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## **Role of United Nations entities in supporting Member States in the implementation of transparency and confidence-building measures in outer space activities**

**Special report by the Inter-Agency Meeting on Outer Space  
Activities on the implementation of the report of the Group of  
Governmental Experts on Transparency and Confidence-Building  
Measures in Outer Space Activities as pertaining to the United  
Nations system**

### **I. Introduction**

1. Acknowledging the fundamental change to the political climate created by the increasing number and type of actors engaged in space activities, as well as the strategic value and fragile nature of the outer space environment, in 2012, pursuant to General Assembly resolution 65/68, the Secretary-General established the Group of Governmental Experts on Transparency and Confidence-Building Measures in Outer Space Activities.
2. The Group, composed of 15 experts selected on the basis of equitable geographic distribution, prepared its report (A/68/189) between July 2012 and July 2013. It held three meetings and its Chair conducted consultations with relevant intergovernmental organizations during the periods between those meetings.
3. The Group agreed on a set of transparency and confidence-building measures for outer space activities, recommending that States consider their implementation on a voluntary basis. The Group also recommended that the General Assembly decide how to further advance transparency and confidence-building measures and provide for their universal consideration and support, including by referring the Group's recommendations to the Committee on the Peaceful Uses of Outer Space,



the Disarmament Commission and the Conference on Disarmament for consideration, as appropriate.

4. The Group recommended that coordination be established between the Office for Outer Space Affairs of the Secretariat, the Office for Disarmament Affairs of the Secretariat and other appropriate United Nations entities on matters related to transparency and confidence-building measures in outer space activities.

5. In accordance with General Assembly resolution 68/50, the Office for Disarmament Affairs circulated the Group's report to all relevant entities and organizations of the United Nations system. In its resolutions 69/38 and 70/53, the General Assembly requested those entities to assist in effectively implementing the conclusions and recommendations contained in the report. The General Assembly also encouraged the relevant entities and organizations of the United Nations system to coordinate, as appropriate, on matters related to those recommendations.

6. At its fifty-seventh session, in 2014, the Committee on the Peaceful Uses of Outer Space agreed that States members of the Committee should be invited to submit their views on the modalities of making practical use of the recommendations contained in the report of the Group of Governmental Experts as they related to and/or could prove instrumental in ensuring the safety of space operations (A/69/20, para. 374). Replies from Germany, Italy, the Russian Federation and the United States of America were received (A/AC.105/1080 and Add.1 and Add.2) and were considered at the fifty-second session of the Scientific and Technical Subcommittee and the fifty-eighth session of the Committee on the Peaceful Uses of Outer Space, held in 2015.

7. At its fifty-eighth session, the Committee on the Peaceful Uses of Outer Space requested the Secretariat to issue a special report by the Inter-Agency Meeting on Outer Space Activities (UN-Space) on the implementation of the report of the Group of Governmental Experts, and to include in that report information on how United Nations entities supported the implementation of transparency and confidence-building measures in outer space activities in accordance with their existing mandates, on how United Nations entities could assist Member States in implementing the recommendations of the Group, and on means to coordinate the work of United Nations entities in that regard (A/70/20, para. 339).

8. UN-Space, under the leadership of the Office for Outer Space Affairs, is the mechanism serving as the focal point for inter-agency coordination and cooperation in space-related activities within the United Nations system. The Office for Outer Space Affairs has prepared the present report in close collaboration with the Office for Disarmament Affairs, and using contributions received from the Department of Field Support of the Secretariat, the International Atomic Energy Agency (IAEA), the International Telecommunication Union (ITU), the United Nations Institute for Disarmament Research (UNIDIR) and the World Meteorological Organization (WMO).

9. The present report addresses the role of United Nations entities in supporting Member States in the implementation of transparency and confidence-building measures in outer space activities and provides an overview of the work of United Nations entities in relation to the main recommendations contained in the report of the Group of Governmental Experts on Transparency and Confidence-Building

Measures in Outer Space Activities, as appropriate and relevant to the objective of that report.

10. Owing to their political importance and interdisciplinary nature, several United Nations bodies have expressed interest in receiving more information on the implementation of transparency and confidence-building measures in outer space activities. In addition to the present report, mandated by the Committee on the Peaceful Uses of Outer Space, in its resolution 70/53, the General Assembly requested the Secretary-General to submit a report to it at its seventy-second session on the coordination of transparency and confidence-building measures in outer space activities in the United Nations system.

## **II. United Nations entities supporting Member States in the implementation of transparency and confidence-building measures in outer space activities**

11. The benefits of space science and technology are increasingly being recognized by the international community, particularly for the ways in which they can support the interrelated aims of environmental sustainability, inclusive social and economic development and global peace and security. Entities within the United Nations system make use of space science and technology to help them carry out their mandates. Space-derived geospatial data, for instance, provide strategic information that is key to decision-making and efficient management in peacekeeping operations and crisis management contexts.

12. There is also growing recognition that international cooperation in outer space activities, both between spacefaring nations and between spacefaring and non-spacefaring nations, builds transparency, trust and confidence among States. Efforts to enhance open satellite data collection and dissemination, for example, support the aim of making the benefits of space available to all States on a mutually agreeable and equitable basis. The Global Climate Observing System, the Global Terrestrial Observing System and the Global Ocean Observing System are examples of joint international undertakings that involve United Nations entities and international organizations and employ, encourage and coordinate space systems and data for collaborative observation, modelling and analysis.

13. Coordination mechanisms such as the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM), which is an intergovernmental mechanism for the global geospatial community, and the United Nations Geographic Information Working Group, which is an internal technical and operational mechanism within the United Nations, also undertake relevant work in geospatial issues. The Group on Earth Observations (GEO), which is not a United Nations entity but has a secretariat hosted by WMO, represents an additional partnership between Governments and organizations that links Earth observation resources around the world. UN-GGIM has a close strategic partnership with GEO.

14. Various United Nations entities already support Member States in the implementation of transparency and confidence-building measures in outer space activities within existing mandates. The present report describes this work and identifies ways that United Nations entities can further assist Member States in

implementing recommendations of the Group of Governmental Experts on Transparency and Confidence-Building Measures. Ways of coordinating work between entities is also addressed.

## **A. Information exchange on space policies**

### **Exchange of information on the principles and goals of a State's outer space policy**

15. Information on national space policies and activities has been reported and disseminated through the Committee on the Peaceful Uses of Outer Space since the early 1960s.

16. In its resolution 1721 (XVI) B of 20 December 1961, the General Assembly requested the Committee on the Peaceful Uses of Outer Space to provide for the exchange of information relating to outer space activities supplied by Governments on a voluntary basis, supplementing but not duplicating existing scientific and technical exchanges.

17. In 1962, the Committee on the Peaceful Uses of Outer Space decided to compile information that might be provided on a voluntary basis relating to national, regional and international programmes of peaceful space research and exploration, and information relating to governmental and non-governmental international bodies active in that field (A/5181, para. 14 (a)).

18. In its resolution 1802 (XVII) of 14 December 1962 on international cooperation in the peaceful uses of outer space, the General Assembly noted with appreciation that a number of Member States had already, on a voluntary basis, provided information on their national space programmes, and urged other States and regional and international organizations to do so.

19. Since that time, information on national space policies and activities has continued to be reported on and disseminated through the Committee on the Peaceful Uses of Outer Space, through general exchanges of views and reports submitted on national activities, as well as under specific items on the agenda of the Committee, including space debris, the long-term sustainability of outer space activities, use of nuclear power sources in outer space, space weather, near-Earth objects and national legislation relevant to the peaceful exploration and use of outer space. That reporting and information-sharing build transparency and confidence. The Office for Outer Space Affairs provides secretariat services for those mechanisms, formally requests submissions via notes verbales to Member States and produces and disseminates parliamentary documentation based on the replies received. The website of the Office for Outer Space Affairs also acts as a repository for information on related topics, such as national space debris mitigation standards,<sup>1</sup> national space legislation<sup>2</sup> and international agreements.<sup>3</sup>

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<sup>1</sup> [www.unoosa.org/documents/pdf/spacelaw/sd/Space\\_Debris\\_Compendium\\_COPUOS\\_10\\_February\\_2016.pdf](http://www.unoosa.org/documents/pdf/spacelaw/sd/Space_Debris_Compendium_COPUOS_10_February_2016.pdf).

<sup>2</sup> [www.unoosa.org/oosa/en/ourwork/spacelaw/nationalspacelaw/index.html](http://www.unoosa.org/oosa/en/ourwork/spacelaw/nationalspacelaw/index.html).

<sup>3</sup> [www.unoosa.org/oosa/en/ourwork/spacelaw/nationalspacelaw/bi-multi-lateral-agreements.html](http://www.unoosa.org/oosa/en/ourwork/spacelaw/nationalspacelaw/bi-multi-lateral-agreements.html).

20. The Office for Disarmament Affairs maintains three confidence-building mechanisms for the reporting of information on military capabilities and plans. These include the United Nations Report on Military Expenditures, the United Nations Register of Conventional Arms and a database containing information on confidence-building measures in conventional arms provided by Member States (see General Assembly resolution 69/64). They provide for transparency in military spending, in reporting on international transfers of conventional arms and in the provision of information on confidence-building measures enacted by Member States, respectively. The database covers a range of measures for, inter alia, information exchange, observation, verification and military constraint. Member States generally do not provide information on their military policies under those mechanisms.

21. To give effect to the measures recommended by the Group of Governmental Experts, Member States are encouraged to consider making use of an existing reporting mechanism for the exchange of information on the security aspects of national space policies, including information on the military aspects of major outer space research and space applications programmes. Member States could also consider requesting the Office for Disarmament Affairs and the Office for Outer Space Affairs to establish a repository for such information received from Member States.

#### **Exchanges of information on major military outer space expenditure and other national security space activities**

22. Since 2015, the Office for Disarmament Affairs has asked all Member States for information on their national space policies and strategies and on major military outer space expenditure for inclusion in the annual United Nations Report on Military Expenditures.<sup>4</sup> No Member State provided such information in their submission for the 2015 Report.

23. The General Assembly undertakes progressive efforts to improve the operation of and broaden participation in the United Nations Report on Military Expenditures. To that end, in its resolution 68/23, the General Assembly decided to establish a group of governmental experts to review the operations and further development of the reporting instrument, including the establishment of a process for periodic reviews in order to ensure the continued relevance and operation of the Report. The group commenced work in 2016 and will transmit its report to the General Assembly for consideration at its seventy-second session. The group is encouraged to consider how reporting on major military outer space expenditures can be integrated into the Report as a means of facilitating the provision of information by Member States.

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<sup>4</sup> The United Nations standardized instrument for reporting military expenditures (previously known as the United Nations System for the Standardized Reporting of Military Expenditures) was introduced pursuant to General Assembly resolution 35/142 B. The Office for Disarmament Affairs includes the request to Member States in the regular note verbale transmitted to all States on the annual submissions to the Report on Military Expenditures.

## **B. Information exchange and notification procedures related to outer space activities, including risk reduction notifications**

### **Mechanisms for information exchange and notifications under the United Nations treaties on outer space**

24. Under the five international treaties and five legal principles governing space activities,<sup>5</sup> the Secretary-General has been delegated a number of responsibilities, which primarily involve the timely dissemination of information received from States. Those responsibilities include:

(a) Maintaining the Register of Objects Launched into Outer Space (Convention on Registration of Objects Launched into Outer Space);

(b) Disseminating information relating to outer space activities (including discovery of harmful phenomena) provided by States (Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies), recovery of “foreign” astronauts in distress and/or space objects by States within their territory and their return (Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space), lunar exploration and habitation (Agreement Governing the Activities of States on the Moon and Other Celestial Bodies), remote sensing, direct broadcasting (Principles Governing the Use by States of Artificial Earth Satellites for International Direct Television Broadcasting and Principles Relating to Remote Sensing of the Earth from Outer Space);

(c) Serving as a facilitator on issues such as nuclear-powered space objects prior to launch and notifications relating to the malfunction and re-entry of nuclear-powered space objects (Principles Relevant to the Use of Nuclear Power Sources in Outer Space and Convention on International Liability for Damage Caused by Space Objects).

25. The Office for Outer Space Affairs assumes those responsibilities on behalf of the Secretary-General. The treaty implementation mechanisms of the Office have thus been oriented towards information-gathering, verification, dissemination and exchange, with information-gathering conducted on a daily basis. Presently, the primary platform used by the Office for information exchange and dissemination is its website. The website includes all documents containing information submitted by States and international intergovernmental organizations under the Registration

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<sup>5</sup> The five outer space treaties are: 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 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; and the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies. The five declarations and sets of legal principles are: the Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space; the Principles Governing the Use by States of Artificial Earth Satellites for International Direct Television Broadcasting; the Principles Relating to Remote Sensing of the Earth from Outer Space; the Principles Relevant to the Use of Nuclear Power Sources in Outer Space; 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.

Convention and General Assembly resolution 1721 (XVI) B, the Outer Space Treaty, the Rescue Agreement and the Principles Relevant to the Use of Nuclear Power Sources in Outer Space.

26. Additionally, every year, the Office for Outer Space Affairs makes available to the Legal Subcommittee of the Committee on the Peaceful Uses of Outer Space an updated table on the status of international agreements relating to activities in outer space, based on information provided by the depositories of the respective instruments. The table covers party and signatory status to the five United Nations treaties on outer space, as well as the Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and under Water and the Convention relating to the Distribution of Programme-carrying Signals Transmitted by Satellite, and instruments establishing international intergovernmental space-related institutions and organizations. The table is available on the website of the Office for Outer Space Affairs.<sup>6</sup>

### **Registration of objects launched into outer space**

27. Of the stated obligations above, the primary responsibility of the Secretary-General under the treaties is the maintenance of the Register of Objects Launched into Outer Space. The intent behind the registration of a space object with the Secretary-General is to identify which State retains jurisdiction and control over a space object and bears international responsibility for it. These factors relate to a State's potential liability for any damages that may be caused by the object.

28. While registration of space objects with the Secretary-General is a requirement for States parties to the Convention, the mechanism for voluntary space object registration established under resolution 1721 (XVI) B is still used by States who are not parties.

29. The Register should be considered the first international mechanism established for promoting transparency in outer space activities. Information contained in the Register is not intended for predicting where a satellite is at any particular time; the Register is a political tool that contains some technical information.

30. The Secretary-General has also disseminated information relating to safety assessments for nuclear-powered space objects. The most recent notification of a safety assessment was by the United States, for the Mars Surface Laboratory, launched in 2011 (A/AC.105/1012). Earlier notifications can be found on the Office for Outer Space Affairs website.<sup>7</sup>

31. In general, States that are party to the Registration Convention register their military and intelligence payloads. While not all States declare that the space objects perform those functions, most do.

32. With a view to improving space object registration, in 2007, the General Assembly adopted resolution 62/101, entitled "Recommendations on enhancing the practice of States and international intergovernmental organizations in registering space objects". The resolution, based on recommendations made available in a

<sup>6</sup> [www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/status/index.html](http://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/status/index.html).

<sup>7</sup> [www.unoosa.org/oosa/en/treatyimplementation/ost-art-xi/index.html](http://www.unoosa.org/oosa/en/treatyimplementation/ost-art-xi/index.html).

background document by the Office for Outer Space Affairs (A/AC.105/C.2/L.255 and Corr.1 and 2), has resulted in positive changes to the registration practices of States and international intergovernmental organizations. Since 2001, the Office has proactively worked with States to increase the number of States registering space objects, resolve conflicts in information provided by multiple States and harmonize the information provided by States. The Office has also developed a model registration form to assist States and organizations in registering space objects and to enhance information exchange.<sup>8</sup>

33. As part of the registration process, some States provide information beyond what is required under the Convention. A number of States with indigenous launch capabilities provide information on satellites launched by them on behalf of foreign clients (those objects are not registered by the launch provider). Similarly, the Office for Outer Space Affairs also occasionally receives information on future satellite launches (these are known as pre-launch notifications).

#### **Risk reduction notifications**

34. The Secretary-General's obligations under international space law already include the requirement for the immediate and effective dissemination of information comparable to the risk reduction notifications recommended by the Group of Governmental Experts. Historically, States have used the existing treaty mechanisms to convey information on controlled and uncontrolled re-entries of high-interest space objects, emergency situations related to nuclear power sources and intentional orbital break-ups. Depending on the circumstances, such notifications have been processed on a priority basis and disseminated immediately.

35. Past examples of notifications to the Secretary-General of the uncontrolled re-entry of high-interest space objects can be found in documents A/AC.105/648, A/AC.105/803 and A/AC.105/803/Add.1. The Secretary-General has been informed of other events that have been considered as potentially high risk, such as the Earth flyby of a nuclear-powered probe, and has also been informed of controlled high-risk re-entry events (see, for example, A/AC.105/759 and Add.1).

36. The Secretary-General has been notified of emergency situations concerning nuclear-powered space objects. Those notifications were made under article IV, paragraph 2, of the Registration Convention, prior to the adoption of the Principles Relevant to the Use of Nuclear Power Sources in Outer Space in 1992 (see, for example, ST/SG/SER.E/72 and Add.1-4, and ST/SG/SER.E/176 and Add.1-6).

37. In line with the above precedents, treaty mechanisms already established under the Office for Outer Space Affairs could be expanded to provide regular notifications relating to risk reduction in outer space activities. To facilitate the immediate and effective dissemination of such information, an online platform could be developed. States could enter information directly into the platform, and that information could be distributed to a network of national focal points. The Office's in-house capabilities in the area of space technology could be used, and grown as necessary, to validate and verify the information. Additionally, as it has done in the past through its media monitoring of space activities, the Office could identify possible relevant events for follow-up by national focal points.

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<sup>8</sup> [www.unoosa.org/oosa/en/spaceobjectregister/resources/index.html](http://www.unoosa.org/oosa/en/spaceobjectregister/resources/index.html).

38. With regard to mechanisms for information exchange and notification within the United Nations system, the Office for Outer Space Affairs is part of the Joint Radiation Emergency Management Plan of the International Organizations, the purpose of which is to coordinate the arrangements of relevant international organizations to prepare for and respond to nuclear or radiological emergencies. Its role is to facilitate information exchange on the possible re-entry of a nuclear-powered space object and the Office for Outer Space Affairs maintains a communication channel with the IAEA Incident and Emergency Centre for that purpose. This mechanism is also used by the Office for Outer Space Affairs to provide pre-launch notifications of nuclear-powered space objects to the Incident and Emergency Centre, based on information provided by States under the Outer Space Treaty and the Principles Relevant to the Use of Nuclear Power Sources in Outer Space. It has also been used to provide information on the launch of non-nuclear-powered high-interest deep space missions. The mechanism has been used by the Incident and Emergency Centre following the notification by a State of the recovery of a possible space object. In such cases, the Office for Outer Space Affairs has utilized in-house technical resources and/or requested assistance from States in identifying the space object and the responsible State.

39. ITU is the specialized United Nations agency for information and communication technologies responsible for taking such action as may be appropriate under its basic instruments. Those instruments are: the Constitution, the Convention, the Radio Regulations, the Rules of Procedure and the Recommendations. Principles of use of the orbit/spectrum resource come under article 44 of the Constitution, the allocation of frequency bands comes under article 5 of the Radio Regulations, the regulatory procedures and plans to secure access to the orbit/spectrum resource come under articles 9 and 11 and appendices 30, 30A and 30B of the Radio Regulations, and operational measures in case of harmful interference come under article 45 of the Constitution and articles 15 and 16 of the Radio Regulations. The Radiocommunication Sector of ITU, by ensuring the rational, equitable, efficient and economical use of the radio-frequency spectrum by all radiocommunications services, including those using the geostationary satellite orbit or other satellite orbits subject to the provisions of article 44 of the Constitution, creates the regulatory and technical bases for the sustainable development and effective operation of various satellite services used, in particular, for global navigation satellite systems, meteorological satellite services, fixed, mobile and broadcasting satellite services and climate monitoring and data dissemination systems by allocating the necessary radio-frequency spectrum or satellite orbit resources, carrying out studies and developing international standards on treaty status (Radio Regulations) and voluntary international standards (ITU-R Recommendations) for space-based and other telecommunication systems and networks.

40. In 2014, the Plenipotentiary Conference of ITU adopted resolution 186, on strengthening the role of ITU with regard to transparency and confidence-building measures in outer space activities. In its resolution 70/53, the General Assembly welcomed that resolution.

**Exchange of information on forecast natural hazards in outer space**

41. Under the Outer Space Treaty, the Secretary-General has responsibilities regarding the dissemination of information on outer space activities, including on the discovery of harmful phenomena. The Office for Outer Space Affairs carries out that work on behalf of the Secretary-General (see the information provided above under risk reduction notifications).

42. Although the term “phenomena” is not defined in the Outer Space Treaty, space weather phenomena is regarded as a natural hazard falling within that scope. The Scientific and Technical Subcommittee of the Committee on the Peaceful Uses of Outer Space has an item on space weather on its agenda, and the Office for Outer Space Affairs has carried out scientific and technical assistance and capacity-building in that field. The International Space Weather Initiative, for example, is an international cooperation programme to advance space weather science. The goal is to develop scientific capacity and to reconstruct and forecast near-Earth space weather. The programme includes instrumentation, data analysis, modelling, education, training and public outreach. The International Space Weather Initiative was launched in 2009 and concluded as an agenda item of the Subcommittee in 2012. International Space Weather Initiative activities continue, however, and since 2013 they have been discussed under the regular agenda item on space weather of the Subcommittee. An expert group of the Subcommittee has been established to study the topic in a more in-depth manner (see also para. 62 below).

43. The Seventeenth World Meteorological Congress, in May 2015, decided that WMO would engage in international coordination of operational space weather monitoring and forecasting, with a view to supporting the protection of life, property and critical infrastructures and related economic activities. Building on the preliminary activities conducted in this domain over the past six years, which have involved 26 WMO members working in collaboration with several United Nations organizations and entities (the International Civil Aviation Organization (ICAO), ITU and the Office for Outer Space Affairs), a four-year plan for space weather coordination has been developed. It is aimed at enabling members to establish fully operational space weather services, sharing observation data, products and best practices, and ensuring interoperability and standardization, as appropriate, to efficiently respond to global challenges. A priority objective is to coordinate a technical response to ICAO requirements for the space weather services that should be provided to international air navigation from 2018 onwards.

**Notification of planned spacecraft launches**

44. The Hague Code of Conduct against Ballistic Missile Proliferation is the result of the international community’s efforts to internationally regulate the area of ballistic missiles capable of carrying weapons of mass destruction. It is the only multilateral transparency and confidence-building instrument concerning the spread of ballistic missiles.

45. There is no specific mechanism with the United Nations system for the provision of pre-notified information on all planned spacecraft launches. In its resolutions 65/73 and 67/42, the General Assembly welcomed progress in implementing the Hague Code of Conduct against Ballistic Missile Proliferation, which contributes to enhancing transparency and building confidence among States

through the submission of pre-launch notifications and annual declarations on space and ballistic missile activity. In its resolution 69/44, the Assembly called upon States, in particular those possessing space launch vehicle and ballistic missile capabilities, to subscribe to the Code of Conduct.

46. States that subscribe to the Code of Conduct commit to exchanging pre-launch notifications on their ballistic missile and space-launch vehicle launches and test flights, including information on the generic class of the ballistic missile or space launch vehicle, the planned launch notification window, the launch area and the planned direction. Subscribing States also commit themselves to submitting an annual declaration of their country's policies on ballistic missiles and space-launch vehicles. Information received from subscribing States on notifications is kept confidential. The Ministry of Foreign Affairs of Austria serves as the Immediate Central Contact (executive secretariat) for subscribing States, of which there are 137.

47. The Office for Outer Space Affairs also currently provides some pre-launch information using open source data. For instance, it provides pre-launch notifications to the IAEA Incident and Emergency Centre on nuclear-powered satellites and other non-nuclear deep space satellite missions (see para. 38 above). The Office could expand that function, if requested to do so by Member States, perhaps making use of software similar to that used to disseminate notifications under the Hague Code of Conduct against Ballistic Missile Proliferation.

## **C. Contact and visits to space launch sites and facilities**

### **Voluntary familiarization visits**

48. The Group of Governmental Experts noted that voluntary familiarization visits can provide opportunities to improve international understanding of a State's processes and procedures for space activities (A/68/189, para. 46). As a response to that recommendation, the Office for Outer Space Affairs could assist Member States that wish to host and/or participate in voluntary familiarization visits by disseminating related communications, such as invitations.

### **Expert visits, including visits to space launch sites, and invitations to international observers to launch sites, flight command and control centres and other operations facilities of outer space infrastructure**

49. The Outer Space Treaty provides the basis for voluntary visits. Article X states that States parties to the Treaty shall consider requests by other States parties to the Treaty to be afforded an opportunity to observe the flight of space objects launched by those States.

50. Given the role of the Office for Outer Space Affairs in implementing the Secretary-General's obligations under the Outer Space Treaty, the Office is well positioned to, at the request of Member States, share information that would facilitate voluntary visits, or even organize the logistics of the visits. The broad network of governmental entities and non-governmental institutions under the mandated programmes of the Office would provide a basis for such activities. The extent to which those efforts may be undertaken will depend on the availability of resources.

**Demonstrations of rocket and space technologies**

51. Demonstrations of rockets and space technologies could be performed under the same framework as for expert visits (see paras. 49 and 50 above).

**III. Intergovernmental platforms, mechanisms and political initiatives**

52. Partnership and international cooperation are important vehicles for developing and exchanging knowledge, expertise and technologies, and in turn bolster transparency and build confidence between States. United Nations entities support Member States through various intergovernmental platforms, mechanisms and initiatives related to outer space activities, which include but are not limited to the Committee on the Peaceful Uses of Outer Space, the Conference on Disarmament, the United Nations Disarmament Commission and the General Assembly.

53. The General Assembly adopted resolution 70/27, entitled “No first placement of weapons in outer space”, on 7 December 2015. The “no first placement” pledge was proposed by the Russian Federation as an interim measure pending the negotiation and adoption of a legally binding treaty on the placement of weapons in outer space. In that resolution, the Assembly encouraged all States to make a political commitment not to be the first to place weapons in outer space. Also in the resolution, the Assembly noted the importance of the political statements made by a number of States making such a commitment, namely Argentina, Armenia, Belarus, Brazil, Cuba, Indonesia, Kazakhstan, Kyrgyzstan, Russian Federation, Sri Lanka, Tajikistan and Venezuela (Bolivarian Republic of).

54. The Office for Disarmament Affairs provided substantive support to the Chair of the 2016 substantive session of the United Nations Disarmament Commission in his efforts to seek agreement on the inclusion of an additional agenda item for the Commission, further to proposals by Member States to address the practical implementation of transparency and confidence-building measures in outer space activities. The Office for Disarmament Affairs will continue to offer its substantive support to the Chair, in view of the further consultations he will be conducting on the possible inclusion of such an agenda item at the session of the Commission to be held in 2017.

55. In July 2015, the European Union convened a multilateral meeting in New York on an international code of conduct for outer space activities, with the assistance of the Office for Disarmament Affairs. Participants discussed possible elements of a code of conduct, including its purpose, scope and general principles, and noted the value that a code could bring to promoting the safety, security and sustainability of outer space activities through transparency and confidence-building measures, thereby serving to safeguard the continued peaceful use of outer space and prevent outer space from becoming a zone of conflict.

56. At the conclusion of the meeting, the Chair noted that, based on the discussions and considering the importance afforded to the principles of openness, transparency, universality and inclusiveness, the way forward that had gained most support would be pursuing negotiations within the framework of the United Nations,

through a mandate from the General Assembly. Nonetheless, diverging views still existed among Member States regarding how to reach a multilateral agreement within the framework of the United Nations.

57. The Working Group on the Long-term Sustainability of Outer Space Activities, a working group established by the Scientific and Technical Subcommittee of the Committee on the Peaceful Uses of Outer Space in February 2010 (A/66/20, annex II, para. 5), is tasked with identifying potential risks to the long-term sustainability of outer space activities and producing voluntary guidelines to reduce those risks. The Office for Outer Space Affairs provides secretariat services to the Working Group.

58. The International Committee on Global Navigation Satellite Systems (ICG), established under the umbrella of the United Nations and serviced by the Office for Outer Space Affairs, which acts as its executive secretariat, promotes voluntary cooperation on matters of mutual interest relating to civil satellite-based positioning, navigation, timing and value-added services. ICG strives to encourage and facilitate compatibility, interoperability and transparency between all satellite navigation systems, to promote and protect the use of their open service applications, and to thereby benefit the global community.

59. Following an increasing number of requests from Member States to share positioning data and to leverage existing global positioning infrastructure in the field of geospatial information management, the UN-GGIM Working Group on the Global Geodetic Reference Frame has been successful in building consensus among Member States and policymakers about the importance of global geodesy for sustainable development. The increased understanding that geodesy is fundamental for societal positioning activities led to the General Assembly adopting resolution 69/266, on a global geodetic reference frame for sustainable development, in February 2016. Under the guidance of UN-GGIM, the global geospatial community is now developing a road map to operationalize the vision set out in the resolution.

60. The International Satellite System for Search and Rescue (COSPAS-SARSAT), a satellite-based search and rescue distress alert detection and information distribution system, is operated with the assistance of ICAO, the International Maritime Organization, ITU and other international organizations. Participants in the system work to ensure the compatibility of the COSPAS-SARSAT distress alerting services with the needs, standards and applicable recommendations of the international community.

61. International coordination mechanisms also exist to address the threat of a near-Earth object impact. The Committee on the Peaceful Uses of Outer Space established an Action Team on Near-Earth Objects, which led to the creation of the International Asteroid Warning Network (IAWN) and the Space Mission Planning Advisory Group (SMPAG). IAWN is an interface linking together the institutions performing functions such as discovering, monitoring and physically characterizing the potentially hazardous near-Earth object population and maintaining an internationally recognized clearing house for the receipt, acknowledgment and processing of all near-Earth object observations. It was established as a network that would also recommend criteria and thresholds for notification of an emerging impact threat and recommend strategies using well-defined communication plans and procedures to assist Governments in their response to predicted impact

consequences. SMPAG also has an interface role and links Member States with space agencies and other relevant entities. Its responsibilities include laying out the framework, timeline and options for initiating and executing space mission response activities as well as promoting opportunities for international collaboration on research and techniques for near-Earth object deflection. The Office for Outer Space Affairs is an observer of SMPAG.

62. The Expert Group on Space Weather, an expert group of the Scientific and Technical Subcommittee of the Committee on the Peaceful Uses of Outer Space, promotes awareness, provides guidance and enables communication and cooperation in space weather-related activities among States and relevant national and international organizations.

## **IV. Capacity-building and outreach**

63. International cooperation in the peaceful uses of outer space provides a basis for all States to develop and strengthen their capacity to undertake and/or derive benefits from space activities. The Group of Governmental Experts noted that, while there are a number of States that have acquired significant space-related capabilities, many non-spacefaring States have a strong desire to participate directly in outer space activities and to share in space technology (A/68/189, para. 50).

64. The overall capacity-building programme of the Office for Outer Space Affairs, covering space science and technology applications as well as space law and policy, constitutes a foundation for promoting transparency and confidence-building measures in outer space activities.

65. The United Nations Programme on Space Applications, implemented by the Office for Outer Space Affairs, was flagged by the Group of Governmental Experts as an example of a well-established capacity-building programme. Under the Programme on Space Applications, conferences, workshops, symposiums and training courses addressing topics related to space science, technology and education, including within the frameworks of the Basic Space Science Initiative, the Basic Space Technology Initiative and the Human Space Technology Initiative, have been and continue to be organized, in close cooperation and coordination with other relevant entities.

66. Under the United Nations Platform for Space-based Information for Disaster Management and Emergency Response (UN-SPIDER), which was established in 2006 under the Office for Outer Space Affairs, solutions are developed to address the limited access that developing countries have to specialized technologies that can be essential in the management of disasters and reduction of disaster risks. UN-SPIDER facilitates cooperation between satellite data and information providers and different groups of users of such data, such as policymakers, disaster risk managers and emergency responders, with the objective of establishing a better flow of information between all stakeholders and affected populations.

67. The Office for Outer Space Affairs also has the mandate to undertake capacity-building activities related to space law. The Office maintains a directory of education opportunities in space law and a collection of national space legislation and regulatory frameworks and international agreements on space cooperation. The

Office has coordinated the development of a space law curriculum, which forms a basic course on space law that can be used by universities and other academic institutions, in particular for the benefit of developing countries. The curriculum is complemented by supplemental reference materials and is available on the website of the Office.<sup>9</sup>

68. Dedicated United Nations/host country space law workshops have been held, hosted by Argentina, Brazil, China, Iran (Islamic Republic of), the Netherlands, Nigeria, the Republic of Korea, Thailand and Ukraine. The proceedings of the workshops have been published, and official parliamentary reports containing conclusions, observations and recommendations of the workshops have been presented to the Legal Subcommittee of the Committee on the Peaceful Uses of Outer Space.

69. The General Assembly, in its resolution 70/82, encouraged the Office for Outer Space Affairs to conduct capacity-building and outreach activities associated with space security and transparency and confidence-building measures in outer space activities, as appropriate, and within the context of the long-term sustainability of outer space activities. In that connection, the Office for Outer Space Affairs is organizing its next space law workshop, to be held in Vienna from 5 to 8 September 2016, on the theme of space law and policy in relation to space security and transparency and confidence-building measures.

70. The Office for Outer Space Affairs also provides capacity-building and guidance to assist States in their registration of space objects. Upon receipt of a submission from an accredited permanent mission to the United Nations, for instance, the Office for Outer Space Affairs verifies information on each space object using open source data. If there are perceived discrepancies, the Office enters into a dialogue with the submitting party. That process is facilitated by a network of space object registration national focal points, established in accordance with General Assembly resolution 62/101 of 17 December 2007.

71. Small and very small satellites and their applications have made it possible for an increasing number of governmental and non-governmental organizations to participate in and benefit from space activities. Recognizing the requirements under international law for all entities launching and operating satellites, the Office for Outer Space Affairs and ITU have collaborated to produce a guidance document to assist small satellite developers and operators with space object registration and frequency management. The document, available on the websites of the Office for Outer Space Affairs<sup>10</sup> and of ITU, also covers information on authorization and licensing of satellite missions and space debris mitigation measures.

72. To date, there have been two ICAO/Office for Outer Space Affairs aerospace symposiums. The first, held in 2015 in Montreal, Canada, provided a forum for various stakeholders in the aviation and space sectors to discuss aerospace innovation and the latest trends in commercial space transportation and suborbital operations, as well as regulatory mechanisms and authorization and licensing at the national level. The second symposium, held in 2016 in Abu Dhabi, expanded the dialogue between the aviation and space communities on additional topics relating

<sup>9</sup> [www.unoosa.org/oosa/en/ourwork/spacelaw/space-law-curriculum.html](http://www.unoosa.org/oosa/en/ourwork/spacelaw/space-law-curriculum.html).

<sup>10</sup> [www.unoosa.org/oosa/en/spaceobjectregister/resources/index.html](http://www.unoosa.org/oosa/en/spaceobjectregister/resources/index.html).

to space debris, space weather and other safety issues in aviation and space flight. The third symposium in the series will be held in 2017 in Vienna.

73. UNIDIR supports Member States, especially emerging space actors, in building capacity and understanding on international peace and security-related space issues, to allow for more effective participation of all space stakeholders in multilateral processes and dialogue on the development of a stable and sustainable space security regime.

74. A key part of the space security activities of UNIDIR is its annual outer space security conference series, organized together with the Secure World Foundation and The Simons Foundation. The conferences provide a forum where established and emerging actors are able to share views and explore concerns about and options for achieving greater understanding and consensus on the issues that have an impact on space security and stability initiatives.

75. UNIDIR, with the support of the European Union, carried out a project from 2012 to 2014 on facilitating the process for the development of an international code of conduct for outer space activities. The aim of the project was to frame the diplomatic process towards producing a widely accepted and implemented code.

76. UNIDIR also undertook a study looking at the reliance of “middle powers” on space resources in the context of space security, with the purpose of supporting them in understanding the strategic choices they are faced with when it comes to space security concerns. The study was aimed at supporting the development of effective approaches to space security questions relevant to current and future “middle powers” and to discuss options for action.

77. UNIDIR also provided support to the third ASEAN Regional Forum Workshop on Space Security, which was co-hosted by China, the Lao People’s Democratic Republic, the Russian Federation and the United States, building on the success of earlier regional capacity-building seminars.

78. The Office for Disarmament Affairs, in cooperation with the European Union, convened a panel discussion at the fifty-eighth session of Committee on the Peaceful Uses of Outer Space, held in Vienna in June 2015, on challenges of and opportunities for multilateral efforts for the enhancement of security and stability in outer space activities. Discussions included an exchange of views on the implementation of transparency and confidence-building measures, including a possible multilateral code of conduct. Member States are encouraged to consider co-sponsoring additional outreach activities on the margins of relevant international conferences in order to facilitate the participation of individuals with relevant expertise in the area of outer space security, safety and long-term sustainability.

79. The Office for Disarmament Affairs and the Office for Outer Space Affairs provided assistance to the Chairs of the First and Fourth Committees of the General Assembly in the organization of the joint ad hoc meeting on possible challenges to space security and sustainability, which was convened pursuant to General Assembly resolution 69/38 and held at United Nations Headquarters on 22 October 2015.

80. At that joint ad hoc meeting, Member States expressed interest in ensuring greater coordination on the implementation of transparency and confidence-building

measures in outer space between those dealing with the international peace and security (i.e., military aspects) of outer space and those dealing with the peaceful uses (i.e., civil and commercial aspects) of outer space. Member States held an exchange of views on various aspects of security in outer space that reflected the growing recognition of the need for States to address the cross-cutting aspects of security challenges in outer space in a comprehensive manner. There was also recognition of the need for the various United Nations bodies to consider how to further advance transparency and confidence-building measures and provide for their universal consideration and support. Member States voiced support for additional joint meetings of the two Committees.

81. In its resolution 70/53, the General Assembly welcomed the joint ad hoc meeting and the substantive exchange of opinions on various aspects of security in outer space that had taken place during the meeting.

82. At its fifty-fifth session, in April 2016, the Legal Subcommittee of the Committee on the Peaceful Uses of Outer Space endorsed a proposal to have a joint half-day panel discussion by the First and Fourth Committees of the General Assembly, to be held at United Nations Headquarters in New York in 2017 during the seventy-second session of the Assembly and organized jointly by the Office for Outer Space Affairs and the Office for Disarmament Affairs. The Subcommittee recommended that the discussion be held in a plenary meeting with interpretation and that it constitute a joint contribution by the First and Fourth Committees to the fiftieth anniversary of the Outer Space Treaty (A/AC.105/1113, annex I, para. 19 (c)).