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**Fiftieth anniversary of the United Nations Conference on  
the Exploration and Peaceful Uses of Outer Space: the  
Committee on the Peaceful Uses of Outer Space and global  
space governance**

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## **I. UNISPACE+50 and global space governance**

1. At present, over 60 countries operate their own satellites and our societies have become increasingly dependent on more than 1,000 operational satellites that orbit the Earth. If at a time of UNISPACE III, annual space expenditure stood at about \$100 billion, the value of outer space environment has continued to maintain a long-term growth trend and more than tripled since then. In 2014, the global space economy was worth \$330 billion, made mostly by commercial and government entities operating at the national, regional and global levels. This increased strategic value of space has resulted in a growing focus on the governance of outer space activities, their safety and sustainability.

2. Addressing challenges to humanity and sustainable development, protecting the space environment and securing the long-term sustainability of outer space activities all require further attention. The 2030 Agenda for Sustainable Development argues for stronger space governance and supporting structures at all levels, including improved space-based data and space infrastructure.

3. Building resilient societies through better coordination and forging of global partnerships is one of the key challenges in the 21st century and an integral part of meeting the commitments, set by the three key United Nations global summits in 2015, the Sendai Framework for Disaster Risk reduction 2015-2030, the 2030 Agenda for Sustainable Development and the Climate Summit (COP 21).

4. Since the beginning of the space age, international cooperation in the peaceful uses of outer space has evolved in such a way as to provide the impetus for a consideration of international mechanisms and infrastructures for space cooperation and coordination mechanisms at the international, regional, interregional and national levels.

5. The governance of space, which has been depicted as humanity's most expansive global common, has become increasingly complex due to the growing number of actors, both governmental and non-governmental, new technologies and approaches such as the public-private partnerships and private funding initiatives.

6. The concept of global space governance refers to the international action or manner (process) of governing and regulating space-related activities and as such, encompasses a wide range of instruments, institutions and mechanisms, ranging from international and regional treaties, agreements and regulations, model national laws and regulations to a wide-range of international cooperative mechanisms utilized in space cooperation, guidelines and transparency and confidence building measures, aimed at ensuring a certain level of predictability and orderly conduct of space activities.

7. For the purpose of this document, global space governance refers primarily to the institutional framework for governance of international cooperation in using outer space for peaceful purposes, including the United Nations treaties and principles on outer space, guidelines adopted by the Committee on the Peaceful Uses of Outer Space and General Assembly resolutions on outer space as well as supporting efforts at the national, regional and global levels, including those of entities of the United Nations system and international space-related entities. International initiatives for cooperation on specific aspects of the exploration and

use of outer space, such as Earth observation and global navigation as well as multilateral coordination mechanisms through which space-system operators coordinate the development of applications of space systems for the benefit of the environment, human security and welfare, and are aimed at increasing coherence and synergy in international cooperation in space activities at all levels also form an integral part of global space governance, as elaborated further in Chapter III.1.<sup>1</sup>

8. The Committee on the Peaceful Uses of Outer Space is the primary and unique United Nations body for coordinating and facilitating international cooperation in space activities with the overall mandate of strengthening the international legal regime governing outer space and working towards improved conditions for expanding international cooperation in using outer space for peaceful purposes. Through their agendas, the Committee and its subsidiary bodies, the Scientific and Technical Subcommittee and the Legal Subcommittee, promote international cooperation among spacefaring and emerging space nations and serve as an important platform for strengthening the development of space capabilities in developing countries for economic, social and scientific development.

9. As an ambitious undertaking by the Committee, the fiftieth anniversary of the first United Nations Conference on the Exploration and Peaceful Uses of Outer Space, UNISPACE+50, to take place in 2018, will consider the current status and chart the future role of the Committee, its subsidiary bodies and the Office for Outer Space Affairs as important players shaping global space governance. Furthermore, UNISPACE+50 will consider ways and means for strengthening their role within the United Nations system and the global space community at a time when the space agenda is becoming increasingly complex and more actors, both governmental and non-governmental, are involved in ventures to explore space and carry out space activities.

10. In the document entitled “Fiftieth anniversary of the United Nations Conference on the Exploration and Peaceful Uses of Outer Space: theme of the sessions of the Committee on the Peaceful Uses of Outer Space, its Scientific and Technical Subcommittee and its Legal Subcommittee in 2018” (A/AC.105/L.297), as endorsed by the Committee on the Peaceful Uses of Outer Space at its fifty-eighth session in June 2015, the Office for Outer Space Affairs was requested to prepare a draft report for the fifty-third session of the Scientific and Technical Subcommittee in 2016 in the form of a conference room paper providing an outline for the consolidation of A/AC.105/C.1/2015/CRP.15 with the UNISPACE+50 theme and an overview of the evolution of space activities over the past fifty years, in particular the increase in space activities of developing countries. The main outcome of the three UNISPACE Conferences and the review of the implementation of UNISPACE III (UNISPACE III+5) should also be addressed. Upon further guidance by the Committee and its subsidiary bodies at their respective sessions in 2016, the report should be submitted in the six official languages of the United Nations to the Scientific and Technical Subcommittee in 2017 (A/AC.105/L.297, para. 32 (d)).

11. In addressing the role of the Committee on the Peaceful Uses of Outer Space, its subsidiary bodies and the Office for Outer Space Affairs in global space

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<sup>1</sup> See also chapter II in “Governance of international cooperation in the peaceful uses of outer space”, document A/AC.105/993.

governance, the present document presents in Chapter II an historical overview of the three UNISPACE conferences and highlights their implementation processes and lessons learned, in terms of envisioned outcomes and final results. In Chapter III, the breadth of instruments, programmes and other cooperation and coordination mechanisms that resulted from UNISPACE conferences and the work of the Committee and the Office for Outer Space Affairs, are highlighted under the cross-cutting areas of (a) governance, (b) capacity-building, (c) resiliency, (d) interoperability and (e) space for sustainable development. Chapter IV connects the overview of UNISPACE conferences with the assessment of the cross-cutting areas and outlines a strategy towards UNISPACE+50.

## II. UNISPACE Conferences: Review of 50 Years of Cooperation and Development in Space

### II.1. Historical overview of the three UNISPACE Conferences

#### Main Focus of UNISPACE Conferences

**UNISPACE I (1968):** Access to and sharing of information, in particular examining opportunities and practical benefits of space science and technology applications for developing countries.

**UNISPACE II (1982):** Building capacities in developing countries, in particular focusing on technical assistance and its financing; strengthening regional cooperation (regional centres) and dealing with the concern of preventing an arms race in outer space, in order to be able to reap the benefits from the peaceful uses of outer space.

**UNISPACE III (1999):** Using space science and technology to meet global development challenges (following the Earth summit in 1992), in particular using space technology to assist in the solution of problems of regional and global significance, and strengthening the capabilities of Member States, in particular developing countries, in using the applications of space science and technology for economic, social and cultural development.

12. The United Nations has been at the centre of international cooperation in space activities since the beginning of the space age, marked by the launch of Sputnik I. The Committee on the Peaceful Uses of Outer Space evolved as a result of the recognition by the General Assembly, in its resolution 1348 (XIII), of the importance of using outer space for peaceful purposes and of the need to promote international cooperation in the conduct of space activities and through the Assembly's establishment of the permanent Committee in Assembly resolution 1472 A (XIV).

13. Due to its unique mandate and positioning at the centre of global space governance, the Committee also played a key role in the organization of the three global United Nations conferences on the exploration and peaceful uses of outer space, which, convened in Vienna in 1968, 1982 and 1999, have examined the practical benefits of space science and technology and their applications, with special relevance to the needs of developing countries and in support of global and regional development agendas and of gaining benefits for society at large.

14. Each of the UNISPACE conferences took place in a different geopolitical context but the mandate of the Committee remained flexible enough to ensure progress has been made in terms of implementing the recommendations of the three UNISPACE conferences while also gradually strengthening the mandates of the Committee and its subsidiary bodies, and the Office for Outer Space Affairs.

#### II.1.1. UNISPACE I

15. The rapid growth of space technology and its potential for applications, which has become evident by the 1960s, led to the first United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE I), held in Vienna from 14 to 27 August 1968.<sup>2</sup> UNISPACE I was convened with the prime objective to review progress in space science, technology and applications and explore their practical benefits and the opportunities available to non-spacefaring nations for international cooperation in space activities.

16. The United Nations was perceived as an important facilitator in these processes. Open to all Member States of the United Nations, UNISPACE I also brought together the entities of the United Nations system and heard reports from specialized agencies and programmes on trainings and projects aimed at facilitating developing countries in using space applications for their developmental needs.<sup>3</sup> Among recommendations of UNISPACE I, United Nations entities and specialized agencies were requested to continue to submit to the Committee on the Peaceful Uses of Outer Space progress reports on their work in the field of the peaceful uses of outer space, including on any problems that have arisen or may arise from the use of outer space in the fields within their competencies.<sup>4</sup>

17. UNISPACE I also clearly demonstrated that there was a growing demand for a wider dissemination of knowledge and achievements of space science and technology, and the promotion of its practical applications. As a result, the Office for Outer Space Affairs, which was initially established at a request by the General Assembly as a small expert unit to service the Committee on the Peaceful Uses of Outer Space and its Subcommittees, was enlarged with the establishment of the post of Expert on Space Application.<sup>5</sup> Subsequently, the Programme on Space Applications of the Office for Outer Space<sup>6</sup> was established in 1971 with a mandate to promote practical applications of space technology, create awareness of the benefits of space technology and to assist people from developing countries in

<sup>2</sup> UNISPACE I Report is contained in document A/7285 titled "Report of the Committee on the Peaceful Uses of Outer Space", *General Assembly Official Records*, Twenty-third session, Agenda item 24, 1968.

<sup>3</sup> COSPAR, FAO, IAEA, ICAO, ILO, IMCO, ITU, UNESCO, WHO, WMO.

<sup>4</sup> UNISPACE I Report A/7285, paras 36-38.

<sup>5</sup> The Office for Outer Space Affairs was initially established as a small expert unit, following the General Assembly request to render assistance to the Ad Hoc Committee on the Peaceful Uses of Outer Space in 1959 and became a unit within the Department of Political and Security in 1962. In the year of UNISPACE I, 1968, the Office was transformed into an Outer Space Division within that Department and then into the Office for Outer Space Affairs within the Department of Political Affairs in 1992. Since 1993, when the Office has been relocated from New York to the United Nations Office at Vienna, it has also been servicing the Legal Subcommittee, which had previously been serviced by the Office of Legal Affairs. (See A/CONF.184/6, p. 90, footnote 16).

<sup>6</sup> Then titled United Nations Outer Space Division. See also footnote 5.

acquiring the knowledge, skills and practical experience necessary for their application.

18. Demonstrating that important and practical application of space research for the benefit of humankind had already been developed and proven during the first decade of the space age, UNISPACE I served as an important platform for exchange of information and consultation in the field of practical application of space technology and as an impetus for considering the establishment of fellowships and technical assistance in support of national efforts to develop space activities, with the Office for Outer Space Affairs<sup>7</sup> now mandated to carry out programmes designated to disseminate information and provide training in the practical applications of space technology, in particular in developing countries.

#### *II.1.2. UNISPACE II*

19. By the time UNISPACE II (UNISPACE 82) was convened in Vienna from 9 to 21 August 1982, it was estimated that an average of some 120 satellites were launched annually with over 100 countries using remote-sensing data, that about 150 countries have been using space communication and with more than 220 stations for the direct reception of image data from meteorological satellites in operation.

20. At the same time, the United Nations Conference on Science and Technology for Development, which convened in 1979 in Vienna, estimated that 95 per cent of all research and development was conducted by developed countries, while developing countries, which represented 70 per cent of the world's population at the time, had only 5 per cent of the world's research and development capacity, including in space science and technology.<sup>8</sup>

21. Against this background, UNISPACE II focused on greater cooperation in space science and technology between developed and developing countries as well as among developing countries, and on intensifying efforts to promote a wider exploitation of space technology and applications by developing countries as a powerful tool for accelerating national development. Several other important issues were discussed, among them, the allocation of the geostationary orbit, direct broadcasting by satellites and remote sensing. However, one of the primary concerns of UNISPACE II were the issues of maintaining the outer space for peaceful purposes and preventing an arms race in outer space as these were essential conditions for the promotion of international cooperation in the exploration and uses of outer space for peaceful purposes.

22. UNISPACE II recommended appropriate assistance in support of the growth of indigenous nuclei and capacity-building in space technology in developing countries with the General Assembly in its resolution 37/90 of 10 December 1982 subsequently calling upon the Secretary-General to strengthen the Office of Outer Space Affairs<sup>9</sup> to be able to implement UNISPACE II recommendations on promotion of greater exchange of actual experiences with specific applications, provision of technical advisory services on space applications projects upon the

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<sup>7</sup> Then titled United Nations Outer Space Division. See also footnote 5.

<sup>8</sup> Ibid.

<sup>9</sup> Then still titled the Outer Space Affairs Division.

request by Member States or any specialized agencies and the development of fellowship programmes for in-depth training of space technology and applications specialists, among others.<sup>10</sup>

23. UNISPACE II also called for strengthened regional cooperation, which led to the establishment of regional centres for space science and technology education in existing national/regional educational institutions in developing countries with the support of the United Nations, pursuant to General Assembly resolution 45/72 of 11 December 1990.<sup>11</sup>

24. The implementation of the UNISPACE II recommendations nevertheless relied mainly on voluntary contributions by States, including for all new and expanded activities of the Office for Outer Space Affairs, as was decided by the General Assembly in its resolution 37/90 and resulted in a limited progress in the implementation.

25. In the years that followed UNISPACE II, space applications and the use of space technology forged rapidly ahead. The number of countries with space capabilities and countries using space technology and applications increased as well as the role of the commercial sector and the number of non-governmental actors in space arena.

26. Major advances have also been made in space-based observations of the Earth's atmosphere, oceans, surface and biosphere. Satellite communications have resulted in greater global interdependence and brought distant parts of the world closer together. In addition to services in the field of transportation, new applications of global navigation satellite systems have emerged in such areas as surveying and mapping, Earth sciences, agriculture, environmental monitoring, disaster management, telecommunications and precision timing.

27. At the same time, the Committee recognized the increasing challenges faced by humanity due to rapid population growth, resulting in the expansion of human activities, in particular industrial activities, and in increasing demand to meet the basic needs of people, continued to have an adverse impact on the condition of the planet, including land and coastal degradation, air and water pollution, loss of biodiversity, deforestation and degradation of living conditions. These challenges were addressed in the series of United Nations global conferences held in the 1990s, and in the early 2000s, including the United Nations Millennium Summit in 2000, which repeatedly stressed the importance of sustainable development for all humanity.

### *II.1.3. UNISPACE III*

28. The end of the Cold War, the emergence of new issues regarding sustainable development, the advances made in space science and technology, and the increase in the number of emerging space nations led to the consensus to organize the UNISPACE III conference, convened from 19 to 30 July 1999 in Vienna. Influenced also by the United Nations Conference on Environment and Development, the so-called "Earth Summit", held in Rio de Janeiro, Brazil, in 1992, which concluded

<sup>10</sup> See para. 7 (a)-(g), and paras. 8 and 9 of the General Assembly Resolution 37/90 of 10 December 1982.

<sup>11</sup> Ibid., para. 11 and General Assembly resolution 45/72 of 11 December 1990.

with Agenda 21 as a non-binding, voluntarily implemented action plan of the United Nations with regard to sustainable development, UNISPACE III expanded the notion of international cooperation in the peaceful uses in outer space by looking into how space could help humankind in tackling global problems, from protecting the Earth's environment and managing its resources to using space applications for human security, development and welfare.

29. UNISPACE III was unique in its organizational aspects as it was the first such United Nations conference on outer space issues in which industry and civil society were participating in partnership with Governments. This innovative approach reflected the increasing use of space for economic purposes and the growing importance of commercial sector in this endeavour.<sup>12</sup>

30. UNISPACE III was convened as a special session of the Committee on the Peaceful Uses of Outer Space, open to all Member States and organized within existing resources. As part of the Conference, a Technical Forum with 40 workshops, seminars, round-table meetings and discussion panels was held. An important role was also played by the regional preparatory conferences, which served to consolidate regional inputs for the Conference.<sup>13</sup>

31. The most important result of UNISPACE III was the adoption of the Vienna Declaration on Space and Human Development, which provided the nucleus of a strategy to address global challenges at the brink of the 21st century, comprising 33 specific recommendations that addressed global challenges and were subsequently endorsed by the General Assembly in its resolution 54/68 of 6 December 1999. In the Vienna Declaration, UNISPACE III also invited the General Assembly to declare the period from 4 to 10 October each year World Space Week, in order to celebrate at the international level each year the contributions that space science and technology can make to the betterment of human living conditions.

32. UNISPACE III strengthened the role of the Office for Outer Space Affairs in supporting Member States in building their national space infrastructures as well as in supporting the intergovernmental processes in the area of space activities that take place within the United Nations framework. The Office was vested with a mandate to conduct capacity-building activities in space law and policy. In addition, the implementation of various recommendations of UNISPACE III led to the establishment in 2005 of the International Committee on Global Navigation Satellite Systems (ICG), to which the Office serves as the Executive Secretariat and to the establishment of the United Nations Platform for Space-based information and Emergency Response (UN-SPIDER) as a programme of the Office for Outer Space Affairs in 2006.

33. In contrast to the follow-up process of UNISPACE II, the emphasis in the implementation of the recommendations of UNISPACE III was placed on the primary responsibility of Member States to lead to the implementation of various recommendations through national programmes and through bilateral and multilateral cooperation, in particular through the work of action teams under the

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<sup>12</sup> See "Report of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (Vienna, 19-30 July 1999)", document A/CONF.184/6.

<sup>13</sup> See General Assembly Resolution A/RES/59/2 and Proceedings ST/SPACE/1.



voluntary leadership of Member States. This permitted progress to be made throughout the year and helped to avoid sole reliance on the resources available to the Secretariat, while ensuring that primary responsibility for providing policy guidance on and coordinating implementation at the global level remained with the Committee and its subsidiary bodies through their consideration of agenda items.

34. Through the implementation of the recommendations of UNISPACE III, the focus on the dual-use character of space applications shifted to civil and industrial uses for the promotion of sustainable development, including protecting the Earth's environment and managing its resources; using space applications for human security, development and welfare; advancing scientific knowledge of space and protecting the space environment; enhancing education and training opportunities; strengthening space activities in the United Nations system; and promoting international cooperation.

*II.1.4. UNISPACE III + 5 — Review of the implementation of UNISPACE III recommendations*

35. At the international level, the Committee on the Peaceful Uses of Outer Space has coordinated the efforts to implement the recommendations of UNISPACE III. More than 50 Member States and some 40 intergovernmental and non-governmental organizations, including 15 entities of the United Nations system, participated in the work of the 12 action teams, which were established by the Committee in 2001 and 2003, under the voluntary leadership of Member States to translate priority recommendations into specific actions. The Office for Outer Space Affairs also prepared a plan of action for contribution to the implementation of specific recommendations.

36. The recommendations of the action teams on the way forward were based on a comprehensive, global review of the current status of the activities that relate to the recommendations of UNISPACE III under their responsibility. The assessments by the actions teams, unprecedented in both scope and depth, were conducted without an increase in the regular budget of the programme on the peaceful uses of outer space. Their analysis of the current situation, their findings on the impediments to making space technology work effectively to solve the most acute problems faced by humanity and their recommendations on how to do so constituted a solid foundation for the implementation phase. The implementation of the priority recommendations through the action teams also led to the development of international action-oriented networks to address the use of space applications as a tool to solve global problems. To date, however, several coordination mechanisms and platforms, established as a result of UNISPACE III recommendations, such as UN-SPIDER and ICG, which have become even more vital for supporting the implementation of the global development agendas, continue to rely mainly on voluntary contributions.

37. Following UNISPACE III, the Committee and its subsidiary bodies established several new mechanisms for facilitating the implementation of the Conference's recommendations. The structure of the agendas of the two Subcommittees was revised to enable the introduction on new agenda items under multi-year work-plans or single items for discussion. The revised structure of the agendas enabled those bodies to provide policy guidelines to the action teams to implement the recommendations of UNISPACE III.

38. In 2004, the Committee conducted a five year review of the mechanisms for and progress made in implementing the recommendations of UNISPACE III conference, identified synergies between the implementation of those recommendations and the results of global conferences held within the United Nations system and other global initiatives and proposed a plan of action for further implementing the recommendations of UNISPACE III, stressing that any progress achieved in the implementation of the recommendations of UNISPACE III saw also a progress towards achieving internationally agreed development goals.<sup>14</sup>

39. The review of the UNISPACE III conference, as contained in the report of the Committee,<sup>15</sup> provided a road map for the further development of space capabilities to advance human development through making space tools more widely available by moving from the demonstration of the usefulness of space technology to a more broadly based operational use of space-based services. The plan of action (A/59/174, Chapter VI, para. 228-316) proposed further specific actions in the following areas: (a) Use of space to support overarching global agendas for sustainable development; (b) Developing coordinated, global space capabilities; (c) Use of space to support specific agendas to meet human development needs at the global level; and (d) Overarching capacity development. The plan of action also identified entities willing to undertake some of those actions.

40. In implementing the plan of action<sup>16</sup> in the areas detailed above (para. 38, (a)-(d)), the Committee was to provide a bridge between users and potential providers of space-based development and services by identifying needs of Member States and coordinating international cooperation to facilitate access to the scientific and technical systems that might meet them, while observing the interaction between different stakeholders in the future implementation of the strategy and building upon the respective roles and needs of actors involved in the wider space community.

41. Other important achievements include the successful conclusion of work by the Scientific and Technical Subcommittee Working Group on Space Debris, which led to the adoption by the General Assembly of the Space Debris Mitigation Guidelines in 2007; the results of the Working Group on the Use of Nuclear Power Sources in Outer Space, which jointly with the International Atomic Energy Agency in 2009 published the Safety Framework for Nuclear Power Sources Applications in Outer Space and the conclusion of the work of the Scientific and Technical Subcommittee Working Group on Near-Earth Objects (NEOs) and the Action Team on NEOs, which finalized recommendations for an international response to a NEO threat, resulting in the establishment in 2013 of the International Asteroid Warning Network (IAWN) and the Space Mission Planning Advisory Group (SMPAG). The Action Team on Space and Global Health also eventually led to the establishment in 2015 of a dedicated expert group under the Scientific and Technical Subcommittee.

42. Through the implementation process, the Committee on the Peaceful Uses of Outer Space also established closer links with the work of the Commission on Sustainable Development by contributing to its multi-year thematic clusters, paving

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<sup>14</sup> See “Review of the implementation of the recommendations of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space”, document A/59/174, and plan of action contained in chapter VI (paras. 228-316) of that document.

<sup>15</sup> Ibid.

<sup>16</sup> Ibid.

the way for further recognition of space tools as drivers for socioeconomic sustainable development and their contribution to the objectives of the United Nations Conference on Sustainable Development (Rio+20), held in Rio de Janeiro, Brazil, from 20 to 22 June 2012.

#### II.1.5. Following UNISPACE Conferences and their review: progress and limitations

##### Main accomplishments of UNISPACE Conferences

###### UNISPACE I (1968):

- *Outcomes:* Institutionalized the support to access to and sharing of information on practical benefits of space science and technology applications for developing countries (trainings, fellowships), including through strengthening and expanding the mandate of the Office for Outer Space Affairs to assist developing countries.
- *New mechanisms:* Establishment of the United Nations Programme on Space Applications.
- *Implementation and funding:* Regular budget; through international cooperation among Member States and through the Office for Outer Space Affairs,<sup>17</sup> United Nations inter-agency cooperation.

###### UNISPACE II (1982):

- *Outcomes:* Strengthened indigenous capacities of developing countries in using space science and technology for development, to a limited extent due to lack of financing; strengthened regional cooperation; strengthened importance of prevention of an arms race in outer space.
- *New mechanisms:* Establishment of regional centres for space science and technology education.
- *Implementation and funding:* Voluntary contributions; through national and regional efforts and international cooperation among Member States, through the Office for Outer Space Affairs, its Programme on Space Applications and regional centres for space science and technology education, affiliated to the United Nations; and the United Nations inter-agency cooperation mechanism.

###### UNISPACE III (1999)

- *Outcomes:* 33 recommendations, grouped into six categories: (1) Protecting the Earth's environment and managing its resources (5 recommendations); (2) Using space applications for human security, development and welfare (6 recommendations); (3) Advancing scientific knowledge of space and protecting the space environment (5 recommendations); (4) Enhancing education and training opportunities and ensuring public awareness of the importance of space activities (7 recommendations); (5) Strengthening and repositioning of space activities in the United Nations system (6 recommendations); (6) Promoting international cooperation (4 recommendations).

<sup>17</sup> Then titled United Nations Outer Space Division, see also footnote 5.

- *New mechanisms:* Establishment of ICG and UN-SPIDER; establishment of mechanisms in NEO-coordination activities — IAWN/SMPAG; establishment of expert groups of the Scientific and Technical Subcommittee on global health and space weather.
- *Implementation and funding:* Both implementation and funding through dedicated commitments by Member States chairing over the 12 action teams, the Office for Outer Space Affairs under the guidance of the Committee and its subsidiary bodies; intergovernmental organizations for multilateral cooperation and other entities with space-related activities, including non-governmental entities and the young generation; the regional centres for space science and technology education, affiliated to the United Nations; and the United Nations inter-agency cooperation mechanism. Implementation also through re-structuring of the agendas of the Committee and its Subcommittees to facilitate the consideration of 33 specific actions contained in the Vienna Declaration.

43. Although there was no official review of recommendations of UNISPACE I, this first global conference on the exploration and peaceful uses of outer space gave an important impetus to the development of awareness of the benefits that could be derived from the applications of space technologies and to encourage training and education programmes to enable officials from developing countries to gain practical experiences in these applications. Over the course of 1970s, space applications programmes were also developed by the United Nations and the specialized agencies concerned with telecommunications, meteorology, disaster risk reduction, environment monitoring and remote sensing for agriculture, forestry, geology, cartography and other resource development applications.

44. The review of recommendations of UNISPACE II (82) was conducted by the Working Group of the Whole of the Scientific and Technical Subcommittee, which identified several follow-up actions that needed attention if the UNISPACE II recommendations were to be met, including the need for a greater international understanding to overcome the difficulties faced by the developing countries in terms of free exchange of scientific and technological information, the transfer of technologies and lift of undue restrictions on the sale of components, subsystems or systems required for peaceful space applications.

45. Moreover, to allow for the implementation of UNISPACE II recommendations, Member States and international organizations were urged to provide cash and in-kind contributions for activities of the Programme on Space Applications of the Office for Outer Space Affairs, in particular for those that were not implemented due to a lack of financing. The Office was namely requested by the General Assembly in its resolution 37/90, which endorsed the UNISPACE II recommendations, to implement all new and expanded activities funded mainly through voluntary contributions as well as through the rearrangement of priorities within the next regular budget of the United Nations.<sup>18</sup>

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<sup>18</sup> Review of the implementation of recommendations of UNISPACE II is contained in the reports of the Working Group of the Whole of the Scientific and Technical Subcommittee (A/AC.105/672, Annex II) and General Assembly resolution 39/90 of 10 December 1982, para.9.

46. The UNISPACE III conference concluded with quite a substantive number of 33 recommendations, including a provision that their implementation is to be reviewed in five years. It has therefore undergone the most comprehensive review, as reflected in paragraphs 34-42 above.

47. The role of the Governments of Member States was critical in making progress in the implementation of the recommendations of UNISPACE III. The General Assembly in its resolution 59/2 of 3 December 2004 recognized that the responsibility for implementing the recommendations rested with Member States, the Office for Outer Space Affairs under the guidance of the Committee and its subsidiary bodies, intergovernmental organizations for multilateral cooperation and other entities with space-related activities, including non-governmental entities and the young generation.

48. Despite the fact that there was still limited awareness of space benefits for society at large and therefore space activities have not been assigned a high priority in many States, which also resulted in limited resources being allocated to support space activities, much has been accomplished in the UNISPACE III implementation, in particular due to well-defined responsibilities and commitments for implementation and through the work of the Committee. To date, however, several coordination mechanisms and platforms, established as a result of UNISPACE III recommendations, such as UN-SPIDER and ICG, which have become even more vital for supporting the implementation of the current global development agendas, continue to rely mainly on voluntary contributions.

49. In order for government agencies, research institutions and non-governmental entities to receive broad support from policy makers and the general public for their activities, objectives had to be clearly defined, realistic and linked to the priorities of society at large and the benefits to be derived, including short-term benefits, must be well articulated. The successful implementation of any recommendation that involves Governments requires a commitment by policy makers in terms of the level of priority assigned to the space-related activity and the allocation of financial and human resources.

### **III. Cross-cutting areas unique to the Committee on the Peaceful Uses of Outer Space and the Office for Outer Space Affairs**

50. In identifying a core set of thematic priorities for UNISPACE+50, to be agreed upon by the Committee and its Subcommittees in 2016, the Committee and its Subcommittees shall consider the cross-cutting areas of governance, capacity-building, resiliency, interoperability and space for sustainable development, addressed below under (a) to (e), as endorsed by the Committee at its fifty-eighth session in 2015, which are unique to the work of the Committee, its subsidiary bodies and the Office for Outer Space Affairs as well as closely related to the goals of the three global development agendas, adopted by the international community in 2015: the Sendai Framework for Disaster Risk Reduction 2015-2030, the 2030 Agenda for Sustainable Development and the Paris Climate Agreement. The cross-cutting areas, as identified in document A/AC.105/L.297 also most adequately reflect the current activities of the Office for Outer Space Affairs, as mandated by

the Committee on the Peaceful Uses of Outer Space Affairs and by the General Assembly.

**(a) Governance**

51. The Committee has been instrumental in the development of the legal regime governing activities in outer space for peaceful purposes established through the five space law treaties and the five sets of principles and declarations on outer space. The fundamental principles laid down in the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (Outer Space Treaty) have been further made manifest in the subsequent treaties and sets of principles and declarations adopted by the General Assembly.<sup>19</sup>

52. The space treaties include a number of confidence-building measures that States have asked the United Nations to act upon. The United Nations Register of Objects Launched into Outer Space Register, entrusted with the Office for Outer Space Affairs, and which is the central repository of official information provided by States on Space Objects in accordance with the Convention on Registration of Objects Launched into Outer Space or, on a voluntary basis, under General Assembly resolution 1721 B, has been maintained by the Office since 1962. To date, over 92 per cent of 7,200 satellites, probes, landers, manned spacecraft and space station flight elements launched into Earth orbit or beyond have been registered with the Secretary-General.

53. The Vienna Declaration called for action to promote the efforts of the Committee on the Peaceful Uses of Outer Space in the development of space law by inviting States to ratify or accede to, and inviting intergovernmental organizations to declare acceptance of, the outer space treaties developed by the Committee. Following UNISPACE III, the number of ratifications of all five treaties on outer space increased. As at January 2015, the number of States that had ratified 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”, General Assembly resolution 2222 (XXI), annex) had increased from 95

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<sup>19</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 (General Assembly resolution 2222 (XXI), annex); the Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (Assembly resolution 2345 (XXII), annex); the Convention on International Liability for Damage Caused by Space Objects (Assembly resolution 2777 (XXVI), annex); the Convention on Registration of Objects Launched into Outer Space (Assembly resolution 3235 (XXIX), annex); and the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (Assembly resolution 34/68, annex); 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 (Assembly resolution 1962 (XVIII)); the Principles Governing the Use by States of Artificial Earth Satellites for International Direct Television Broadcasting (Assembly resolution 37/92, annex); the Principles Relating to Remote Sensing of the Earth from Outer Space (Assembly resolution 41/65, annex); the Principles Relevant to the Use of Nuclear Power Sources in Outer Space (Assembly resolution 47/68) 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 (Assembly resolution 51/122, annex).

in 1999 to 103; for the Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (the “Rescue Agreement”, General Assembly resolution 2345 (XXII)), the figure rose from 85 to 94; for the Liability Convention, from 80 to 92; for the Registration Convention, from 40 to 62; and for the Agreement Governing the Activities of States on the Moon and other Celestial Bodies (the “Moon Agreement”, Assembly resolution 34/68, annex), from 9 to 16. The Legal Subcommittee, in particular, is continuing its efforts and is considering further measures to increase the number of States that ratify or accede to the outer space treaties and the number of intergovernmental organizations that declare acceptance of them.

54. The unique positioning of the Committee and its Subcommittees as a global platform for international cooperation in the peaceful uses of outer space and dialogue among major space-faring nations and emerging space nations, has also been reaffirmed through the increasing number of States that have become members of the Committee, from the initial 24 States at the establishment of the Committee as a permanent body in 1959 to the current 83 States members of the Committee.

55. In 1962, the Committee began to invite to its meetings international organizations that promoted the peaceful uses of outer space. At its second meeting, the Committee invited the Committee on Space Research (COSPAR), along with the United Nations entities UNESCO, ITU and the World Meteorological Organization (WMO), to become permanent observers. Organizations having permanent observer status with the Committee have received a standing invitation to its annual sessions and those of its subsidiary bodies and have been given opportunities to address the Committee and its subsidiary bodies in their open meetings. At the time of UNISPACE III, 13 organizations had permanent observer status with the Committee. Since UNISPACE III, there has been an increase in the number of intergovernmental and non-governmental entities granted permanent observer status with the Committee, currently amounting to 33.

56. Furthermore, the Committee and its Subcommittees, through their agendas and the work of the working- and expert groups, constantly monitor the advances in space technology and the rapidly evolving space agenda with a view to developing new mechanisms reflective of these new complexities in space activities, including addressing the broader concept of space security, transparency and confidence-building measures in outer space and working towards securing the long-term sustainability of outer space activities.

57. In their contribution to strengthening the overall space governance, the Committee, and in particular its Legal Subcommittee, have not only worked on the elaboration of treaties and principles on outer space but are also looking at States’ practices in implementing the existing regulations in their national legislations, which has led to the creation of valuable databases on national legislation relevant to peaceful exploration and uses of outer space.

58. Moreover, the on-going process of reviewing international mechanisms for cooperation in outer space activities by the Legal Subcommittee and its dedicated working group on this issue, revealed the breadth, diversity and important elements of the mechanisms utilized in space cooperation, which all constitute important elements of the overall governance of space, including legally binding multilateral and bilateral agreements; memorandums of understanding; non-legally binding

arrangements, principles and technical guidelines; multilateral coordination mechanisms through which space-system operators coordinated the development of applications of space systems for the benefit of the environment, human security and welfare, and development.

59. Since the early 2000s, the Legal Subcommittee also completed three successful working groups resulting in the following General Assembly Resolutions: resolution 59/115 of 10 December on the application of the concept of the “launching state”, resolution 62/101 of 17 December 2007 on recommendations for enhancing the practice of states and international intergovernmental organizations in registering space objects, and resolution 68/74 of 16 December 2013 on recommendations on national legislation relevant to the peaceful exploration and use of outer space.

60. Another milestone reached by the Legal Subcommittee in the 2000s was the agreement on some aspect concerning geostationary orbit, including a recommendation that where coordination is required between countries with a view to the utilisation of satellite orbits including the geostationary satellite orbit, the countries concerned should take into account the fact that access to that orbit has to take place *inter alia* in an equitable manner and according to the Radio Regulations of the International Telecommunications Union (ITU).

61. Moreover, the work carried by the Working Group of the Scientific and Technical Subcommittee on Space Debris resulted in adoption, by the Committee of the Space Debris Mitigation Guidelines and their subsequent endorsement by the General Assembly Resolution 62/217 of 21 December 2007.

62. In meeting the need to comprehensively address the present challenges in using outer space for peaceful purposes pertaining to the long-term sustainability of outer space activities, the Scientific and Technical Subcommittee established in 2010 a dedicated working group tasked with recommending a set of guidelines containing voluntary best-practices for all space actors to help ensure the long-term sustainable use of outer space.

63. In this context, the Committee has also considered since 2014 the broader perspective of space security and associated matters that are instrumental in ensuring the safe and responsible conduct of space activities, in line with the report of the Group of Governmental Experts on Transparency and Confidence-Building Measures in Outer Space Activities (GGE report, A/68/189) which contains several concrete measures aimed at ensuring the safety, security and sustainability of outer space activities in the long-term, and in accordance with the corresponding General Assembly resolutions 68/50, 69/38 and 70/53.

64. In line with the GGE report and a growing recognition of the need to comprehensively address the cross-cutting aspects of safety and security under the broader concept of space security as well as to strengthen the coordination of transparency and confidence-building measures in outer space activities in the United Nations system,<sup>20</sup> the Office for Outer Space Affairs established closer links with other United Nations entities, including the Office for Disarmament Affairs, to enhance cooperation and coordination aimed at strengthening the overall governance of outer space.

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<sup>20</sup> As mandated by the General Assembly resolution 70/73.



65. Another important segment in global space governance represents the United Nations inter-agency coordination mechanism on outer space activities, which was established shortly after the first UNISPACE conference, in 1974. Branded as UN-Space since 2014, this unique coordination mechanism in space-related activities in the United Nations, has been serving, under the leadership of the Office for Outer Space Affairs, as a focal point for inter-agency coordination and cooperation among the United Nations entities that routinely make use of space technologies and their applications in a wide range of activities under their respective mandates.

66. The substantive issues on the agenda of UN-Space have been primarily related to the implementation of major conferences, events and initiatives, including recommendations of the three UNISPACE conferences, the Millennium Development Goals and the Agenda 21, the World Summit on Information Society to the present post-2015 global development agenda.

67. Moreover, to make use of UN-Space as a unique United Nations coordination mechanism in space-related activities, the General Assembly in its resolution 70/82 noted with satisfaction that the Office for Outer Space Affairs will issue a special report by UN-Space for consideration by the Committee on the Peaceful Uses of Outer Space at its session in 2016 on the implementation of the GGE report as pertaining to the United Nations system, and coordinate the preparation of that report with relevant United Nations entities.

**(b) Capacity-building**

68. Capacity-building, as a mechanism for building and strengthening national space infrastructures and for increasing awareness among decision makers of the benefits of space science and technology and their applications in addressing societal needs for sustainable development, represents another central element in the work of the Committee, and includes activities of States members of the Committee and permanent observers to the Committee, and the work undertaken by the Office for Outer Space Affairs under its central role in fostering capacity-building in the use of space science and technology and their applications for the benefit of all countries, in particular developing countries, and through the regional centres on space science and technology education, affiliated to the United Nations.

69. The Office for Outer Space Affairs has placed capacity-building among its core activities, as called upon by the three UNISPACE conferences and mandated by the Committee, in particular building capacity in the use of space science and technology in developing countries, raising awareness of socio-economic benefits of space technology applications at the national, regional, and international levels, fostering institutional capacities in managing disaster risk reduction, and promoting capacity-building in space law and policy to meet the need for strengthened capacities of all countries in developing their national space activities.

70. Following recommendations of UNISPACE III, which established a dedicated action team on capacity-building, the Office has expanded its capacity-building activities to the area of space law and policy. Capacity-building in disaster risk reduction is an essential pillar of the Office's programme UN-SPIDER. Furthermore, the General Assembly in its resolution 70/82 of 15 December 2015, encourages the Office to conduct capacity-building and outreach activities on

transparency and confidence-building measures within the context of the long-term sustainability of outer space activities.

71. An important dimension of capacity-building to assist States in the development of their space capabilities is represented through regional and interregional cooperation in the field of space activities. To that end, close ties of the Committee with regional and interregional intergovernmental entities and mechanism for coordination and cooperation in space activities, such as the European Space Agency, the Asia-Pacific Space Cooperation Organization, the Asia-Pacific Regional Space Agency Forum, the African Leadership Conference on Space Science and Technology for Sustainable Development and the Space Conference of the Americas have been essential.

72. Further strengthening the regional component of capacity-building in space science and technology applications are the regional centres for space science and technology education, affiliated to the United Nations, established as one of the important outcomes of UNISPACE II conference. Currently, there are six regional centres, affiliated to the United Nations, namely, the African regional centres for space science and technology education in the French and English languages, located in Morocco and Nigeria, respectively, the Regional Centre for Space Science and Technology Education for Asia and the Pacific, located in China, the Centre for Space Science and Technology Education in Asia and the Pacific, located in India, the Regional Centre for Space Science and Technology Education for Latin America and the Caribbean, with campuses located in Brazil and Mexico, and the Centre for Space Science and Technology Education for Western Asia, located in Jordan.

73. Moreover, a number of entities of the United Nations system, as reflected in UN-Space reports,<sup>21</sup> carry out capacity-building activities in space applications for the benefit of developing countries. The inter-agency coordination bodies that have direct or indirect relevance to space-related activities have started to emerge following UNISPACE III; one such example is coordination of United Nations activities related to geospatial information management, undertaken by the United Nations Geographic Information Working Group, comprising 35 United Nations departments, offices, programmes and specialized agencies, and United Nations entities, which seeks to develop and maintain a common geographic database as a crucial capacity-building effort to enhance normative, programme and operational capabilities and efficiencies within the United Nations system, and was co-chaired by the Office for Outer Space Affairs together with the Department of Safety and Security in 2013-2015.

74. Capacity-building in the use of space science and technology and their applications is also vital to ensure that space activities support development agendas. Strengthening the capabilities of Member States, especially developing countries, to use the results of space research for economic and cultural development has come further to the foreground of the work of the Committee through promoting the exchange of experiences and information, as well as coordination of capacity-building efforts in a systematic manner at the global and regional levels among Member States and national and international space-related

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<sup>21</sup> UN-Space reports are available at: [http://www.unoosa.org/oosa/en/ourwork/un-space/reports\\_publications.html](http://www.unoosa.org/oosa/en/ourwork/un-space/reports_publications.html).

entities, including the private sector. This has been further reinforced through the interlinkages among the agenda items of the Committee and its Subcommittees, such as the relationship between agenda item on national space legislation and capacity-building in space law of the Legal Subcommittee since capacity-building efforts are essential for promoting an understanding of national requirements of space activities, in particular due to different constitutional and legal systems worldwide.

**(c) Resiliency**

75. Building resilient societies through better coordination and forging of global partnerships is one of the key challenges in the 21st century and an integral part of meeting the commitments, set by the three key United Nations global summits in 2015, the Sendai Framework for Disaster Risk reduction 2015-2030, the 2030 Agenda for Sustainable Development and the Climate Summit (COP 21). Strengthening the use of space for resiliency relates to the ability to depend on space systems and to respond to the impact of events such as adverse space weather, natural disasters and near-Earth object impact threats.

76. In the area of disaster risk reduction and the use of space-based technologies for disaster prevention and mitigation, the United Nations has carried out a sustained effort since the 1990s, with important role attributed to the coordinated applications of space technology, such as Earth observation and meteorological satellites, communications satellites and satellite navigation and positioning systems in the implementation of the Hyogo Framework for Action 2005-2015, adopted at the second World Conference for Disaster Reduction at Kobe, Hyogo, Japan.

77. As a result of UNISPACE III and further consideration by the Committee on the Peaceful Uses of Outer Space on how to meet the needs for enhanced international coordination at the global level in disaster management and emergency response, the United Nations Platform for Space-based Information for Disaster Management and Emergency Response (UN-SPIDER) was established in 2006 as a programme of the Office for Outer Space Affairs, mandated to ensure greater access to and use of space-based services for all countries and facilitate capacity-building and institutional strengthening for disaster management, in particular in developing countries.

78. A number of other initiatives have been launched at the regional and global levels to integrate the use of satellite data in various phases of disaster management and, in particular, during the crisis phase, including the International Charter “Space and Major Disasters”, established following the UNISPACE III conference in November 2000, which provides, through authorized users, a unified system of space data acquisition and delivery to those affected by disasters. Furthermore, the Group on Earth Observations (GEO) has been since 2005 leading a worldwide effort to build a Global Earth Observation System of Systems (GEOSS), strengthening significantly international collaboration on Earth observation and policy decisions by coordinating strategies in this area. The Office for Outer Space Affairs has acted as a Cooperating body of the Charter and has a Memorandum of Understanding with the GEO Secretariat to strengthened the collaboration, particularly relevant for implementation of the Office’s UN-SPIDER mandates.

79. Through its advisory missions, capacity-building and information dissemination via its knowledge portal, UN-SPIDER, which marks its 10th anniversary in 2016, is an important programme of the Office for Outer Space Affairs due to its direct relevance and contribution towards the implementation of the outcomes of the Sendai Framework for Disaster Risk Reduction 2015-2030, adopted at the third World Conference for Disaster Risk Reduction in Sendai, Japan, which reaffirmed the commitment of the United Nations and world community to advancing disaster risk reduction in the global development agenda and to integrate, as appropriate, both disaster risk reduction and the building of resilience into policies, plans, programmes and budgets at all levels and to consider both within relevant frameworks.

80. The Sendai Framework recognizes the value of space-based technology and Earth observation for disaster management and emergency response because they pave the way for building more resilient societies through effective disaster risk management. It includes specific references to the importance of using information gathered by space-based platforms and in situ for the purpose of pre-disaster risk assessment, for prevention and mitigation and for the development and implementation of appropriate preparedness and effective response to disasters.

81. Apart from natural disasters, there are other areas with an increased dependence on space systems to respond to the impact of events, such as adverse space weather and near-Earth object impact threats, where enhanced coordination efforts at the global level to reduce the impact of such disasters are essential.

82. As a result of UNISPACE III recommendations and under the auspices of the Committee on the Peaceful Uses of Outer Space, several mechanisms in the areas of near-Earth object impact threat and space weather, which are closely related to building resiliency and human security issues have also been developed.

83. The recommendations for an international response to the near-Earth object (NEO) impact threat, an outcome document of the Action Team on Near-Earth Objects (Action Team 14) provide for a coordinated international response to the NEO impact threat. The recommendations aim to ensure information-sharing in discovering, monitoring and physically characterizing potentially hazardous near-Earth objects with a view that all countries, in particular developing countries with limited capacity in predicting and mitigating a near-Earth object impact, are aware of potential threats, and to emphasize the need for an effective emergency response and disaster management in the event of a near-Earth object impact threat.

84. Similarly, potentially hazardous impacts of space weather require development of a global capability to monitor space weather events from space and the ground, share data to better forecast and mitigate the impacts of space weather on Earth and the space environment. In this regard, the Expert Group on Space Weather of the Scientific and Technical Subcommittee, established in 2014, plays an important role in fostering more synergy and in promoting the convergence of common interest among States members of the Committee and related national and international organizations in space weather efforts.

**(d) Interoperability**

85. Interoperability is a crucial variable on which the global societies, in particular economies are dependent upon as it refers to the possibility of spatial data to be

combined, and for services to interact without repetitive manual intervention and in such a way that the result is coherent and that the added value of the data sets and services is enhanced.<sup>22</sup> Several platforms have been established as a result of UNISPACE III aimed at achieving interoperability, such as in the area of compatibility and interoperability among global and regional space-based positioning, navigation and timing systems and in coordination of efforts relating to the near-Earth object impact threat.

86. The growing importance of satellite navigation positioning and timing, and their applications in a variety of areas, such as surveying and mapping, transportation, precision agriculture, monitoring of environment and disaster risk have led to a development of an important coordination mechanism in this area in 2005, the International Committee on Global Navigation Satellite Systems (ICG), to which the Office for Outer Space Affairs serves as the Executive Secretariat.

87. The establishment of ICG is a follow-up of the UNISPACE III recommendations and the work of the Action Team on global navigation satellite systems (GNSS) (Action Team 10), which recognized that although system providers were working to increase awareness among policy makers of the benefits of GNSS and their augmentations for a wide range of societal, civil and commercial application, the task was beyond the resources of any individual operator and called for a need to establish a coordination mechanism involving operators of GNSS and their augmentations, as well as appropriate international organizations.

88. ICG, which in 2015 marked its tenth anniversary, has been working over the past decade towards achieving compatibility and interoperability among global and regional space-based positioning, navigation and timing systems and in the promotion of the use of global navigation satellite systems and their integration into national infrastructure, particularly in developing countries. In view of growing dynamism of GNSS infrastructures and the installed base of GNSS devices projected to reach 6 billion in 2020, two thirds outside Europe and North America, the ICG continues to add value as a platform for exchanging views on signal availability, integrity and interference issues, crucial for the quality of the resource.<sup>23</sup>

89. The International Asteroid Warning Network (IAWN) and the Space Mission Planning Advisory Group (SMPAG) were established in 2014 to implement the recommendations for an international response to the near-Earth object impact threat. The recommendations, which are an outcome of the Action Team 14 on Near-Earth objects call for ensuring information-sharing in discovering, monitoring and physically characterizing potentially hazardous near-Earth objects so that all countries, in particular developing countries with limited capacity in predicting and mitigating a near-Earth object impact, are aware of potential threats and for the need

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<sup>22</sup> Unhelkar B: Handbook of Research on Green ICT. "Enhancing the efficiency of ICT by Spatial Data Interoperability". 2011, Hershey, New York.

<sup>23</sup> The 2015 GNSS Market Report. The European GNSS Agency (<http://www.gsa.europa.eu/2015-gnss-market-report>).

for capacity-building for effective emergency response and disaster management in the event of a near-Earth object impact.<sup>24</sup>

90. IAWN is an interface linking together the institutions performing functions, including discovering, monitoring and physically characterizing the potentially hazardous NEO population and maintaining an internationally recognized clearing house for the receipt, acknowledgment and processing of all NEO observations. It was established as a network that would also recommend criteria and thresholds for notification of an emerging impact threat and to recommend strategies using well-defined communication plans and procedures to assist Governments in their response to predicted impact consequences. IAWN aims to operate as a global, round-the-clock communications network in order to become a trusted and credible source of information and is in the process of establishing a five-year plan with near- and mid-term actions for becoming the global trusted and credible NEO information, notification and warning network.

91. SMPAG, comprising representatives of spacefaring nations and other relevant entities, was established by States Members of the United Nations that have space agencies. 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 NEO deflection. The Office for Outer Space Affairs is currently an observer to SMPAG.

92. In its resolution 70/82 of 9 December 2015, the General Assembly notes with satisfaction the establishment of and work carried out by the International Asteroid Warning Network and the Space Mission Planning Advisory Group to implement the recommendations for an international response to the near-Earth object impact threat.

**(e) Space for sustainable development**

93. Following UNISPACE III Conference, the Committee on the Peaceful Uses of Outer Space, strengthened its unique position to promote wider application of space science and technology for sustainable development, from initiating closer links with the Commission on Sustainable Development to working towards strengthening the awareness of the contributions of space science and technology and their applications to the efforts of humankind to promote sustainable development in all countries and regions of the world.

94. The value of space technology and applications and space-derived data and information in contributing to sustainable development, has been demonstrated in improving the formulation and subsequent implementation of policies and programmes of action in connection with land and water management, marine and coastal ecosystems, health care, climate change, disaster risk reduction and emergency response, energy, navigation, seismic monitoring, natural resources management, biodiversity, agriculture and food security. The capacity of space science and technology in meeting development goals was further recognized at the

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<sup>24</sup> The recommendations for an international response to the near-Earth object (NEO) impact threat are contained in document A/AC.105/1038, annex III, paragraphs 11-14, endorsed by the General Assembly resolution 68/75 of 16 December 2013.

United Nations Conference on Sustainable Development, held in Rio de Janeiro, Brazil, from 20 to 22 June 2012.

95. The UNISPACE+5 Review report (A/59/174) of the Committee in 2004 provided a road map for the further development of space capabilities to advance human development through making space tools more widely available by moving from the demonstration of the usefulness of space technology to a more broadly based operational use of space-based services. The Plan of Action, contained in that report (see, sect. VI.B) and endorsed by the General Assembly in its resolution 59/2, constituted a long-term strategy for enhancing mechanisms at the national, regional and global levels in developing and strengthening the use of space science and technology and their applications to support overarching global agendas for sustainable development; developing coordinated, global space capabilities; supporting specific agendas to meet human development needs at the global level; and supporting overarching capacity development.

96. In that regard, the Committee also provided substantive inputs on the contributions by space science and technology and their applications for consideration by the Commission on Sustainable Development to its thematic clusters in the years 2006-2011 on a wide range of thematic areas, from improving energy efficiency; promoting industrial development; addressing climate change; the role of space applications in agriculture, for sustainable resource management, consumption and production. Cross-cutting areas, identified by the Commission on Sustainable Development, such as sustainable development in Africa and capacity-building and training opportunities for developing countries were also addressed.<sup>25</sup>

97. Paramount to the strategy for implementing the recommendations of UNISPACE III and contributing to the work of the Commission on Sustainable Development was the need to take into account the benefits of space-based data and space infrastructure as essential inputs for decision-making in multiple areas, one such is disaster management and emergency response.<sup>26</sup>

98. With the adoption of the 2030 Agenda for Sustainable Development,<sup>27</sup> there is a growing recognition that its goals and major targets argue for stronger space governance and supporting structures at all levels, including improved space-based data and space infrastructure.

99. The 17 Sustainable Development Goals (SDGs) and 169 targets demonstrate the scale and ambition of this new universal Agenda, which constitutes a plan of action for people, planet and prosperity. All countries and all stakeholders, acting in collaborative partnership, have committed to implement this plan by taking the bold and transformative steps which are urgently needed to shift the world on to a sustainable and resilient path.

<sup>25</sup> See reports on the contributions of the Committee on the Peaceful Uses of Outer Space to the work of the Commission on Sustainable Development: for the thematic cluster 2006-2007 (document A/AC.105/872); for the thematic cluster 2008-2009 (document A/AC.105/892); and for the thematic cluster 2010-2011 (document A/AC.105/944).

<sup>26</sup> See "Contribution of the Committee on the Peaceful Uses of Outer Space to the United Nations Conference on Sustainable Development: harnessing space-derived geospatial data for sustainable development", document A/AC.105/993.

<sup>27</sup> See Transforming our world: the 2030 Agenda for Sustainable Development. <https://sustainabledevelopment.un.org/post2015/transformingourworld>.

100. Space tools carry significant relevance for the attainment of all 17 SDGs and their corresponding targets, either directly — as enablers and drivers for sustainable development, or indirectly — as integral part of the indicators for monitoring the progress towards the 2030 Agenda. The SDGs and their corresponding targets where space tools carry significant relevance, are primarily Goal 3 on ensuring healthy lives and promoting well-being for all at all ages (space for global health); Goal 9 and 11 on building resilient infrastructure, promoting inclusive and sustainable industrialization and fostering innovation, and on making cities and human settlements inclusive, safe, resilient and sustainable (space for resilient societies and infrastructures); Goal 13 on urgent action to combat climate change and its impacts (space for monitoring and mitigating climate change); Goal 14 on conserving and sustainable use the oceans, seas and marine resources for sustainable development (space for ocean monitoring). Space-based technologies are also vital for protecting, restoring and promoting sustainable use of terrestrial ecosystems, sustainably managing forests, combating desertification, and halting and reversing land degradation and halting biodiversity loss, as defined in the Goal 15 (space and biodiversity).

101. Effective use of space tools for implementing the 2030 Agenda, its Goals and targets, will depend on building strong partnerships and on cooperation with all relevant stakeholders, to support Member States in fulfilling the SDGs and targets at their national levels. UNISPACE+50 will align to the 2030 Agenda, its Goals and targets, which will stimulate action over the next 15 years in an integrated way, balancing the three dimensions of sustainable development: economic, social and environmental.

#### **IV. The way ahead towards UNISPACE+50**

102. The present space achievements are not the result of spontaneous generation. It is due to the combined efforts at the national, regional, and global levels in fostering international cooperation in the peaceful uses of outer space and through the global UNISPACE conferences and work of the Committee on the Peaceful Uses of Outer Space as the main international platform for facilitating this cooperation, supported by the Office for Outer Space Affairs that the map of space activities today has become so impressive. This is further supported by the fact that at the beginning of the space age in the late 1950s there were two space powers and two satellites launched into outer space whereas today more than 1,000 operational satellites orbit the Earth with over 60 countries operating their own satellites.

103. The Committee and its Subcommittees have provided critical institutional leadership in the development of the main legal and cooperation processes in space activities. The interaction among the Committee's broad-based membership, which includes space powers, emerging space nations and countries that are still embarking to build their space infrastructures, as well as an impressive number of space-related intergovernmental and non-governmental organizations, continues to position the Committee at the centre of global space governance.

104. It is therefore a timely opportunity for UNISPACE+50, which will take place in 2018, fifty years after the first global United Nations conference on exploration and peaceful uses of outer space, to steer the way towards strengthening the



Committee's mandates, to be able to address the current challenges and opportunities, in the areas of enhanced international cooperation, in particular in:

(1) Space exploration and innovation as essential drivers for opening up new domains in space science and technology, triggering new partnerships and developing capabilities through space exploration that create new opportunities for addressing global challenges;

(2) The effective use of space tools for meeting sustainable development goals and targets, building resilient societies, and monitoring and mitigating climate change;

(3) Ensuring long-term sustainability of outer space activities, including strengthening the existing registration regime by looking closely into enhanced information exchange and notification procedures on space objects and events; space debris; space security and transparency and confidence-building measures, and space traffic management;

(4) Strengthening interoperability and coordinated response to a possible near-Earth object threat; and strengthening the ability to depend on space systems and to respond to the impact of events such as adverse space weather;

(5) Improving the use of space technologies and space-based information and systems in the global health domain; and

(6) Forging partnerships to strengthen and deliver capacity-building in the use and applications of space science and technology, fit for the 21st century.

105. Another central element of the work of the Committee is to further increase coherence and synergy as well as build partnerships in the space-related work of entities of the United Nations system and international space-related entities, including through increased coordination within the Inter-Agency Meeting on Outer Space Activities, UN-Space, and as part of the recommendations of the Group of Governmental Experts on Transparency and Confidence-Building in Outer Space Activities, to address holistically the challenges to safety, security and sustainability of the outer space activities.

106. In order to strengthen the ongoing processes as well as deliver new, UNISPACE+50 aims to become a major milestone for designing a road map for the United Nations space policy that the global community needs for the next 15 years and beyond. It is viewed as an opportunity to strengthen unified efforts at all levels and among all relevant stakeholders in shaping the global "Space 2030" agenda.

107. In the lead-up to UNISPACE+50, a three-year series (2016-2018) of the High-Level Fora (HLF) "Space as a driver for socio-economic sustainable development" will be an opportunity for the collective space community to provide guidance and recommendations for the UNISPACE+50 blueprint. This series of High-Level Fora is aimed at driving the debate on the role of space science and technology in fostering global development, while at the same time providing a framework for cooperation development. The HLF will also be an opportunity: (i) to get in contact with Government, non-governmental and intergovernmental organization officials responsible for space technology development and applications around the world; and (ii) to build a community to implement projects and initiatives with a particular focus on the space sector for the economy, society and diplomacy of a nation.

108. This is particularly important in view of the fact that according to the United Nations 2015 World Population Prospects, the world's population is projected to reach 8.5 billion by 2030, 9.7 billion by 2050 and exceed 11 billion in 2100, with almost all the population growth from the current 7 billion taking place in less developed countries.<sup>28</sup> This trend places a growing pressure on our planet and its population, and Space has the global reach to address this challenge, since space applications support environmental security, food security, disaster preparedness and overall human security as well as form one of the cornerstones of the Information Society.<sup>29</sup>

109. In fostering global partnerships and engaging the space community at large, the Office for Outer Space Affairs has launched the Multi-Donor Strategic Support to UNISPACE+50 initiative, which seeks to provide support of the UNISPACE+50 process to prepare, structure, and implement activities in the promotion of space-based applications and technologies for innovative and timely actions to support Member States in meeting objectives of the global development agenda.

110. Working with all relevant stakeholders in addressing the overarching long-term development concerns, UNISPACE+50 road-map is aimed to define concrete deliverables of Space for the development of a nation under the four pillars: development of economy under "Space Economy"; evolution of society and societal benefits stemming from space-related activities under "Space Society"; strengthening of national space infrastructures and capacity-building under "Space Accessibility", and building partnerships and strengthening international cooperation in space activities under "Space Diplomacy".

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<sup>28</sup> 2015 World Population Prospects: 2015 Revision. United Nations Population Division, Department of Economic and Social Affairs.

<sup>29</sup> P. Martinez: Fair and responsible use of space: a perspective from an emerging space country. In W. Rathgeber, K.-U. Schrogl and R.A. Williamson (Eds) "The Fair and Responsible Use of Space. An International Perspective.", SpringerWienNewYork, 2010.

**[ANNEXES:]**

**[ANNEX A: Space and development** [Evolution of space activities and major trends in a nutshell per decade, focusing on developing countries 1960s-2015]

**ANNEX B: Space and institutional dimensions** [Growing membership in the Committee; Ratification of treaties; Evolution of the practice of registration of objects launched in the outer space]

**ANNEX C: Capacity-building activities and advisory services of the Office for Outer Space Affairs** [Regional distribution, thematic areas]]