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### **Prevention of an arms race in outer space: further practical measures for the prevention of an arms race in outer space**

## **Group of Governmental Experts on further practical measures for the prevention of an arms race in outer space**

### **Note by the Secretary-General**

The Secretary-General has the honour to transmit herewith the report of the Group of Governmental Experts on further practical measures for the prevention of an arms race in outer space. The Group was established pursuant to General Assembly resolution [72/250](#).

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\* [A/74/50](#).



# Report of the Group of Governmental Experts on further practical measures for the prevention of an arms race in outer space

## I. Introduction

1. In its resolution [72/250](#), on further practical measures for the prevention of an arms race in outer space, the General Assembly requested the Secretary-General to establish a United Nations Group of Governmental Experts, with a membership of up to 25 Member States, chosen on the basis of fair and equitable geographical representation, to consider and make recommendations on substantial elements of an international legally binding instrument on the prevention of an arms race in outer space, including on the prevention of the placement of weapons in outer space. The General Assembly decided that the newly established Group of Governmental Experts would operate by consensus, without prejudice to national positions in future negotiations, and hold two 2-week sessions in Geneva, one in 2018 and the other in 2019, and requested the Secretary-General to transmit the report of the Group of Governmental Experts to the General Assembly at its seventy-fourth session and to the Conference on Disarmament prior to its 2020 session.

## II. Organizational matters

2. In accordance with the terms of the resolution, the Secretary-General appointed a Group of Governmental Experts from 25 Member States: Algeria, Argentina, Australia, Belarus, Brazil, Canada, Chile, China, Egypt, France, Germany, India, Iran (Islamic Republic of), Italy, Japan, Kazakhstan, Malaysia, Nigeria, Pakistan, Republic of Korea, Romania, Russian Federation, South Africa, United Kingdom of Great Britain and Northern Ireland and United States of America. The list of experts is contained in annex I to the present report.

3. The Group met in two sessions at the United Nations Office at Geneva, the first from 6 to 17 August 2018 and the second from 18 to 29 March 2019. Prior to its first session, the Group benefited from an international workshop on the prevention of an arms race in outer space, which was convened in Beijing in July 2018 by the Office for Disarmament Affairs of the Secretariat, together with the Ministry of Foreign Affairs of China and the Ministry of Foreign Affairs of the Russian Federation. At its first session, the Group elected Guilherme de Aguiar Patriota (Brazil) as its Chair.

4. Michael Spies of the Office for Disarmament Affairs served as Secretary of the Group. Daniel Porras and Raji Rajagopalan of the United Nations Institute for Disarmament Research served as consultants to the Group.

5. In accordance with resolution [72/250](#), the Chair of the Group convened a two-day open-ended intersessional informal consultative meeting, from 31 January to 1 February 2019 at United Nations Headquarters in New York, so that all Member States could engage in interactive discussions and share their views on the basis of a report on the work of the Group provided by the Chair in his own capacity.<sup>1</sup> That report is contained in annex II to the present report. At that meeting, the Chair also organized a series of panels in order to facilitate engagement and interaction between Member States and the broader outer space community, including representatives of national space agencies, the commercial sector and civil society.

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<sup>1</sup> Materials from that meeting are available on the website of the Office for Disarmament Affairs at [www.un.org/disarmament/topics/outerspace/paros-gge/](http://www.un.org/disarmament/topics/outerspace/paros-gge/).

6. During its sessions in Geneva, the Group benefited from presentations by representatives of the United Nations Institute for Disarmament Research and independent experts, including from the International Committee of the Red Cross; the Prague Security Studies Institute; the Center for International and Security Studies at Maryland, University of Maryland, United States; the University of Texas at Austin, United States; the University of Adelaide, Australia; and the Keldysh Institute of Applied Mathematics, Russian Academy of Sciences, Russian Federation. In addition, the Group benefited from presentations, working papers and other inputs from its own members. The Group also received written inputs from non-members, including non-governmental organizations.<sup>2</sup>

7. In accordance with resolution [72/250](#), the Group considered recommendations on substantial elements of an international legally binding instrument on the prevention of an arms race in outer space, including on the prevention of the placement of weapons in outer space. Pursuant to this mandate, it discussed: (a) the international security situation in outer space; (b) the existing legal regime applicable to the prevention of an arms race in outer space; (c) the application of the right to self-defence in outer space; (d) general principles; (e) general obligations; (f) definitions; (g) monitoring, verification and transparency and confidence-building measures; (h) international cooperation; and (i) final provisions, including institutional arrangements. The Group considered several drafts of a substantive report. No consensus was reached on a final report.

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<sup>2</sup> Working papers made publicly available by Group members and written inputs from non-members are available at [www.un.org/en/official-documents-system-search/index.html](http://www.un.org/en/official-documents-system-search/index.html), under the symbol series GE-PAROS/2019/WP.1–7.

## **Annex I to the report of the Group of Governmental Experts on further practical measures for the prevention of an arms race in outer space**

### **List of members of the Group of Governmental Experts**

#### **Algeria**

Mustapha Abbani  
Counsellor  
Permanent Mission of Algeria to the United Nations

#### **Argentina**

Juan Guzik  
Counsellor  
Directorate of International Security, Nuclear and Space Affairs  
Ministry of External Affairs and Worship

#### **Australia**

Robert McKinnon  
Assistant Secretary  
National Security Strategy, Cyber and Intelligence Branch  
Department of Foreign Affairs and Trade

#### **Belarus**

Nikolai Ovsyanko  
Head of Section  
International Security and Arms Control  
Ministry of Foreign Affairs

#### **Brazil**

Guilherme de Aguiar Patriota  
Ambassador  
Special Representative of Brazil to the Conference on Disarmament

#### **Canada**

Eleonora Agnew  
Manager, International and Regulatory Affairs  
Policy Branch  
Canadian Space Agency

#### **Chile**

Hellmut Lagos (first session)  
Deputy Director  
International and Human Security Division  
Ministry of External Relations  
  
Andrea Francisca Quezada Carrasco (second session)  
International and Human Security Division  
Ministry of External Relations

**China**

Shengkun Ma  
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Department of Arms Control and Disarmament  
Ministry of Foreign Affairs

**Egypt**

Bassem Hassan  
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Permanent Mission of Egypt to the United Nations

**France**

Sophie Gauthier (first session)  
Nuclear Disarmament and Non-Proliferation Branch  
Ministry of Europe and Foreign Affairs

Elisabeth Meyer (second session)  
Nuclear Disarmament and Non-Proliferation Branch  
Ministry of Europe and Foreign Affairs

**Germany**

Michael Biontino  
Ambassador (retired)  
Adviser  
Federal Foreign Office

**India**

Vipul  
Consul General of India, Dubai

**Islamic Republic of Iran**

Seyed Mohammad Ali Robotjazi (first session)  
Director  
Office for Disarmament and Non-proliferation

Nassereddin Heidari (second session)  
Head of Conventional Weapons and Space Affairs  
Ministry of Foreign Affairs

**Italy**

Sergio Marchisio  
Full Professor of International Law  
Sapienza University

**Japan**

Setsuko Aoki  
Professor of Law  
Keio University Law School

**Kazakhstan**

Amanat Umbetbayev  
Head of the International Relations Division  
Ministry of Defence and Aerospace Industry of Kazakhstan

**Malaysia**

Bahari bin Zainol Saiful (first session)  
Principal Assistant Secretary  
Policy and Strategic Planning Division  
Ministry for Foreign Affairs

**Nigeria**

Faisal Ibrahim  
First Secretary  
Permanent Mission of Nigeria to the United Nations

**Pakistan**

Usman Iqbal Jadoon  
Counsellor  
Permanent Mission of Pakistan to the United Nations and other international organizations in Geneva

**Republic of Korea**

Il Park  
Minister Counsellor  
Embassy of the Republic of Korea in Ethiopia

**Romania**

Dumitru-Dorin Prunariu  
Member of the Board of the Romanian Space Agency  
Former Chair of United Nations Committee on the Peaceful Uses of Outer Space

**Russian Federation**

Andrey Belousov  
Head of the Multilateral Disarmament Division  
Department for Non-Proliferation and Arms Control  
Ministry of Foreign Affairs of the Russian Federation

**South Africa**

Doc Mashabane  
Chief Director  
United Nations Political, Peace and Security Directorate  
Department of International Relations and Cooperation

**United Kingdom of Great Britain and Northern Ireland**

Brian Jones  
Deputy Head  
Security Policy Department  
Foreign and Commonwealth Office

**United States of America**

Eric Desautels  
Office Director, Office of Emerging Security Challenges  
Bureau of Arms Control, Verification, and Compliance  
United States Department of State

## **Annex II to the report of the Group of Governmental Experts on further practical measures for the prevention of an arms race in outer space**

### **Report by the Chair of the Group of Governmental Experts on further practical measures for the prevention of an arms race in outer space<sup>1</sup>**

1. New York, 31 January 2019 I am pleased to convene this meeting today, which focuses on the work of the Group of Governmental Experts on further practical measures for the prevention of an arms race in outer space. The Group was established pursuant to resolution [72/250](#), adopted by the General Assembly on 24 December 2017.
2. In accordance with that resolution, I am mandated to convene this informal meeting today “so that all Member States can engage in interactive discussions and share their views on the basis of a report on the work of the Group to be provided by the Chair in his own capacity”.
3. As specified in the programme for this consultative meeting, I have suggested dividing the time as set out below. The meetings today will be devoted to interactive discussions and the sharing of views among Member States on the main substantive topics considered by the Group at its first session.
4. The topics include: (a) the existing legal regime in outer space and elements of general principles; (b) elements of general obligations; (c) elements related to monitoring, verification and transparency and confidence-building measures; and (d) elements related to international cooperation, institutional arrangements and final provisions.
5. At the outset of the discussion of each substantive topic, I will provide a brief summary of the main points raised during the meetings of the Group.
6. Time permitting, and after discussion has been exhausted among Member States on a topic, I will open the floor to observers and representatives of non-governmental organizations.
7. At the first session of the Group, it was suggested that this consultative meeting should also serve as a platform for engagement with the broader outer space community. I have therefore arranged for our meetings tomorrow to be devoted to exchanges between Member States and three panels, respectively composed of representatives of national space agencies, the commercial sector and civil society.
8. This will be an open informal meeting. This means that observers and non-governmental organizations may attend and participate, provided they respect the private nature of the discussion. This also means that there should be no public reporting of any kind on the meeting, including via Twitter or other social media.
9. For members of the press who might be in the room, the meeting should be considered off the record and there should not be any reporting of the discussion. It is my hope that these modalities will facilitate a frank and open exchange among all participants.
10. Before starting with the substantive discussions today, I will first provide a general overview of the work completed so far. I suggest that, in the spirit of an

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<sup>1</sup> In accordance with paragraph 5 of General Assembly resolution [72/250](#), the report on the work of the Group of Governmental Experts is provided by the Chair in his own capacity.

informal consultation, remarks be focused on the topic at hand. After my presentation on the first topic, namely, the existing legal regime in outer space and elements of general principles, I will invite delegations to take the floor to address that item or to make any statements of a general nature.

### **General overview**

11. In paragraph 3 of its resolution [72/250](#), the General Assembly requested the Secretary-General to establish a United Nations Group of Governmental Experts, with a membership of up to 25 Member States, chosen on the basis of fair and equitable geographical representation, to consider and make recommendations on substantial elements of an international legally binding instrument on the prevention of an arms race in outer space, including on the prevention of the placement of weapons in outer space.

12. In accordance with the resolution, the Secretary-General invited 25 Member States, selected on the basis of equitable geographic distribution, to nominate experts to participate in the Group. The Group is comprised of experts from the following Member States: Algeria, Argentina, Australia, Belarus, Brazil, Canada, Chile, China, Egypt, France, Germany, India, Iran (Islamic Republic of), Italy, Japan, Kazakhstan, Malaysia, Nigeria, Pakistan, Republic of Korea, Romania, Russian Federation, South Africa, United Kingdom of Great Britain and Northern Ireland and United States of America.

13. Prior to the first session, the Group benefited from an international workshop on the prevention of an arms race in outer space, which was convened in Beijing in July 2018 by the Office for Disarmament Affairs of the Secretariat, together with the Ministry of Foreign Affairs of China and the Ministry of Foreign Affairs of the Russian Federation. That workshop made a valuable contribution to the preparations for the Group.

14. In particular, the workshop allowed for the nominated experts to come together before the official session to discuss all issues relevant to their mandate, including the evolving space security landscape and the prospects for and consequences of an arms race in, and the weaponization of, outer space; the status of international efforts to prevent an arms race in outer space, including the relevance and sufficiency of applicable norms and principles; and possible elements related to an international legally binding instrument on the prevention of an arms race in outer space, including, on the prevention of the placement of weapons in outer space.

15. The preparatory workshop enabled the nominated chair of the Group to identify a set of issues that should be addressed and to seek views on working methods. The workshop also greatly benefited from the participation of invited non-governmental experts, who were able to deliver presentations and support discussions on technical matters.

16. The Group of Governmental Experts held its first session in Geneva from 6 to 17 August 2018.

17. The Group was guided by a detailed indicative timetable, designed to focus discussion on the various thematic areas that could be addressed in a possible legally binding treaty and including the following aspects:

- (a) The international security situation, including current trends and developments and the identification of indicators for an arms race in outer space;
- (b) The existing legal regime applicable to the prevention of an arms race in outer space;
- (c) The application of the right to self-defence in outer space;

(d) General principles, including those contained in existing instruments and those additional ones that may be required;

(e) General obligations, including scope and objectives, elements related to the control of arms, equipment and technology, elements related to the control of behaviour, and elements on the possible limitation and regulation of the use of force;

(f) Definitions;

(g) Monitoring, verification and transparency and confidence-building measures, including the role of existing measures and the elaboration of new ones;

(h) International cooperation and capacity-building;

(i) Final provisions and institutional arrangements;

(j) Organization of work for the second session.

18. During its session, the Group benefited from technical presentations made by external experts and representatives of the United Nations Institute for Disarmament Research, who briefed the Group on a variety of topics. The Group also greatly benefited from the active engagement, presentations and working papers of its own members.

19. It was my sense that members of the Group seemed willing to work within the established mandate, contributing to the debate on elements of a possible legally binding instrument, while exploring different approaches towards that goal.

20. The draft treaty on the prohibition of the placement of weapons in outer space was a recurring point of reference as the debate progressed, but substantive exchanges were not limited to it or by it.

21. With assistance from the Office for Disarmament Affairs and the United Nations Institute for Disarmament Research, I circulated a comprehensive version of the “grid” proposal that was made and discussed by members of the Group so that experts could provide inputs on as many elements as they deemed necessary. Owing to the complexity of the issues under consideration, the deadline for receiving these inputs was extended until mid-January.

22. The inputs, and the discussions from the first session, have informed my preparation of the first draft of the report, which is being prepared for submission to the Secretariat for processing. That draft will be discussed and finalized by the Group at its final session in March 2019.

23. A number of experts have already expressed their intention to submit working papers prior to the second session. I wish to extend an invitation to all delegations to submit written proposals, through the Secretariat, to be made available to the experts for their consideration at the second session. I would appreciate it if any such working papers could be limited to a maximum of two pages and submitted no later than Friday, 1 March.

#### **The existing legal regime in outer space and elements of general principles**

24. I will now address the first substantive topic: the existing legal regime in outer space and elements of general principles.

25. The Group considered that the principles, rules and norms contained in existing international treaties, conventions, instruments and other sources are relevant for the purpose of preventing an arms race in outer space. These principles, rules and norms have played an essential role in fostering cooperation in the peaceful use of outer space.

26. At the same time, the view was expressed that the existing legal regime remains insufficient to prevent an arms race in outer space. A legally binding instrument on the prevention of an arms race in outer space would fill a gap in the international legal regime applicable to outer space, including in the maintenance of international peace and security. It was therefore considered that any instrument that may be pursued in the context of an agreed outcome of the Group of Experts should build upon and extend existing international law, especially the 1967 Treaty on Peaceful Uses of Outer Space.

27. Experts generally affirmed or recognized the relevance to the prevention of an arms race in outer space of the principles codified in that Treaty, including:

- (a) The applicability of the Charter of the United Nations in outer space;
- (b) Freedom of access to outer space without discrimination and on the basis of equality;
- (c) The non-placement of nuclear weapons or other weapons of mass destruction in outer space;
- (d) The use of the moon and other celestial bodies exclusively for peaceful purposes;
- (e) State responsibility for the activities of their nationals in outer space;
- (f) The liability of launching States for damage;
- (g) The requirement to give due regard to the interests of others in the use and exploration of outer space;
- (h) The duty to consult before proceeding with any activity that could cause potentially harmful interference with the outer space activities of others.

28. Experts generally affirmed or recognized the relevance to the prevention of an arms race in outer space of the principles contained in the Charter of the United Nations, including:

- (a) The prohibition of the threat or use of force;
- (b) The peaceful settlement of disputes;
- (c) The right of individual and collective self-defence;
- (d) The precedence of the Charter over other international obligations.

29. Experts also generally affirmed or recognized the relevance of the principles contained in disarmament and non-proliferation treaties, including:

- (a) The right to develop technology for peaceful purposes;
- (b) The need to avoid hampering the economic or technological development of States;
- (c) Non-discrimination;
- (d) The objective of general and complete disarmament.

30. There was no dispute that international law and the Charter of the United Nations in particular apply in outer space. There were concerns, however, about engaging in a discussion on the application of international humanitarian law, since such a discussion might signal acceptance of the notion that armed conflict could be conducted in outer space.

31. In particular, any attack in low-Earth orbit could create long-lasting debris that would persist for decades or longer, posing a serious hazard to any spacecraft

operating at the same altitude. An attack in higher orbits could create debris that persists indefinitely. A small number of attacks resulting in the breakup of outer space objects could negatively impact wide areas of Earth orbit and pose a consequent hazard to the safety and security of space operations, which could result in unpredictable incidental harm to other spacecraft.

32. There was some convergence on the notion that it would be useful to avoid any attempt to determine what constitutes a possible scenario for the use of force in outer space pursuant to article 51 of the Charter and, instead, to focus on the regulation of behaviour as may be agreed by States. This included the possible prohibition or limitation of harmful or hostile acts. There was no single view, *inter alia*, on how to deal with intentional interference with or disruption of a space object that does not result in permanent damage.

### **Elements of general obligations**

33. I will address the second substantive topic: elements of general obligations.

34. The matter of what general obligations should be included in a possible legally binding instrument was closely linked with its scope.

35. The Group discussed various possible threats to outer space activities and which of these threats can and should be effectively and verifiably addressed in an instrument. It was considered that threats exist on a continuum from low intensity, characterized by reversible and disruptive impacts, to high intensity, characterized by irreversible and destructive impacts. These threats can affect outer space objects as well as associated terrestrial infrastructure and the end-users of space-based services.

36. One expert presented a useful scheme for classifying specific threats, in order of growing intensity. These included the following: (a) electronic warfare, including the jamming and spoofing of radio transmissions; (b) cyberattacks, including directly on outer space objects as well as on space related terrestrial infrastructure and commercial operations; (c) directed energy attacks, which can be launched from ground-, air-, sea- or space-based platforms and currently have the capability of blinding, dazzling or damaging sensitive equipment; (d) orbital-based anti-satellite systems with the capability to rendezvous with and physically interact with or impact space objects; (e) ground-based anti-satellite weapons, which can destroy space-based objects through kinetic or explosive impacts; and (f) nuclear detonations.

37. While threat perceptions varied among experts, they considered that an instrument for the prevention of an arms race in outer space should address at least three scenarios: space-to-space attacks; space-to-ground attacks; and ground-to-space attacks. Attacks against terrestrial infrastructure related to outer space objects were also discussed.

38. Threats generally involve existing capabilities already in operation that could emanate from systems more easily identified as military systems and weapons, though addressing dual-use technologies is of great concern.

39. "Dual-use" systems with legitimate civilian applications would be more difficult to distinguish from military systems intended to be used to carry out attacks. One such capability includes on-orbit servicers, which are satellites designed to manoeuvre close to another object, inspect it, dock with it, and carry out refuelling or repairs. Another capability includes active debris removal. The problem of dual-use capabilities was regarded as one of the challenges for the development of an effective and verifiable legally binding instrument. Nevertheless, addressing outer space objects designed for use as weapons in space, or for targeting objects in space or Earth objects from space, should be considered central to any instrument for the prevention of an arms race in outer space.

40. Experts considered that there could be a varied approach to rules on harmful or hostile acts (attacks) against outer space objects, based on the nature of the threat and taking into account challenges associated with attribution, verification and the dual-use application, both civil and military, of outer space objects and capabilities. Experts also considered that any instrument should prohibit the use of outer space objects to attack terrestrial targets. The need for the instrument to be flexible enough to address future developments and threats was also emphasized.

41. Some experts placed high priority on regulating behaviour, including by prohibiting various types of intentionally harmful or destructive acts. There was some emphasis on prohibiting in particular intentional acts that could result in the generation of long-lasting debris in Earth orbit.

42. The view was also expressed that an instrument should not discriminate among various means of attacking space objects on the basis of its potential to generate debris. Different views were expressed on the sufficiency of the 2007 debris mitigation guidelines in the context of the prevention of an arms race in outer space.

43. There was convergence, however, on addressing attacks against outer space objects, regardless of whether such attacks originated from other space-based systems or if they were launched from a terrestrial-based missile.

44. A number of experts regarded the prohibition on placing any weapon in outer space as the primary purpose of any legally binding instrument. There was a robust discussion on the potential dual-use nature of space activities complicating effective verification of such a prohibition. It was suggested that an instrument could prohibit the placement of outer space objects specifically designed for use as weapons.

45. A number of experts expressed support for a comprehensive approach, which would include both regulation of behaviour and control of capabilities, equipment or technology. Experts considered that the instrument could cover research, development, production, manufacturing, stockpiling and testing of certain capabilities. While the view was expressed that the instrument should also address the covert development of weaponizable capabilities by commercial or non-State entities, some experts cautioned against the inclusion of export controls on the grounds that they could negatively impact, in a discriminatory manner, access to and the right to develop technology for peaceful purposes, while being ineffective in addressing the problem of dual-use capabilities.

### **Definitions**

46. The discussion on definitions was ultimately linked to the matter of general obligations. Experts expressed various views on whether an instrument would require an article on definitions. Some considered that the need for definitions should emanate from the scope.

47. It was noted that explicit definitions might not be required if the underlying concepts were sufficiently clear. Specific terms on which definitions may be sought included: (a) “space object”; (b) “armed attack” in the context of acts of violence against space objects; (c) “space weapon”; and (d) “placement in outer space”.

48. Various views were expressed on possible definitions of these terms, and even on whether precise definitions would be useful or achievable.

### **Elements related to monitoring, verification and transparency and confidence-building measures**

49. I will now address the third substantive topic: elements related to monitoring, verification and transparency and confidence-building measures.

50. It was considered that some degree of verification would be possible for rules covering the various possible harmful or hostile acts that could be included in an instrument. As an example, it was noted that the United States considered that the prohibition against the placement of nuclear weapons in outer space was verifiable by national technical means in the 1960s.

51. Many experts considered that the strictness of the verification approach could vary for each prohibited act, and that acts subject to stronger prohibitions could be subject to more stringent verification. They also considered that verification in outer space did not necessarily have to be perfect in order to be effective.

52. Verifying the nature of an object placed in outer space was considered a key challenge. There was discussion of some novel approaches, such as mandating “keep out” zones which would limit the distance one could approach, without consent, a space object owned by another party. Prelaunch inspections were also suggested.

53. The Group also discussed the importance of building capacity in space situational awareness as a means for characterizing or verifying the behaviour of outer space objects. Some experts considered the possible value of societal verification, and they supported increasing the public sharing of data from national sensors and space object catalogues.

54. In the light of the fact that the national technical means of States vary considerably, a number of experts emphasized the importance of multilateral verification of a legally binding instrument.

55. The view was also expressed that verification measures could be subsequently negotiated and incorporated as a protocol to a legally binding instrument.

56. It was stressed that voluntary transparency and confidence-building measures could not substitute for a legally binding instrument. It was also noted, however, that disarmament and arms control treaties can incorporate compulsory or non-compulsory transparency measures.

57. In that connection, a number of experts suggested various measures that could form the basis for elements in a legally binding instrument, including certain measures contained in the 2013 report of the Group of Governmental Experts on Transparency and Confidence-Building Measures in Outer Space Activities (A/68/189).

58. Such measures included: (a) information exchanges on military strategies and doctrines; (b) prelaunch notifications; (c) prelaunch inspection of dual-capable space objects; (d) enhanced registration of space objects; (e) public access to national space registries; (f) notification of scheduled manoeuvres; (g) familiarization visits to space facilities and launch sites; and (h) technology demonstrations.

#### **Elements related to international cooperation, institutional arrangements and final provisions**

59. I will now address the fourth and final substantive topic: elements related to international cooperation, institutional arrangements and final provisions.

60. With respect to international cooperation, a number of experts considered that the instrument should contain operative provisions on the right to develop technology for peaceful purposes and positive obligations for international cooperation in promoting the peaceful uses of outer space. It was emphasized that an instrument should be designed to avoid hampering peaceful activities or hindering access to dual-use technologies, such as orbital robotics and active debris removal.

61. Support was expressed for including provisions on capacity-building related to various aspects of an instrument and its implementation, including assistance in the development of national legislation, reporting and transparency, verification, space situational awareness and the responsible use of outer space. The role of regional organizations in this regard, including the African Union and European Union, was considered. A distinction was made between provisions on national assistance to parties to carry out their obligations under an instrument and provisions on more general aspects of capacity-building. One expert recalled the proposal for the development of a United Nations data platform for the exchange of information on events in outer space.

62. Various views were expressed on the institutional arrangements, including the need for a dedicated secretariat or an implementation support unit. A number of experts emphasized the importance of limiting the institutional costs as much as possible. Possible supporting roles for existing United Nations entities were recognized, including for the International Telecommunications Union and the Office for Outer Space Affairs.

63. Experts expressed various views on the requirements for entry into force of the instrument. While there was some recognition that the participation of major space-faring nations would be absolutely essential for its effectiveness, there was also recognition of the need to learn the lessons of the Comprehensive Nuclear-Test-Ban Treaty. Many experts supported an approach based on a low number of ratifications, for example 20, in addition to the participation of a qualified category of States.

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