



Open-ended working group on reducing space threats through norms, rules and principles of responsible behaviours

Geneva, 28 August – 1 September 2023

Agenda Item 7

Adoption of the report to be submitted to the General Assembly at its seventy-eighth session

Draft report of the Open-ended working group on reducing space threats through norms, rules and principles of responsible behaviours

I. Introduction

1. By its resolution 76/231 adopted on 24 December 2021, the General Assembly decided “to convene, beginning in 2022, an open-ended working group:

(a) To take stock of the existing international legal and other normative frameworks concerning threats arising from State behaviours with respect to outer space;

(b) To consider current and future threats by States to space systems, and actions, activities and omissions that could be considered irresponsible;

(c) To make recommendations on possible norms, rules and principles of responsible behaviours relating to threats by States to space systems, including, as appropriate, how they would contribute to the negotiation of legally binding instruments, including on the prevention of an arms race in outer space;

(d) To submit a report to the General Assembly at its seventy-eighth session”.

2. The General Assembly also decided that “the open-ended working group shall work on the basis of consensus, hold its organizational session in Geneva for two days, and meet in Geneva for two sessions of five days each in both 2022 and 2023, with the participation of intergovernmental organizations and other entities having received a standing invitation to participate as observers in the work of the General Assembly, as well as organizations and bodies of the United Nations, and with the attendance of other international organizations, commercial actors and civil society representatives, in accordance with established practice”. It further decided that “the Chair may also hold intersessional consultative meetings with interested parties to exchange views on the issues within the mandate of the open-ended working group”.

II. Organizational matters

3. [to be inserted]

III. Findings

4. The working group recalled paragraph 80 of the Final Document of the Tenth Special Session of the General Assembly (resolution S-10/2 of 30 June 1978), in which it is stated that, in order to prevent an arms race in outer space, further measures should be taken and appropriate international negotiations held in accordance with the spirit 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. The working group affirmed that its work contributes to the implementation of the outcome of the first Special Session of the General Assembly devoted to disarmament, taking into account the enormous advances in the exploration and use of space since then as well as significant developments in the international context and the relations between States.

5. The working group reaffirmed that preventing an arms race in outer space was in the interest of maintaining international peace and security and was essential for international cooperation in the exploration and use of outer space for peaceful purposes. The working group recalled that it was established in recognition of the need to reduce space threats, in order to maintain outer space as a peaceful, safe, stable, secure and sustainable environment so that all can benefit from the contribution of outer space activities to social, economic, scientific and technological development, as well as to international peace and security.

6. The working group also stressed the importance of preventing an arms race in outer space and ensuring that armed conflict does not extend into or is initiated in outer space in order to guarantee that the exploration and use of outer space, including the Moon and other celestial bodies, shall be for peaceful purposes and shall be carried out for the benefit and in the interest of all countries, on a basis of equality and in accordance with international law, irrespective of their degree of economic or scientific development.

7. The working group reaffirmed that possible solutions to outer space security can involve a combination of legally binding obligations and non-legally binding measures, and that work in both of these areas can be further pursued in a progressive, sustained and complementary manner, without undermining existing legal obligations.

8. The working group recognized that non-legally binding measures applicable to outer space activities, while not a substitute for legally binding arms control instruments, could contribute to the consideration of concepts and proposals for such measures as well as verification provisions included in legally binding international instruments, including on the prevention of an arms race in outer space.

9. The working group emphasized that it offered an open and inclusive approach, ensuring that all State had the opportunity to express their concerns and to put forward their ideas and proposals.

10. The working group considered various benefits that measures to address threats by States to space systems could have, including to:

- (a) Reduce threats to international peace and security related to activities in outer space;
- (b) Prevent an arms race in outer space;
- (c) Prevent, with a view to eradicating, the risk of the armed conflict being initiated in or extending to outer space;
- (d) Contribute to the long-term sustainability of outer space activities and the continuing and non-discriminatory use and exploration of outer space;
- (e) Reduce the risk of misunderstandings, misperceptions, miscalculations and unintended escalation and conflict;
- (f) Encourage transparency and communication regarding space activities in order to avoid misinterpretation;
- (g) Inform State practice and positions regarding the application of existing international law;

(h) Identify criteria that could facilitate the identification by States of the hostile intentions of other States;

(i) Contribute to negotiations of a legally binding instrument or instruments on the prevention of an arms race in outer space;

(j) Ensure that private actors are accountable for their actions in outer space and foster cooperation between States and private actors in the protection of space systems;

(k) Encourage the development and deployment of new technology in a manner that is consistent with international law and that promotes the security and the long-term sustainability of outer space.

11. The working group encouraged States with significant space technologies to consider international cooperation such as providing assistance and training and transferring technology, data and material to requesting States for the equitable and mutual benefit of and taking into account the legitimate rights and interest of all parties concerned, in particular the needs of developing countries, noting that the disparity in space capabilities of States, the inability of most States to participate in space activities without the assistance of others, uncertainty concerning sufficient transfer of space technologies between State and the inability of many States to acquire significant space-based information are factors contributing to a lack of confidence among States.

12. The working group considered that States should respect the rights of other States to participate in outer space security governance on an equal and non-discriminatory basis, carry out information exchanges and technical cooperation on a voluntary basis, and follow the principles of openness, transparency and equality.

13. The working group considered that States should share space situational awareness data and catalogues to the extent practicable. Bearing in mind the disparities in capabilities and resources of States, space situation awareness cooperation should be open, transparent, non-discriminatory and voluntary.

Existing international legal and other normative frameworks¹

14. The working group reaffirmed the applicability of international law, including the Charter of the United Nations and, as relevant, other international treaties and customary international law such as the law of State responsibility, as well as other bodies of international law, to activities in the exploration and use of outer space. The working group recalled that this principle was first recognized by the General Assembly in its resolution 1721 (XVI) of 20 December 1961 and reflected in article III 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 (the “Outer Space Treaty”). The working group noted that the prohibition contained within article IV of the Outer Space Treaty, on the non-placement in orbit around the Earth of any objects carrying nuclear weapons or any other kinds of weapons of mass destruction, and the non-installation of such weapons on celestial bodies or their stationing in space in any manner, does not address other types of possible weapons.

15. The working group emphasized the importance of the Outer Space Treaty as a foundational element of space governance. The working group recalled the provisions of the Outer Space Treaty particularly relevant to its work. The working group also emphasized the importance of the Declaration of Legal Principles Governing the Activities of States in the Exploration and Uses of Outer Space of 1963 and the 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 Countries of 1996.

16. The working group also reaffirmed the other principal United Nations treaties on Outer Space, including: The Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space; The Convention on International Liability for Damage Caused by Space Objects; The Convention on Registration of Objects Launched into Outer Space (the “Registration Convention”). The working group also reaffirmed other

¹ Reference to specific treaties is without prejudice to the status of participation in that treaty by Member States.

treaties to which a number of States are party, including the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies.

17. In addition, the working group affirmed that there are international treaties, applicable to States that are parties, in the field of disarmament and arms control applicable to outer space. In particular, the Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and under Water obliges its parties to prohibit, to prevent and not to carry out any nuclear weapon test explosions, or any other nuclear explosion [...] in the atmosphere; [or] beyond its limits, including outer space. Another important instrument is the Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques prohibits its parties from the military or any hostile use of environmental modification techniques having widespread, long-lasting or severe effects as the means of destruction, damage or injury to any other State Party, referring to “any technique for changing – through the deliberate manipulation of natural processes – the dynamics, composition or structure of the Earth, including its biota, lithosphere, hydrosphere and atmosphere, or of outer space”.

18. The working group emphasized the importance of compliance with the existing law applicable in outer space, including treaties, both bilateral and multilateral as well as customary international law. The working group stressed the importance of ensuring that all activities by States in outer space are carried out in accordance with international law including with due regard to the corresponding interests of other States.

19. The working group also emphasized the desirability of clarifying the application of existing international law. It was noted that the existing legal framework applicable to outer space by itself is not sufficient and may be strengthened to address threats to space systems, threats emanating from space or the prevention of an arms race in outer space, that the regime plays a significant role in the prevention of an arms race in that environment, that there is a need to build upon existing legal frameworks and enhance their effectiveness and respond to contemporary challenges. The working group also stressed the importance of strengthening the existing legal framework applicable to outer space to deal with new threats.

20. The working group also affirmed the availability of the consultation mechanism provided by article IX of the Outer Space Treaty, as well as of means for peaceful settlement of disputes between States, including Article 33 of the Charter of the United Nations.

21. The working group noted the importance attached to the duty of “due regard” which could be found in the Outer Space Treaty and other applicable treaties. The working group considered that this matter should be further discussed in the relevant forums.

22. The working group affirmed that the prohibition on the threat or use of force, as contained in Article 2(4) of the Charter of the United Nations, is applicable in outer space. The working group recalled the obligation of Member States, under Article 2(3) of the Charter, to settle their international disputes by peaceful means in such a manner that international peace and security, and justice, are not endangered.

23. The working group reaffirmed that international humanitarian law applies in situations of armed conflict. The working group reaffirmed that no discussion regarding the application or further elaboration of international humanitarian law can be construed as legitimizing or authorizing any act of aggression or any other use of force inconsistent with the Charter of the United Nations. The working group affirmed the urgent need to prevent an arms race in outer space and to prevent conflict from beginning in or extending into outer space.

24. The working group considered the potential relevance of aspects of elements drawn from international instruments governing other domains, aviation and the law of the sea as well as the current set of non-binding norms of responsible State behaviour in cyberspace.

25. The working group underscored the importance of transparency and confidence-building measures, which provide mechanisms to reduce the risks of misperceptions and miscalculations and thereby helping both to prevent military confrontation and to foster regional and global stability. They also assist in building confidence as to the peaceful intentions of States and can help States to increase understanding, enhance clarity of intentions and create conditions for establishing a predictable strategic situation in both the economic and security arenas. The working group also recognized that such measures for

outer space activities could also complement and contribute to, but not substitute for, an international legally binding instrument on the prevention of an arms race in outer space. The working group also recalled the criteria for transparency and confidence-building measures outlined by that report.

26. The working group reaffirmed that transparency and confidence-building measures for outer space activities should complement, but not substitute for, the verification measures in legally binding instruments. Voluntary transparency and confidence-building measures, considered as complementary measures, could contribute to the consideration of concepts and proposals for legally binding measures for the prevention of an arms race in outer space as well as verification protocols included in legally binding international instruments.

27. The working group considered a number of examples of existing transparency and confidence-building measures, derived from the 2013 report of the group of governmental experts as well as from various United Nations and other international instruments, mechanisms or arrangements. The working group stressed in particular the importance of effective and timely communication in order to build transparency and trust. The working group also recalled that States should provide pre-launch notifications of space vehicle launches and the mission of launch vehicles. The working group considered there was merit in the elaboration of further transparency and confidence building measures with the goal of preventing an arms race in outer space.

28. The working group welcomed the consensus outcome at the 2023 session of the United Nations Disarmament Commission on “Preparation of recommendations to promote the practical implementation of transparency and confidence-building measures in outer space activities with the goal of preventing an arms race in outer space, in accordance with the recommendations set out in the report of the Group of Governmental Experts on Transparency and Confidence-Building Measures in Outer Space Activities”.

29. The working group also reaffirmed that negotiations for the conclusion of an international legally binding instrument or instruments to prevent an arms race in outer space in all its aspects remain a priority task of the Conference on Disarmament and reiterated the need for an agreed, balanced and comprehensive programme of work of the Conference, noting the introduction by China and the Russian Federation at the Conference on Disarmament of the draft treaty in 2008² and the submission of its updated version in 2014³.

30. The working group noted that some transparency and confidence-building measures for outer space activities had already been implemented at the multilateral and/or the national level, as reflected in General Assembly resolution 77/251 of 30 December 2022.⁴ The working group noted that fact without prejudice to that resolution.

31. The working group noted the work that takes place within the Committee on the Peaceful Uses of Outer Space, which serves as a unique platform at the global level for discussing the whole spectrum of issues related to the exploration and use of outer space for peaceful purposes, including on issues of relevance to the working group, such as the long-term sustainability of outer space. The working group also noted that mitigation of debris is being addressed in the Committee on the Peaceful Uses of Outer Space and the Inter-Agency Space Debris Coordination Committee. The working group emphasized that the work within the Committee on the Peaceful Uses of Outer Space and its subcommittees should not be duplicated in other bodies. The working group encouraged further coordination between the work of United Nations bodies in the area of outer space, and welcomed the joint ad hoc meetings and joint panel discussions of the First and Fourth Committees.

Current and future threats by States to space systems

32. The working group considered the international security situation and increasing competition between States, together with a growing number of space actors, private and governmental, space objects, space debris and the actual or potential use of space systems for both military and civilian purposes is heightening the risk of misunderstanding and

² CD/1839

³ CD/1985

⁴ See preambular paragraphs 9 and 10.

miscalculation and of an arms race in outer space. Similarly, the large and growing population of orbital debris has increased the risk of collisions involving space objects.

33. The working group noted that a number of States already possess capabilities, including in space, capable of damaging, degrading or destroying space systems. The working group also noted that security concerns resulting from such developments could lead to an arms race in outer space, particularly by driving other States to develop further capabilities to protect and defend their space systems. The working group further noted that many current and emerging threats could fall below the threshold of the threat or use of force and can include strategies, methods and acts which could negatively impact the space environment and international stability. These threats have given rise to serious concern regarding the risks to international peace and security and to the peaceful uses of outer space posed by the possible weaponization of outer space and the potential transformation of outer space into a domain of active hostilities.

34. The working group considered the distinction between hazards and threats, taking into account the various concepts that exist in national strategies, doctrines and policies.

35. The working group regarded threatening acts as deliberate and non-consensual acts by States intended to, directly or indirectly, interfere with, deny, disrupt, degrade, damage or destroy space systems under the jurisdiction or control of other States. The working group considered that such threats could raise international tensions and hamper the free and unhindered access to and use of space, harm the safe operation of space systems and jeopardize the long-term sustainability of outer space, the provision of key space-based services to the civilian population or the military. Such threats against space systems can be divided into four categories, based upon the threat vector: Earth-to-space, space-to-space, space-to-Earth and Earth-to-Earth. These threats can have reversible or irreversible effects. Reversible effects are temporary and can include interference with radio-frequency signals or the dazzling of remote sensing systems. Irreversible effects may involve damage to or the destruction of space systems.

36. The working group recognized that threats in, to, and from space may be perceived and experienced differently by States according to their levels of capacity, security, resilience, infrastructure and development. Such threats may also have a disproportionate impact on different groups of people, including those based on gender, race, sexuality, geography, age, and socio-economic status.

37. The working group considered various types of capabilities in relation to current and future Earth-to-space threats by States to space systems, such as direct-ascent anti-satellite missiles and nuclear detonations or the placement of nuclear weapons or other weapons of mass destruction in outer space, directed-energy and radiofrequency capabilities.

38. The working group considered various types of capabilities in relation to current and future space-to-space threats by States to space systems, such as co-orbital anti-satellite capabilities and directed-energy and radiofrequency capabilities.

39. The working group considered various types of capabilities in relation to current and future space-to-Earth threats by States to space systems, such as space-based missiles and anti-missile interceptors.

40. The working group considered various types of capabilities in relation to current and future Earth-to-Earth threats by States to space systems, such as cyber capabilities.

41. The working group considered certain types of capabilities and operations that could have possible civilian and military applications making it difficult to distinguish between threatening and benign capabilities and operations, for example on-orbit servicing. On-orbit servicing involves the maintenance, repair, fuelling or construction of spacecraft in orbit. Active debris removal systems are intended to dispose of non-operational space objects. Both capabilities entail rendezvous and proximity operations and may employ robotic arms, harpoons, magnets, nets or other capture mechanisms. Such capabilities have the potential to make the orbital environment safer and more sustainable, but they could also be used to manipulate, damage, degrade or destroy other space objects and could increase the risk of misunderstanding or be perceived as hostile or threatening, especially when used or

conducted in a non-transparent manner. The working group considered that proximity operations could also be used to collect information about a space system.

42. The working group noted that traditional approaches to arms control include focus on both capabilities and behaviours and that a balanced approach could contribute to preventing threats to space systems and preventing an arms race in outer space. The working group considered that further discussions are required on the concept of responsible and irresponsible behaviour, taking into account concerns that criteria for determining whether a behaviour was irresponsible could be subjective, who makes these determinations and characterizations, how they are made and the factual basis of such determinations.

43. The working group considered various actions, activities or omissions in relation to outer space policies that could be considered threatening, including, but not necessarily limited to:

(a) Without prejudice to national security considerations, a lack of transparency on national space programmes, space security and defence policies, strategies and doctrines, which can feed mistrust and suspicion, thereby increasing risks of misperception and miscalculation;

(b) Publicly declaring outer space to be a warfighting domain or as an arena for military confrontation, or in pursuing military strategies, doctrines or policies aimed at achieving military superiority in outer space, which could promote an arms race in outer space and increase uncertainty regarding outer space security.

44. The working group considered various actions, activities or omissions in relation to outer space operations that could be considered threatening, including, but not necessarily limited to:

(a) Launching space vehicles without prior coordination with potentially affected countries, including those whose territories may be potential drop zones of uncontrolled re-entering or launch debris that pose a potential risk of injury to people, damage or destruction to property;

(b) Conducting rendezvous and proximity operations, including close approaches, that involve the space objects of another State without prior notification, coordination and consent, or those performed after the affected State has requested consultation or cessation of the manoeuvre;

(c) Failure to communicate with other States about potential collisions involving satellites and a failure to conduct anti-collision manoeuvres when required, taking into account disparities in capabilities among States.

45. The working group considered various specific actions, activities or omissions in relation to counter-space capabilities that could be considered threatening, including, but not necessarily limited to:

(a) The development, acquisition, deployment, testing or use of counter-space capabilities that could hold at risk, interfere with, damage, or destroy space systems;

(b) The placement a weapon in outer space, including a co-orbital weapon;

(c) The development, testing or use of destructive direct-ascent anti-satellite missiles;

(d) Any other deliberate and destructive act that could create large amounts of debris;

(e) Deliberate acts that interfere with the command and control of space systems or that impair or lead to the loss of the ability of an operator to control a satellite;

(f) Jamming or spoofing the signals of positioning, navigation and timing satellites or interfering with such systems via cyber or other means, or conducting or supporting any other activity designed or expected to disrupt, damage, destroy or disable space systems necessary for the provision of essential civilian services and for the protection and functioning of persons and objects specifically protected under international law.

46. The working group affirmed that States must lead in the development of an agreement or agreement on preventing an arms race in outer space and that their work would benefit from the appropriate involvement of intergovernmental organizations and other entities having received a standing invitation to participate as observers in the work of the General Assembly, as well as organizations and bodies of the United Nations, and of other international organizations, commercial actors and civil society representatives.

47. The working group affirmed the need for further discussions on the definition of certain terms including “armament” and “weapon”.

IV. Recommendations

48. The working group recommended that Member States give further consideration to the examination and elaboration of proposals for possible measures to reduce space threats.

49. The working group considered the following non-exhaustive set of elements, without prejudice to the national positions of States participating in the working group:

Damage and destruction of space objects or use of space objects as weapons

(a) States should consider refraining from any deliberate act that causes physical damage to or disabling or destruction of other States’ space objects, including where such acts are expected to result in the generation of space debris. They should also refrain from any tests, experiments, or other activities that result in satellite break-ups or the intentional destruction of spacecraft or orbital stages. In particular, States should:

- i. Refrain from destructive direct-ascent anti-satellite missile tests, from destructive tests using any other type of counter-space capabilities, or from the development, deployment or use of such capabilities;
- ii. Refrain from deliberately colliding satellites or other on-orbit objects;
- iii. Refrain from any other non-consensual act that destroys or damages the space objects of other States;
- iv. Refrain from developing, testing, deploying or using weapons in outer space for any purpose, including missile defence systems, as anti-satellite weapons or for use against targets on Earth or in the air, as well as dismantling such systems already available to States.

Development and deployment of space objects for hostile purposes

(b) States should consider not to develop, produce, test or deploy weapons in space for any purpose.

(c) States should not develop, deploy or use directed-energy weapons to target space objects.

(d) States should not develop, deploy or use electronic warfare capabilities to target space objects.

Interference with the normal and safe operation of space objects

(e) States should refrain from any deliberate act that interferes with the normal and safe operation of the space objects under the jurisdiction or control of other States. Such acts of interference may give rise to tensions and increase the risk of escalation and inadvertent conflict. In particular, States should:

- i. Refrain from any act that destroys, damages, disrupts or alters the normal functioning or change the flight trajectory of the space objects of other States without prior consent;
- ii. Refrain from any act that leads to a loss of command and control over, irreversible damage to or permanent loss of space systems of other States, regardless of the means, which could include the malicious use of information

- and communication technologies, directed energy, or jamming or spoofing of signals, and which would be directed at any segment of a space system;
- iii. Maintain necessary and mutually acceptable safe separation from other space objects;
 - iv. Ensure that satellites under their jurisdiction and control or operating on their behalf do not rendezvous, physically connect or physically damage with satellites under the jurisdiction and control of another State, or operate in proximity to, without prior consultation and consent;
 - v. Provide information to the extent practicable to the affected State in advance of such an operation, including notification at least of the planned timing, trajectory and objective of the operation;
 - vi. Avoid deliberate acts that cause harmful interference with space objects that can pose a particular risk of escalation.

Protection of critical space-based services

(f) States should avoid activities that would endanger space objects crewed by humans.

(g) States should refrain from any acts that would impair the provision of critical space-based services to civilians. These services include services critical to the production and maintenance of objects indispensable to the survival of the civilian population and to persons and objects specifically protected under international law, as well as services that support humanitarian operations and the safety of installations containing dangerous forces such as nuclear power plants or infrastructure containing hazardous or toxic materials.

(h) States should consider the feasibility of registering, marking or otherwise indicating space objects that provide critical space-based services to civilians and to exchange information in this regard, including through the Registration Convention, bearing in mind that the failure to so register, mark or otherwise indicate an object would not legitimize the use of force against that object.

Assistance and encouragement in certain acts

(i) States should refrain from assisting, encouraging or inducing any State or intergovernmental organization, any entity or anyone located on their territory or under their jurisdiction or control, in the conduct of any of the above-mentioned activities from which States should refrain.

(j) States should strengthen supervision of private sector actors under their jurisdiction, in accordance with article VI of the Outer Space Treaty, so as to reduce the potential for activities of such actors to increase the risk of misunderstanding, misperception or miscalculation between States or increase the risk of conflict in outer space, with a view to preventing an arms race in outer space.

Military space policies, doctrines and strategies

(k) States should consider committing, as a matter of policy, to the prevention of an arms race in outer space, to the prevention of conflict in outer space and to the peaceful exploration and use of outer space for the benefit of all humankind. States should consider avoiding policies, doctrines and strategies, as well as rhetoric that could jeopardize the safety, security and sustainability of outer space activities. States should be transparent, on a voluntary basis, about their uses of outer space, both civilian and military, and should share information regarding their space activities, outer space policies, doctrines and strategies, including within multilateral forums, without prejudice to their national security interests.

Implementation of international obligations, commitments and measures

(l) States should promote compliance with existing international law applicable to outer space activities, including all relevant treaties and applicable bodies of law and universal ratification of the principal United Nations treaties on outer space.

Notifications of defence and security exercises

(m) States should provide advance notifications, to the greatest extent practicable, regarding defence and security exercises that could have an impact on space systems and services in order to reduce the risk of misunderstanding or misperception of intentions.

Consultative mechanisms

(n) To facilitate exchanges of notification and information, States should establish routine channels of communication and designating points of contact, as appropriate.

50. The working group affirmed that non-legally binding measures can be developed in support of, and, without prejudice or as a precondition to, the pursuit of legally binding instruments. The working group recommended that Member States give further consideration to how the proposed elements in this report would contribute to the negotiation of legally binding instruments, including on the prevention of an arms race in outer space.

51. Without prejudice to their future work, the working group recommended the Group of Governmental Experts established by General Assembly resolution 77/250 consider the recommendations in this report and how they can contribute to the negotiation of legally binding instruments.