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Item 12 of the provisional agenda*

Long-term sustainability of outer space activities

**Information and views for consideration by the Working
Group on the Long-term Sustainability of Outer Space
Activities**

Note by the Secretariat

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I. Introduction

1. At the fifty-ninth session of the Scientific and Technical Subcommittee of the Committee on the Peaceful Uses of Outer Space, in 2022, the Working Group on the Long-term Sustainability of Outer Space Activities of the Subcommittee agreed that the Chair of the Working Group, with the support of the Secretariat, would, following the fifty-ninth session of the Subcommittee, invite States members of the Committee, organizations having permanent observer status with the Committee and relevant United Nations entities, subject to the relevant provisions of paragraphs 15 and 16 of the terms of reference, methods of work and workplan of the Working Group, to provide information and views on the topics set out in paragraphs 4 and 6 of the terms of reference, methods of work and workplan, in a format deemed appropriate ([A/AC.105/1258](#), annex II, para. 8).

2. In a circular dated 25 February 2022, States members of the Committee, organizations having permanent observer status with the Committee and relevant United Nations entities were invited to provide such information and views. The present note was prepared by the Secretariat on the basis of replies received in response to that invitation.

II. Replies received from States and organizations

Canada

[12 September 2022]

Canada: update on its reporting approach for the voluntary implementation of the Guidelines for the Long-Term Sustainability of Outer Space Activities of the Committee on the Peaceful Uses of Outer Space

The Committee on the Peaceful Uses of Outer Space adopted the preamble and 21 Guidelines for the Long-Term Sustainability of Outer Space Activities at its sixty-second session, in June 2019 ([A/74/20](#), para. 163 and annex II). At the same time, the Committee encouraged States and international intergovernmental organizations to take voluntary measures to ensure that the Guidelines are implemented to the greatest extent feasible and practicable. Canada is a strong supporter of these Guidelines and encourages all parties to take measures towards their implementation.

Canada wishes, at this time, to present a summary of the status of the implementation of certain guidelines. Utilizing the practical approach of the United Kingdom of Great Britain and Northern Ireland to implementation reporting, as outlined at the fifty-seventh ([A/AC.105/C.1/2020/CRP.15](#)) and fifty-eighth ([A/AC.105/C.1/2021/CRP.16](#)) sessions of the Scientific and Technical Subcommittee, Canada is pleased to provide the summary for 2022 of the status of implementation of the Guidelines. Canada will provide the detailed implementation report for 2022 before the sixtieth session of the Scientific and Technical Subcommittee. The report will also be made available as a conference room paper for the sixtieth session.

The 2019 Canadian Space Strategy, “Exploration, Imagination, Innovation: A New Space Strategy for Canada”, contains a commitment to review Canada’s regulatory framework for space-related activities to ensure that they provide timely responses for industry, maintain strategic oversight for national security and enable commercial growth. This work will examine whether the regulatory system is keeping pace with emerging technologies and new business models in the space sector, and whether it is enabling innovative space companies to prosper in Canada. Ensuring robust implementation of the Guidelines for the Long-term Sustainability of Outer Space

Activities is a core part of this process. In addition, Canada's defence policy, "Strong, Secure, Engaged", lays out stable, long-term funding for a range of space projects, including on enhanced space situational awareness. These defence capabilities support essential government functions such as environmental monitoring, disaster response, and search and rescue.

Canada authorizes and supervises space activities through various legislation and regulations, which are available online. The Remote Sensing Space Systems Act, the Aeronautics Act, the Canada Transportation Act and the Radiocommunication Act provide the primary legislation that make up Canada's regulatory framework. Canada is pleased to note that the third independent review of the Remote Sensing Space Systems Act, required as a formal part of the Act, was completed in March 2022, and made a number of recommendations regarding areas of relevance to the Guidelines for the Long-term Sustainability of Outer Space Activities.

Canada maintains a registry of space objects and continues to provide the Office for Outer Space Affairs of the Secretariat with registration information. In 2021 and 2022, Canada registered with the Office for Outer Space Affairs a total of 28 satellites, including three constellations. Canada is actively looking at ways to ensure more timely registration of Canadian space objects, including through the conducting of outreach.

The need for coordination between space actors is expanding commensurately with the growth in the space sector and proliferation of space actors. Canada is committed to sharing our implementation experiences with the Committee on the Peaceful Uses of Outer Space and encourages other States to do the same. Concerning the implementation of the Guidelines for the Long-term Sustainability of Outer Space Activities, Canada stresses the importance of being an active participant in international forums to keep up to date on information-sharing and cooperation occurring in these spheres. To guide the implementation of the Guidelines for the Long-term Sustainability of Outer Space Activities and provide feedback on our processes, Canada remains committed to participation in international forums such as the Committee on the Peaceful Uses of Outer Space, the Committee on Space Research and the Inter-Agency Space Debris Coordination Committee. Canada considers these capacity-building discussions crucial for sharing best practices and enhancing the overall safety and security of outer space for the benefit of all humankind. By undertaking open and transparent engagement, the international community will be well positioned to support and advance the safety and sustainability of the growing space ecosystem.

To ensure the safety of space operations, Canada will continue to operate Canadian sensors to improve the accuracy of orbital data on space objects, including space debris, and maintains the Conjunction Risk Assessment and Mitigation System service to evaluate the status of orbital data and aid owner-operators in conjunction mitigation measures. Canadian operators are encouraged to use the Conjunction Risk Assessment and Mitigation System service to obtain information about on-orbit collision risks. The Conjunction Risk Assessment and Mitigation System service supports more than 90 satellites, from government, industry and academia, as well as international missions, for which Canada has established partnerships. Civil experts work alongside their military counterparts, liaising with industry and international partners to enable timely notifications in case of potential risks to their operations. In addition, Canada works with international partners to update space-track.org, the United States of America-led free data platform, multiple times per day.

Space debris remains a significant concern and mitigating debris is an ongoing priority. Presently, operators of Canadian-licensed systems are required to manage the debris generated by their mission in a manner that is consistent with the voluntary international Space Debris Mitigation Guidelines. Applicants are required to provide, and are assessed on, their orbital debris mitigation plans as a condition of their licence applications.

Canada has many tools to encourage scientific and technical research and development, such as the Innovation for Defence Excellence and Security programme, which is funding innovative research to explore viable and cost-effective solutions for tracking and de-orbiting space debris to reduce the collision threat for orbiting space systems. In addition, through the Near Earth Object Surveillance Satellite (NEOSSat), Canada provides publicly available, accurate orbital data that enable scientists to perform a variety of experiments to improve our understanding of both satellites and space debris. The information currently gathered by the Near Earth Object Surveillance Satellite bolsters Canada's contribution to international efforts to maintain the safety of Canadian and international space assets. Canada is also conducting outreach with industry and academia to promote the development and use of techniques and methods to improve the accuracy of orbital data.

Canada continues to welcome the opportunity to discuss the practicalities of the implementation of the 21 Guidelines for the Long-term Sustainability of Outer Space Activities with other Member States and will provide a more detailed report on national implementation at the sixtieth session of the Scientific and Technical Subcommittee. Canada strongly encourages other Member States to commit to the principle of transparency and capacity-building and to share their approaches to implementation of the Guidelines.

Japan

[12 September 2022]

Report on the implementation of the Guidelines for the Long-term Sustainability of Outer Space Activities of the Committee on the Peaceful Uses of Outer Space in Japan: summary¹

As the number of players in the space sector continues to grow, Japan believes that effective rule-making, and the implementation of rules to ensure the safety, security, sustainability and stability of outer space, are imperative.

Japan takes this opportunity to share its current efforts, as well as experiences, challenges and lessons learned, in the implementation of the Guidelines for the Long-term Sustainability of Outer Space Activities of the Committee on the Peaceful Uses of Outer Space. These efforts include the establishment and implementation of the national regulatory framework for space activities (see the guidelines in section A of the Guidelines), the enhancement of space situational awareness capability, the development of space weather mitigation measures and the updating of space debris mitigation standards (see the guidelines in section B of the Guidelines), and the promotion of international cooperation in the field of national legislation and space weather forecast services (see the guidelines in section C of the Guidelines). In order to effectively implement the Guidelines, Japan also carries out research and development on space debris mitigation measures such as space debris removal and has developed space robotics technologies for on-orbit servicing (see the guidelines in section D of the Guidelines).

¹ The full text of the report of Japan is available to members of the Working Group on the Long-term Sustainability of Outer Space Activities on the dedicated web page of the Working Group.

United Kingdom of Great Britain and Northern Ireland

[12 September 2022]

Input of the United Kingdom of Great Britain and Northern Ireland to the Working Group on the Long-term Sustainability of Outer Space Activities of the Scientific and Technical Subcommittee on the voluntary implementation of the Guidelines for the Long-Term Sustainability of Outer Space Activities of the Committee on the Peaceful Uses of Outer Space

The United Kingdom of Great Britain and Northern Ireland is pleased to submit a text for consideration by the Working Group on the Long-term Sustainability of Outer Space Activities of the Scientific and Technical Subcommittee on the voluntary implementation of the Guidelines for the Long-term Sustainability of Outer Space Activities of the Committee on the Peaceful Uses of Outer Space.

The United Kingdom was pleased to see that, at the fifty-ninth session of the Scientific and Technical Subcommittee, the Working Group agreed on and adopted its terms of reference, methods of work and workplan.

The Working Group builds upon a decade of hard and exceptional work in which the Committee successfully adopted the preamble and 21 Guidelines for the Long-term Sustainability of Outer Space Activities at its sixty-second session, in 2019. In response to this, the United Kingdom joined the consensus on a Committee report encouraging parties to take measures voluntarily to implement the Guidelines to the greatest extent feasible and practicable. The United Kingdom expressed its strong belief in the value of Member States not only implementing the Guidelines but also sharing the approaches, practices and lessons learned in doing so. As a result, the United Kingdom has submitted conference room papers annually since 2019, demonstrating our commitment to tangibly implementing the Guidelines in our national capacity.

Accordingly, the United Kingdom presented its approach to implementation reporting at the fifty-seventh (A/AC.105/C.1/2020/CRP.15), fifty-eighth (A/AC.105/C.1/2021/CRP.16) and fifty-ninth (A/AC.105/C.1/2022/CRP.22) sessions of the Scientific and Technical Subcommittee. The annual papers on voluntary implementation use a common template to capture our approach. The template utilized in these papers is included at the end of this input.

The United Kingdom, alongside the Office for Outer Space Affairs of the Secretariat, is also supporting an inclusive approach to capacity-building and implementation of the Guidelines. To support the implementation of guidelines C.1 and C.2, on international cooperation, the United Kingdom established its first project with the Office for Outer Space Affairs in 2021, which supported awareness-raising and capacity-building in relation to the Guidelines. Information on the project can be found on the dedicated website: spacesustainability.unoosa.org.

The first phase of the Office for Outer Space Affairs project led to concrete outcomes, namely, the publishing of an accessible version of the Guidelines in all six official languages of the United Nations. In addition, three expert events with industry, regulators and space agencies led to the production of almost 45 implementation case studies.

The second phase of the project saw the Office for Outer Space Affairs conduct 42 interviews with States members of the Committee and international intergovernmental organizations to identify challenges associated with implementation, and in May 2022, the Office published the report entitled “Awareness-raising and capacity-building related to the implementation of the

Guidelines for the Long-term Sustainability of Outer Space Activities (LTS Guidelines): stakeholder study report”, which can be found on the project website.

Through its voluntary implementation of the 21 agreed Guidelines, and through the Office for Outer Space Affairs project, the United Kingdom has recognized that a number of different approaches can be adopted within the framework of implementation. Therefore, significant participation in the sharing of implementation practices will allow Member States to uncover the breadth of approaches that could be adopted to implement the 21 agreed Guidelines. This will allow common practices to be uncovered, both to inform capacity-building measures and to allow Member States to work towards potential coherency in our approach to implementation.

As a near-term activity, as part of the workplan of the Working Group, the United Kingdom encourages the following activities to be implemented:

- Agreement on a common template to be used by Member States to capture approaches to voluntarily implementing the Guidelines
- Establishment of a dedicated, easily accessible repository that catalogues the voluntary implementation practices of Member States using a common template and allows for the evolution of approaches to be identified
- Establishment of a process by which the Working Group periodically reviews the voluntary implementation practices to uncover common practices and challenges

Template

Guideline reference Section [A, B, C or D] Guideline [guideline number] Paragraph [para. number]	Guideline summary [Guideline title or key text to be included with the identified guideline reference]	Member State [Name of Member State]
Thoughts on or approach to implementation	[This part should be used to provide either the current thoughts on how the Member State intends to consider implementing this guideline or, if already under way, the current approach to implementing the guideline.]	
Current progress and/or proposed future activities	[This part should be used to provide information on the current progress towards implementing the approach mentioned above and/or future activities to either begin, continue or extend the implementation this guideline.]	
Experiences, challenges and lessons learned	[This part should be used to provide information on any relevant experience regarding the practical implementation of this guideline, including any new practices or procedures to enhance implementation, details of lessons learned, or challenges encountered or overcome.]	
Comments on specific needs for capacity-building to support implementation	[This part should be used to provide information or comments on specific requirements that Member States may have for capacity-building to assist in the implementation of this guideline.]	

International Astronomical Union

[12 September 2022]

Input submitted by the International Astronomical Union to the Working Group on the Long-term Sustainability of Outer Space Activities of the Scientific and Technical Subcommittee

The deployment of large communication satellite constellations represents an important technological development for improving global network connectivity.

However, the large number of satellites in low Earth orbit, estimated to grow to several tens of thousands in a few years, have a serious impact on astronomical observations, in both the optical/infrared radiation and radio wavelength ranges.

The problem was thoroughly discussed during the fifty-ninth session of the Scientific and Technical Subcommittee of the Committee on the Peaceful Uses of Outer Space, in February 2022, under agenda item 18, entitled “General exchange of views on dark and quiet skies for science and society”. A working paper on the theme was presented by Austria, Chile, the Dominican Republic, Slovakia, Spain, the International Astronomical Union (IAU), the European Southern Observatory and the Square Kilometre Array Observatory (see [A/AC.105/C.1/L.396](#) and [A/AC.105/1258](#), para. 265 (c)). The working paper was positively commented on by 25 delegations and it was decided to maintain the same item on the agenda of the Scientific and Technical Subcommittee at its session to be held in the following year, in order to assess the evolution of the situation.

The matter was further discussed at the sixty-fifth session of the Committee on the Peaceful Uses of Outer Space, in June 2022, the report on which reads:

“The Committee welcomed the inclusion of the general exchange of views on dark and quiet skies for science and society on the agenda of the Scientific and Technical Subcommittee as a single issue/item for discussion, as an important recognition of the fact that astronomical observations for both optical and radio astronomy were an essential aspect of space activities and should be protected from interference.” ([A/77/20](#), para. 182)

The report on the sixty-fifth session also included the following paragraph:

“The view was expressed that the adverse effects of satellite constellations on the visibility of the night skies for ground-based astronomy had not been adequately considered and that the matter, which fell within the mandate of the Committee, called for an internationally agreed regulation.” ([A/77/20](#), para. 187)

On this basis, IAU believes that the protection of the dark and quiet sky from the negative impact of large constellations of satellites in low Earth orbit naturally falls under the remit of the Working Group on the Long-term Sustainability of Outer Space Activities of the Scientific and Technical Subcommittee.

The main areas of concern that IAU wishes to submit to the attention of the Working Group are the following:

- *The number of satellites in low Earth orbit.* IAU estimates that if the number of satellites in low Earth orbit reaches more than 100,000, that will make any prospective mitigation measures (see the recommendations below) ineffective. It is recommended that the astronomical impact be added to the various concerns that relate to the crowding of the orbital shell of the low Earth orbit (such as, inter alia, traffic management and the increased risk of collisions).
- *The luminosity of the satellites.* Their apparent luminosity is due to the sunlight reflected by the space object and its solar panels. It primarily depends on the reflectivity of the materials, but is highly variable depending on the aspect of

the satellite relative to the observer. A fraction of the illuminated satellites will be visible by the naked eye, hence dramatically altering the pristine appearance of the night sky, and all of them will be detected by the very sensitive modern telescopes. While the latter problem cannot be easily solved, it is recommended that satellites be built and operated in such a way that they are at all times invisible to the naked eye, that is, that they have an apparent astronomical magnitude of less than seven.

- *Accurate prediction of the satellite's apparent position.* As mentioned in the previous paragraph, all of the illuminated satellites, even the fainter ones, will be visible by the highly sensitive modern astronomical detectors. The only possibility of avoiding the interference produced by their trails in the field of view of the telescopes is to know with high accuracy the time at which a satellite's trail will enter into the field of view and when it will exit. Using this knowledge (and provided that the number of satellites does not become unmanageable – see the first point above), the observer may be able to interrupt the exposure during the passage of the satellites. The current two-line element set public orbital information is not accurate enough for the above-mentioned purpose, and more precise and frequently updated orbital elements are needed. The first recommendation to the Working Group is therefore to include the provision of accurate and up-to-date orbital elements of all satellites among the high-priority requests relating to the long-term sustainability of outer space activities. Although we know how to compute the apparent position of a satellite on the basis of its orbital element, not all observers will have the technical capability to do so in real time, particularly considering the large number of satellites for which the computations have to be made. It is therefore recommended that, among the new guidelines to be proposed by the Working Group, there is a request that companies that operate a large constellation offer to the community at large a free service that predicts the accurate position of their satellites, as a function of the position of the observer and of the time of observation.
- *Radio interference.* The large number of microwave transmitters that populate the low Earth orbit create a microwave diffuse background that seriously impacts radio astronomical observations. In addition to the problem caused by the constellations, single satellites with powerful emitting capability can easily burn the radio receivers if they directly illuminate the dish of a radio telescope. In this case, the recommendation is to consider the possibility of defining radio quiet zones corresponding to the major radio astronomical facilities, and turning off the satellites' emitters while they are transiting over such zones.

For all of the above reasons, IAU recommends that the Working Group on the Long-term Sustainability of Outer Space Activities consider how to ensure the sustainability of access to scientific knowledge from the night sky.

Relevant documents of the Committee on the Peaceful Uses of Outer Space and the Scientific and Technical Subcommittee

- Conference room paper entitled “Recommendations to keep dark and quiet skies for science and society” (A/AC.105/C.1/2021/CRP.17) (19 April 2021)
- Technical presentation by IAU entitled “Technical presentation on recommendations from the Dark and Quiet Skies Workshop” (available at www.unoosa.org/documents/pdf/copuos/stsc/2021/tech-15E.pdf) (4 April 2021)
- Working paper entitled “Protection of dark and quiet skies” (A/AC.105/C.1/L.396) (4 December 2021)
- Web page on the symposium on dark and quiet skies organized by the Office for Outer Space Affairs (www.unoosa.org/oosa/en/ourwork/copuos/stsc/2022/unoosa-symposium.html) (15 February 2022)

Documents of the Office for Outer Space Affairs, the International Astronomical Union and Instituto de Astrofísica de Canarias

- Report and recommendations of the conference entitled “Dark and Quiet Skies for Science and Society – I” (available at <https://noirlab.edu/public/media/archives/techdocs/pdf/techdoc021.pdf>) (October 2020)
- Working group reports on the conference entitled “Dark and Quiet Skies for Science and Society – II” (available at <https://noirlab.edu/public/media/archives/techdocs/pdf/techdoc051.pdf>) (October 2021)
- Website of the IAU Centre for the Protection of the Dark and Quiet Sky from Satellite Constellation Interference (<https://cps.iau.org/>)

International Organization for Standardization

[19 August 2022]

Implementation of the Guidelines for the Long-term Sustainability of Outer Space Activities of the Committee on the Peaceful Uses of Outer Space²

Background

Established in 1947, the International Organization for Standardization (ISO), working in partnership with the Consultative Committee for Space Data Systems, develops consensus international standards that promote the responsible and sustainable use of space. As reflected in the Office for Outer Space Affairs “Compendium of space debris mitigation standards adopted by States and international organizations”,³ ISO and the Consultative Committee for Space Data Systems develop and maintain standards that are critical to enabling the safe and efficient use of space. Standards exist to codify, in an implementable and verifiable way, what international guidelines, such as the Guidelines for the Long-term Sustainability of Outer Space Activities of the Committee on the Peaceful Uses of Outer Space, seek to accomplish. ISO space standards are, and since the dawn of the space age have been, an integral part of this complex and interconnected framework.

ISO implementation of the Space Debris Mitigation Guidelines

Space debris and a lack of space data exchange standards are detrimental to space sustainability. As urged in the Guidelines for the Long-term Sustainability of Outer Space Activities, ISO and the Consultative Committee for Space Data Systems have developed technical standards for space data exchange, design, testing, operations, management, materials and debris mitigation.

ISO has 248 technical committees consisting of over 100,000 subject-matter experts, who collectively have developed 24,000 international standards. Standards expressly focused on space are developed in ISO Technical Committee 20. Space data and information transfer systems are addressed by Subcommittee 13 of ISO Technical Committee 20, which operates in duality with the Consultative Committee for Space Data Systems and consists of 11 member agencies and 29 observer agencies.

Subcommittee 13 of ISO Technical Committee 20 develops international space data message standards. Subcommittee 13, functionally equivalent to and operated in duality with the Consultative Committee for Space Data Systems, comprises 11 space agencies globally. Subcommittee 13 and the Consultative Committee for Space Data

² The full text of the submission by the International Organization for Standardization is available to members of the Working Group on the Long-term Sustainability of Outer Space Activities on the dedicated web page of the Working Group.

³ Available at www.unoosa.org/oosa/en/ourwork/topics/space-debris/compendium.html.

Systems co-publish 135 active publications addressing space data and information transfer systems. These standards are downloadable at no cost⁴ and address the following functional areas:

- Space Internetworking services
- Mission operations and information management services
- Spacecraft on-board interface services
- Systems engineering
- Cross-support services
- Space link services

In the area of space systems and operations, Subcommittee 14 of ISO Technical Committee 20 has published 180 space standards, with an additional 45 in development. It develops standards that capture best practices for space systems and operations. All disciplines of the seven working groups of Subcommittee 14 are relevant to the long-term sustainability of space activities. Those working groups are:

- Working Group 1: Design, engineering and production
- Working Group 2: System requirements, verification and validation, interfaces, integration and test
- Working Group 3: Operations and support systems
- Working Group 4: Space environment (natural and artificial)
- Working Group 5: Space system programme management and quality
- Working Group 6: Materials and processes
- Working Group 7: Orbital debris

Working Group 7 of Subcommittee 14 was initially formed as the Orbital Debris Coordination Working Group in 2003. Formalized in Subcommittee 14 as Working Group 7 in 2012, the Working Group's primary goal continues to be to codify Inter-Agency Space Debris Coordination Committee guidelines and industry best practices as international standards for contractual incorporation and potential national regulatory adoption. Its work programme is well represented by the top-level ISO standard ISO 24113:2019, on space systems and space debris mitigation requirements. Lower-level space debris mitigation standards derive from the high-level requirements contained in ISO 24113:2019.

Connection with the Guidelines for the Long-term Sustainability of Outer Space Activities of the Committee on the Peaceful Uses of Outer Space

Collectively, the ISO and Consultative Committee for Space Data Systems standards address many of the 21 Guidelines for the Long-term Sustainability of Outer Space Activities.

While all of the working groups and functional areas of Subcommittee 13 (the Consultative Committee for Space Data Systems) and Subcommittee 14 of Technical Committee 20 are relevant to space sustainability, the space data message standards assembled by the Navigation Working Group of the Consultative Committee for Space Data Systems and the space debris mitigation standards developed by Subcommittee 14 represent a significant contribution to space sustainability.

A primary focus of the 21 Guidelines for the Long-term Sustainability of Outer Space Activities is the collection, sharing and dissemination of data and derived information on launches, space objects, conjunction assessment, space weather, space debris and re-entry. The sharing of procedures and related long-term sustainability experiences and capacity-building is also a prominent theme. The standards of ISO and the

⁴ The standards are available at <https://public.ccsds.org/Publications/default.aspx>.

Consultative Committee for Space Data Systems foster data exchange (with regard to the structure, provenance, content of and capacity to collect and/or generate data) and enable the timely, comprehensive, consensus-based sharing of space data, such as orbital information, close-approach parameters, tracking, attitude and re-entry data and sensor pointing parameters. The orbital data messages standard is the most widely downloaded Navigation Working Group standard today, and for conjunction assessment, the conjunction data message standard has become the gold standard for sharing information on potential collision risks.

The navigation data message standards developed by the Navigation Working Group include standards on the following:

- Orbit data messages
- Conjunction data messages
- Tracking data messages
- Attitude data messages
- Events data messages
- Re-entry data messages

Another primary focus of the Guidelines for the Long-term Sustainability of Outer Space Activities is on the timely, accurate and comprehensive identification and mitigation of potential collision risks. The standards of Subcommittee 14 comprehensively address this and other space sustainability topics, including debris mitigation, mission design, spacecraft design, testing, launch, operations, disposal and human casualty risk. Space debris mitigation standards, developed in Working Group 3 (Operations), Working Group 4 (Environment) and Working Group 7 (Orbital Debris Mitigation) of Subcommittee 14, are of particular relevance to the long-term sustainability of space activities.

Lessons learned

The development of consensus space standards that codify best practices and expected norms of behaviour is one of the most critical approaches, if not the most critical, to achieving the long-term sustainability of space activities. ISO, established 74 years ago to promote standards for international trade, communications and manufacturing, has held general consultative status with the Economic and Social Council since its formation. Most United Nations agencies working on technical activities have liaison status with ISO, and ISO is an official observer of the Committee on the Peaceful Uses of Outer Space. ISO is a world leader in the development of space-related standards and has learned and incorporated much knowledge about how to build consensus and capacity and develop, promote and disseminate standards.

The standards that ISO and the Consultative Committee for Space Data Systems have developed in support of space data exchange, spacecraft design, testing, operations, management and debris mitigation are a vital element of global efforts to ensure the long-term sustainability of space activities.

World Space Week Association

[12 September 2022]

As a permanent observer of the Committee on the Peaceful Uses of Outer Space, World Space Week Association hereby provides its input and views on the topics in paragraphs 4 and 6 of the terms of reference, methods of work and workplan of the Working Group on the Long-term Sustainability of Outer Space Activities of the Scientific and Technical Subcommittee ([A/AC.105/1258](#), annex II, appendix).

World Space Week Association welcomes the adoption of the Guidelines for the Long-term Sustainability of Outer Space Activities of the Committee and considers

the instrument a milestone achievement on the topic of the protection of the orbital space environment and the safety of space operations. World Space Week Association has the following remarks relevant to the framework provided in paragraphs 4 and 6 of the terms of reference, methods of work and workplan of the Working Group ([A/AC.105/1258](#), annex II, appendix).

Raising awareness and building capacity, in particular among emerging space nations and developing countries

The mission of World Space Week Association is to strengthen the link between space and society through public education, participation and dialogue on the future of space activity using World Space Week as a focus. Therefore, the Association's main activities are mostly relevant to outreach, awareness-raising and capacity-building. The Association is committed to the sharing of best practices through participation in World Space Week events relevant to sustainable space activities, as well as the promotion of activities of all stakeholders working on sustainability-related topics.

Awareness of why we depend on space activities and technologies, and how space exploration drives change for our own home planet, is key. Furthermore, the understanding of the importance of protecting the long-term sustainability of outer space activities is crucial for the future sustainable exploration of outer space. World Space Week Association works year-round to encourage the space and education sectors to hold events during World Space Week to inspire youth and educate the public about space, with a special focus on emerging space nations and developing countries. The result is the largest network of space-supporting organizations on Earth, which participate in this annual event. World Space Week is celebrated by a network of over 4,000 space-related organizations, the largest science, technology, engineering, arts and mathematics network in the world. In 2021, we counted over 6,400 registered events in 96 countries. World Space Week Association supports these events by maximizing the visibility and impact of World Space Week. In 2021, we counted over 770 million individual impressions on Twitter alone. This clearly shows the outstanding outreach capabilities of the Association, as well as the powerful impact of a coordinated annual, global celebration of space science on the space sector.

Every year, the Association's Board of Directors selects a theme for World Space Week to provide focus for the activities and events that take place annually between 4 and 10 October. World Space Week event organizers are encouraged to incorporate the theme into their activities and promotional materials. The World Space Week theme for 2022 is "Space and sustainability". This year, from October 4 to 10, World Space Week will celebrate events dedicated to raising awareness of the importance of the sustainability of outer space, as well as the many ways in which space applications and technologies contribute to the achievement of sustainability on Earth.

World Space Week Association is committed to promoting and facilitating interdisciplinary and multi-stakeholder dialogues. Maintaining such multilayered communication channels allows an all-encompassing implementation of the Guidelines for the Long-term Sustainability of Outer Space Activities, by bringing together all relevant stakeholders. Using World Space Week as a forum allows information, as well as achievements, to be shared among various entities. Such discussions, especially in terms of this year's theme, "Space and sustainability", allow World Space Week Association to facilitate the sharing of information on the importance and relevance of the long-term operation of all space entities.

World Space Week Association will remain committed to raising awareness regarding the Guidelines for the Long-term Sustainability of Outer Space Activities and is eager to collaborate in the capacity-building efforts of all involved stakeholders.