of Public International Law, 2014.

33 F. von der Dunk, *Maintaining the Master International Frequency Register*, in M. Hofmann (Ed.), *International regulations of space communications: current issues*, Bruxelles, 2013, pp. 45-67.

Bringing into Use (BIU) regulation.³⁴ Of course, the author is aware of that all these provisions serve technical purposes because all the information to be provided are necessary for the operational functioning of satellite systems/networks. Nevertheless, they serve a political purpose too, as the entire framework of the ITU is based on good faith and mutual assistance principles, strictly followed by States and operators in the majority of cases, particularly because of law of the Physics considerations.³⁵

Going directly to the recently adopted measures, due to the growing problem posed by harmful interference (hereinafter, HI) to satellite communications, both technical and intentional, in the last years the ITU started to work on suitable instruments able to tackle that challenge, looking for long-term solutions able to avoid HI and solve problems stemming from it. These initiatives are the result of the synergistic approach with all parties involved, such as States, IGOs and private entities – whose participation is facilitated by the exclusive structure of the membership of the ITU stemming from its reform of 1992/1994 – aiming at maximizing the results and avoid duplication of efforts.³⁶

Although these initiatives were present in the agenda on the ITU since few years thanks to the solicitation made in that sense by States to the *Radio Regulation Board*,³⁷ they have been undoubtedly consecrated and sustained by Resolution 186, *Strengthening the role of the ITU with regard to transparency and confidence-building measures in outer space activities*, adopted by the Plenipotentiary Conference in 2014 at Busan (PP-14). This Resolution has been perceived by experts and ITU functionaries as a turning point, and significantly welcomed by stakeholders, in particular those affected by HI.³⁸ The adoption of this Resolution has been also welcomed by the UNGA in its Resolution 70/53.³⁹

34 P. Stubbe, New Definition of ‘Bringing into Use’ in the Radio Regulations, in M. Hofmann (Ed.), *International regulations of space communications: current issues*, Bruxelles, 2013, pp. 81-101.

35 F. Lyall, ‘Harmful Interference’ and ITU, in M. Hofmann (Ed.), *Harmful interference in Regulatory Perspective*, Baden-Baden, 2015, pp. 19-29.

36 Y. Henry, Preventing Harmful Interference to Satellite Systems, in G. Penent (Ed.), *Governing the Geostationary Orbit. Orbital Slots and Spectrum Use in an Era of Interference*, Note de l’IFRI, January 2014, pp. 50-53.

37 P. B. De Selding, Signal Interference Proposal Could Make the ITU Watchdog with Some Teeth, 10 October 2014, <http://spacenews.com/42147signal-interference-proposal-could-make-the-itu-a-watchdog-with-some/> (accessed 20.11.17).

38 Board of Broadcasting Governors Presse Release, 13 November 2014, <https://www.bbg.gov/2014/11/13/bbg-applauds-itu-decision-to-track-sources-of-satellite-interference/> (accessed 20.11.17).

39 United Nations General Assembly Resolution on Transparency and Confidence Building Measures, UN Doc 70/53, 7 December 2015, www.un.org/en/ga/search/view_doc.asp?symbol=A/RES/70/53, (accessed 20.11.17).

The crucial element of this significant Resolution is obviously the link with the UN strategy for the promotion of transparency and mutual trust among actors in outer space activities: it is purported not only by the title itself, but also by the explicit reference to UNGA Resolution 68/50 incorporated at the beginning of the Resolution. This confirm that the ITU, at least as far as space services are concerned, forms integral part of the international governance for space activities, as recalled many times by the UNGA, and authoritatively underlined in the GGE on TCBMs report:

“[t]he Group noted the role of ITU in the management of the radio frequency spectrum and geostationary orbital slots. In the context of transparency and confidence-building measures, the ITU Radiocommunication Bureau plays a key role in addressing harmful radiofrequency interference, as provided for in article 45 of the ITU Constitution and article 15 of the ITU Radio Regulations. The Group also noted the importance of commitments to establish and implement policies and procedures to minimize any form of harmful radio-frequency interference.”

Resolution 186 is funded on three principles, to which correspond four practical tools that are already operational, or are going to be available soon.⁴⁰

5.1 Dissemination of Information and Best Practices Sharing

First, PP-14 decided to “encourage the dissemination of information, capacity building and the sharing of best practices in the use and development of radiocommunication satellite networks/systems, with the objectives of, inter alia, bridging the digital divide and enhancing the reliability and availability of the above-mentioned satellite networks/systems”. Observing these principles, ITU developed two different tools.

On the one hand, in the last year ITU has organized events on an international as well as regional basis concerning the problem of HI, opened to the participation of national administration in charge of telecommunications and stakeholders representing all economic sectors involved in the field of satellite communications. During those meetings, participants benefited from mutual exchange of information, experience, best practices and solutions, receiving, where necessary, the ITU direct assistance. Thanks to those events, ITU is contributing to the growing consciousness of the risks of HI to space services.⁴¹

40 The information here given on recent ITU initiatives are based on the author’s personal elaboration of documents received by ITU functionaries, in the light of decision taken by PP-14 and contained in Resolution 186.

41 ITU recently organized many workshops. Among them, ITU International Satellite Symposium 2017; International Satellite Communication Symposium – Interference-

On the other hand, ITU promoted studies on crucial issues which can easily turn into future amendments of the treaties. In particular, two Recommendations have been adopted with the intent of mitigating the problem of HI. The first one is Recommendation ITU-R S.2049, adopted in December 2013 by the Radiocommunication Assembly, on *Access procedures for fixed-satellite service (FSS) occasional use (OU), transmissions to geostationary-satellite orbit space stations, in the 4/6 GHz and 11-12/13/14 GHz FSS bands*. An occasional use transmission is a telecommunication application in the FSS where the transmission lasts a limited period of time ranging from minutes to months. The second one is the Recommendation ITU-R S.2062-0, adopted by the Radiocommunication Assembly in September 2014 completing the aforementioned document on OU. Its main goal is to facilitate the rapid identification of a source of interference and to reduce the time required to clear the interference that occurs unintentionally: the instrument for the identification of the interference will be the attribution of a Carrier ID to satellite transmission addressed by the Recommendation. This would be a very interesting measure if applied and broadened to all satellite transmissions, as the Carrier ID will function as a mark.⁴²

5.2 Enhancing Monitoring Capabilities

The second principle enshrined in Resolution 186 concerns monitoring capabilities, as the PP-14 invited the ITU Council to “consider and review any proposed cooperation agreements on the use of satellite monitoring facilities consistent with the objectives of this resolution, in the light of their strategic and financial implications, within the budgetary limitations of the Union”. In the light of this purpose, many steps have been taken, in recognition of the importance to rely on accurate and precise data to enhance the efficiency of the ITU system, especially when it should exert political pressure against recalcitrant interferers.

To that end, ITU has recently relaunched the role of the International Monitoring System (hereinafter, IMS). According to Article 16 of RRs, are part of the IMS all States who agreed to offer their monitoring capabilities to give information on the source of HI helping the prompt elimination of it. Since 2013, in order to relaunch the IMS and extend its scope of application, the Radiocommunication Bureau has prepared a draft Cooperation Agreement to be submitted to national administrations already participating to the IMS or ready to do it because of their advanced monitoring systems. According to the Cooperation Agreement, ITU can ask monitoring stations’

Free Satellite Frequency Spectrum: “Myth or Reality in 2016”. More information can be found in here, www.itu.int/en/ITU-R/seminars/Pages/default.aspx, (accessed 20.11.17).

42 S. Spassova, *New and Alternative Means for Safeguarding the Efficient Use of Spectrum Resources for Satellite Communications*, in M. Hofmann (Ed.), *Harmful interference in Regulatory Perspective*, Baden-Baden, 2015, pp. 195-213.

help in three cases, differently illustrated in the draft. First, assistance can be asked to solve cases of HI pursuant to Articles 13.2 and 15 of RRs: this case was the one already foreseen in dedicated regulations concerning the use of the IMS. Second, the Radiocommunication Bureau can ask assistance in relation to cases of HI stemming from coordination difficulties, as foreseen by Article 11.41 of RRs. Third, support can be requested aiming at acquiring relevant data to verify that stations operating in the geostationary orbit are respecting the declared characteristics as registered in the MIFR.

On the 6th August 2013, the ITU Secretary-General sent out a circular letter inviting administrations to subscribe that Cooperation Agreement. As a follow-up to this letter, bilateral discussions are being pursued between ITU and six national administrations such as Brazil, South Korea, Japan, Kazakhstan, Russia and Ukraine; since then Belarus, Germany, Pakistan and Vietnam joined the IMS signing the Agreement.⁴³

For completeness' sake, it should be recalled that a Memorandum of Cooperation of similar nature was already signed by the ITU and the ICAO, UN specialized agency with the mandate of promoting a secure development of international civil aviation, aiming at protecting the Global Navigation Satellite System (GNSS) from HI, which can have a negative impact on international civil aviation.⁴⁴

5.3 Transparency and Database of Infringements

The third and last point is also of outmost importance. The PP-14 requested to the Director of the Radiocommunication Bureau to “continue taking action to maintain a database on cases of harmful interference reported in accordance with relevant provisions of the Radio Regulations, in consultation with Member State concerned”. This ambitious project of a database on reported cases of HI is the result of a broader aim of the ITU itself: in fact, it is in line with Decision 5, Annex 2, paragraph 28 adopted by the PP-10 at Guadalajara, which proposed to move from communications by fax or postal mail between the Union and Member States to modern electronic communication methods. Additionally, this project falls under the scope of Resolution 907 adopted by WRC-12, and modified by WRC-15: it encourages the use of modern electronic means of communications, facilitating fast and effective communications among administrations

43 J. Ciccorossi, *Harmful Interference to Space Services*, May 2017, www.itu.int/en/ITU-R/space/workshops/2017-Bariloche/Presentations/18%20-%20Jorge%20Ciccorossi%20-%20ITU.pdf, (accessed 20.11.17).

44 For further information, see S. Spassova, A. Loukakis, *The Legal Implications of Erroneous GNSS Signal, Resulting from Harmful Interference*, in *Proceedings of the International Institute of Space Law, The Hague, 2015*, pp. 79-94; S. Spassova, *New and Alternative Means for Safeguarding the Efficient Use of Spectrum Resources for Satellite Communications*, in M. Hofmann (Ed.), *Harmful interference in Regulatory Perspective*, Baden-Baden, 2015, pp. 195-213.

involved in cases of HI to space services with the aim of contributing to prompt resolution of the case.

A very important part of this on-going project is the creation of the *Satellite Interference Reporting and Resolution Systems* (SIRRS) which would be an online application making easy the communication among administrations involved in a case of HI, immediately alerting them in case of interference. This system will be a suitable tool to create also analysis, statistics and reports on cases of HI, which would be a deterrent, contributing to the transparency and publicity of events of HI.

6. Concluding Remarks

To conclude, it is possible to observe that, as the UNGA has stressed since the 90s, the measures here examined have two main purposes: on the one hand, the prevention of military confrontation and the inhibition of an arm race in outer space, on the other, the enhancement of stability. Besides, TCBMs, which are voluntary in nature, can nevertheless pave the way to the preservation of the safety, security and sustainability in outer space activities, assuring the availability of that important realm for future generations of users.

We observed that IGOs are particularly important because they play a prominent role in their implementation, within their original mandate and renewing it in the light of new challenges and exigencies of international community. Following their work and their regulatory provisions, States do not have to conceive neither new norms, nor original verifying mechanisms. Besides, the creation of new binding treaties or new dedicated IGOs, mandated with verification powers, is particularly difficult (if not impossible) and not suitable, given the already elevate fragmentation (and bureaucratization) of international law.

Their recent involvement in the implementation of TCBMs is proving effective in supporting States' abidance, and therefore warrants due account. The commitment of existing IGOs involved directly or indirectly in outer space activities is the best way to push States to comply with their treaty obligations: IGOs can exploit their credibility and make it available to the higher purpose of space security. The analyzed case of the ITU graphically proved the theoretical observations proposed.

Thanks to IGOs, the adherence to the ISL principles can be preserved and enhanced, and the OST could continue to be a living instrument.

