

1 February 2015

English only

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**Committee on the Peaceful  
Uses of Outer Space**  
Scientific and Technical Subcommittee  
Fifty-second session  
Vienna, 2-13 February 2015  
**Long-term sustainability of outer space activities**

**Proposed amendment to the proposal for the consolidation  
of the set of draft guidelines on the long-term sustainability  
of outer space activities**

**Submission by the Islamic Republic of Iran**

The Islamic Republic of Iran appreciates all the efforts have been done by the Working Group on Long-term Sustainability of Outer Space Affairs, Member States and the Committee on the Peaceful Uses of Outer Space for the preparation and improvement of the draft guidelines. Considering the proposal by the Chair of the Working Group for the consolidation of the set of draft guidelines, contained in A/AC.105/2014/CRP.5, the Islamic Republic of Iran, proposes some additional paragraphs or terms for consideration. (The underlined text in larger font added directly in the draft guidelines represents the amendments recommended by Iran).

**Spectrum protection (Guideline 4)**

**States and international intergovernmental organizations should ensure that all space activities under their jurisdiction or control are carried out in accordance with the Constitution, Convention and Radio Regulations of the International Telecommunication Union, in order to enhance the long-term sustainability of space activities and in support of sustainable development on Earth.**

The radio-frequency spectrum is a limited natural resource that should be used rationally, efficiently, sustainably and economically so that countries or groups of countries may have equitable access to radio frequencies for the conduct of their space activities, taking into account the special needs of developing countries and the geographical situation of particular countries. States and international intergovernmental organizations should ensure that their space activities are conducted in conformity with the Radio Regulations of the International



Telecommunication Union, in order to avoid harmful interference with the space activities of other States and international intergovernmental organizations, and as one of the means to promote the long-term sustainability of outer space activities.

In their use of the electromagnetic spectrum, States and international intergovernmental organizations should consider the requirements for space-based Earth observation systems and other space-based systems and services in support of sustainable development on Earth, in accordance with the Radio Regulations and recommendations of the International Telecommunication Union.

**Awareness (Guideline 7+8+15)**

**States and international intergovernmental organizations are encouraged to raise general public awareness of the important societal benefits of space activities and of the consequent importance of enhancing the long-term sustainability of outer space activities. To this end, States and international intergovernmental organizations are encouraged to:**

- (a) promote institutional and public awareness of space activities and their applications for sustainable development, environmental monitoring and assessment, disaster management and emergency response;**
- (b) conduct outreach, capacity-building and education on regulations and best practices relevant to the long-term sustainability of space activities;**
- (c) promote activities of non-governmental entities that will enhance the long-term sustainability of outer space activities.**

States and international intergovernmental organizations should promote public awareness of space applications for sustainable development, environmental monitoring and assessment, disaster management and emergency response through information sharing and joint efforts with public institutions, private sector entities and civil society, taking into account the needs of young people and future generations. In designing space education programmes, States, international intergovernmental organizations and non-governmental entities should pay special attention to courses on enhancing knowledge and practice of the utilization of space applications to support sustainable development. States and international intergovernmental organizations should initiate the voluntary collection of information on public awareness and education tools and programmes with a view to facilitating the development and implementation of similar initiatives with consistent messages.

States and international intergovernmental organizations are encouraged to foster outreach activities by or with industry, academia, and other relevant non-governmental entities. Outreach, capacity-building and educational initiatives could take the form of seminars (in person or broadcast over the Internet), published guidelines to complement national and international regulations, or an Internet site with basic information on a regulatory framework and/or a contact point within the Government for regulatory information. Appropriately targeted outreach and education can assist all space actors in gaining a better appreciation and understanding of the nature of their obligations, in particular relating to implementation, which can lead to improved compliance with the existing

regulatory framework and the best practices currently being employed to enhance the long-term sustainability of outer space activities. This is particularly valuable where the regulatory framework has been changed or updated, resulting in new obligations.

International cooperation between Governments and non-governmental and private sector entities should be encouraged and fostered. Non-governmental entities, including professional and industry associations and academic institutions, can play important roles in increasing international awareness of issues associated with space sustainability, as well as promoting practical measures to enhance space sustainability. Such measures could include adoption of the Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space, compliance with the Radio Regulations of the International Telecommunication Union related to space services and the development of open, transparent standards for the exchange of data necessary to avoid collisions, radio frequency interference or other harmful events. Non-governmental entities also play important roles in bringing stakeholders together to develop common approaches to certain aspects of space activities that can collectively enhance the long-term sustainability of space activities.

#### **Development of regulatory frameworks (Guideline 10+11+13)**

**In developing regulatory measures applicable to the long-term sustainability of outer space activities, States should**

- (a) weigh the costs, benefits, disadvantages and risks of a range of alternatives;**
- (b) consider the potential benefits of using existing international technical standards and definitions;**
- (c) address risks to people, property, public health and the environment associated with the launch, in-orbit operation and re-entry of space objects;**
- (d) encourage advisory input from affected national stakeholders.**

In developing regulatory measures applicable to the long-term sustainability of outer space activities, States should ensure that such measures are implementable and practicable in terms of the technical, legal and management capacities of the State imposing the regulation, as a regulation should not require a technical innovation or exceed the current state of practice for the space activity being regulated. Regulations should also be efficient in terms of imposing the least cost for compliance (e.g. in terms of money, time or risk) when compared with feasible alternatives, and effective in that they have a clear intended purpose and accomplish their intended purpose. States should share regulations and experience resulting from their implementation with other States, and consider information available on other States' regulatory frameworks when creating their own regulatory frameworks.

When creating regulatory frameworks, States should also consider the potential benefits of using existing international technical standards and definitions, such as those published by the International Standards Organization (ISO), the Consultative Committee on Space Data Standards (CCSDS), and national

standardization bodies. In addition, States should consider the utilization of recommended practices and voluntary guidelines proposed by the Inter-Agency Space Debris Coordination Committee (IADC) and the Committee on Space Research (COSPAR).

When creating regulatory frameworks, States should address risks to public health, safety, and potential harm to persons and property not directly taking part in space operations, taking into consideration the potential risks of space operations and the different liability regimes for harm occurring on the Earth versus in space. Reducing risks to public health and safety should be considered as part of national regulations applicable to the launch, in-orbit operations and atmospheric re-entry of space objects.

Due consideration should be given to international practices of space-faring States and the development of new practices as a result of new technologies and capabilities. Ways to manage risks to public health and safety can include: quality assurance and risk management techniques; methodologies to assess probabilities of harm to people and property from objects reaching the surface of the Earth from space or as a result of launch attempts; probabilistic risk assessments, hazard analyses, and environmental impact studies that address the complete life-cycle of space missions; implementation of “Principles relevant to the use of nuclear power sources in outer space” for space operations using nuclear power; and measures for planetary protection.

States should encourage advisory input from affected national stakeholders during the process of developing regulatory frameworks governing space activities. The stakeholders may include private sector entities, universities, research organizations and non-governmental organizations operating under the jurisdiction of the State, agencies of the State or other bodies that play a role in space activities and that will be affected by the proposed regulatory initiative. By allowing early advisory input, the State can avoid unintended consequences of regulation that may have an adverse impact on key stakeholders, is more restrictive than needed, or conflicts with other legal obligations.

In developing or refining national regulatory frameworks, States should consider the need for appropriate transition periods and milestones for the implementation of measures to improve the long-term sustainability of space activities.

States and international intergovernmental organizations should establish and promote the regulations and policies that support the idea of **minimizing the impacts of human activities** on Earth as well as space environment. They are encouraged to **Prioritize** their activities (type/duration/...) **based on sustainable development goals, their main national requirements and international considerations** for space and Earth sustainability, due to the finite resources available in space and rising of unpredictable risks in space environment by increasing human activities.

**Capacity-building (Guideline 17+19+31)**

**States and international intergovernmental organizations are encouraged to support and promote capacity-building in scientific, technical and legal capabilities and improved data accessibility as means to promote the long-term sustainability of outer space activities.**

States and international intergovernmental organizations should support current capacity-building initiatives and promote new forms of regional and international cooperation and capacity-building that are in accordance with national and international law to assist countries in gathering human and financial resources and achieving efficient technical capabilities, standards, regulatory frameworks and governance approaches that support the long-term sustainability of outer space activities and sustainable development on Earth.

Capacity-building activities include education, training and sharing of appropriate experience, information, data and tools. States and international intergovernmental organizations are encouraged to coordinate their efforts in space-related capacity-building and data accessibility in order to ensure efficiency in the use of available resources and, to the extent that it is reasonable and relevant, avoid unnecessary duplication of functions and efforts, taking into account the needs and interests of developing countries.

States and international intergovernmental organizations should also undertake efforts to make relevant space-based information and data accessible to countries affected by natural disasters or other catastrophes, applying the principles of neutrality, impartiality and non-discrimination, and to support capacity-building activities aimed at enabling the receiving countries to make optimal use of such data and information. These space-based data and information -with appropriate special and temporal resolution - should be freely, quickly and easily available.

**Promote space debris monitoring and sharing of information (Guideline 21)**

Promote the collection, sharing and dissemination of space debris monitoring information

States and international intergovernmental organizations should encourage the development and use of relevant technologies for the measurement, monitoring and characterization of the orbital and physical properties of space debris and should promote the sharing and dissemination of derived data products and methodologies for their use.

“International Space Debris Fund” could be established under the auspices of UNOOSA, in order to support the activities that remove/mitigate current and prevent future debris or reduce their impacts. Member States, especially the leading states in space activities might be encouraged to consider a percentage of their space activities budget for this fund in order to enhancing the long-term sustainability of outer space activities and supporting sustainable development on Earth and space.

**Risk assessment relating to space objects (Guideline 23+25)**

**States and international intergovernmental organizations should encourage entities under their jurisdiction or control that conduct space activities to perform conjunction assessment during orbital phases of controlled flight and to limit the risk to people and property from controlled re-entries.**

Conjunction assessment with other space objects should be performed for all spacecraft capable of adjusting trajectories during orbital phases of controlled flight for current and planned spacecraft trajectories. If spacecraft operators, including those of the private sector, are unable to perform conjunction assessments, they are encouraged to obtain support from any appropriate around-the-clock operational conjunction assessment entities.

Appropriate steps of the conjunction assessment process include improving the orbit determination of relevant space objects, screening current and planned trajectories of relevant space objects for potential collisions and determining whether an adjustment of trajectory is required to reduce the risk of collision, in coordination with other operators and/or organizations responsible for conjunction assessment, as appropriate.

States and international intergovernmental organizations are encouraged to cooperate with all spacecraft operators to develop and implement common approaches to conjunction assessment.

In cases of controlled re-entries of spacecraft or launch vehicle orbital and/or suborbital stages, States and international intergovernmental organizations should consider furnishing notices to aviators and mariners using already established procedures [and as appropriate, inform the public and other States].

**Sharing of operational space weather data, forecasts and best practices (Guideline 27+29)**

**States and international intergovernmental organizations should support and promote the collection, archiving, sharing, intercalibration, long-term continuity and dissemination of critical space weather data and space weather model outputs and forecasts, where appropriate in real-time, as a means to promote the long-term sustainability of outer space activities.**

States and international intergovernmental organizations should support the identification of data sets critical for space weather services and research and should consider adopting policies for the free and unrestricted sharing of critical space weather data from their space- and ground-based assets. All governmental, civilian and commercial space weather data owners are urged to allow free and unrestricted access to, and archival of, such data for mutual benefit.

States and international intergovernmental organizations should also consider sharing real-time and near-real-time critical space weather data and data products in a common format, promote and adopt common access protocols for their critical space weather data and data products, and promote the interoperability of space weather data portals, thus promoting ease of data access for users and researchers.

States and international intergovernmental organizations should further undertake a coordinated approach to maintaining the long-term continuity of space weather observations, and identifying and filling key measurement gaps, so as to meet critical needs for space weather information and/or data. Consideration should be given to flying small and low-power integrated payloads for space weather science and monitoring whenever and wherever possible (e.g. radiation monitors on Earth-orbiting satellite missions).

States and international intergovernmental organizations should identify high-priority needs for space weather models, space weather model outputs and space weather forecasts and adopt policies for free and unrestricted sharing of space weather model outputs and forecasts. All governmental, civilian and commercial space weather model developers and forecast providers are urged to allow free and unrestricted access to and archival of space weather model outputs and forecasts for mutual benefit, which will promote research and development.

States and international intergovernmental organizations should also encourage their space weather service providers to:

(a) Undertake comparisons of space weather model and forecast outputs with the goal of improved model performance and forecast accuracy;

(b) Openly share and disseminate historical and future critical space weather model outputs and forecast products in a common format;

(c) Adopt common access protocols for their space weather model outputs and forecast products to the extent possible, to promote their ease of use by users and researchers, including through interoperability of space weather portals; and

(d) Undertake coordinated dissemination of space weather forecasts among space weather service providers and to operational end users.

States should be encouraged to monitor the space weather changes continuously and also share data and information with the aim of establishing an “international space weather database network”.

#### **Guidance for entities conducting space activities (Guideline 32+33)**

**States should ensure that entities under their jurisdiction that conduct outer space activities have the appropriate structures and procedures for planning and conducting space activities in a manner that supports the objective of promoting the long-term sustainability of outer space activities, and that they have the means to comply with relevant national and international regulatory frameworks, requirements, policies and processes in this regard.**

States bear international responsibility for national activities in outer space and for the authorization and continuing supervision of such activities, which are to be carried out in conformity with international law. However, the direct responsibility for ensuring that a given space activity does not jeopardize the long-term sustainability of outer space activities in general lies with the entity conducting that activity. In this regard, the management of that entity should take steps to:

(a) Establish and maintain all the necessary technical competencies required

to conduct outer space activities in a safe and responsible manner and to enable it to comply with the relevant governmental and intergovernmental regulatory frameworks, requirements, policies and processes;

(b) Develop specific requirements and procedures to address the safety and reliability of outer space activities under the entity's control, during all phases of a mission life cycle;

(c) Assess all risks to the long-term sustainability of outer space activities associated with the space activities conducted by the entity, in all phases of the mission life cycle, and take steps to mitigate such risks.

The management of an entity that conducts outer space activities should ensure that the entity's structures and procedures for planning and conducting space activities support the objective of promoting the long-term sustainability of outer space activities. Appropriate measures to be taken by management in this regard should include:

(a) A commitment at the highest levels of the entity to promoting the long-term sustainability of outer space activities;

(b) Establishing and fostering an organizational culture and commitment to promoting the long-term sustainability of outer space activities within the entity, as well as in relevant interactions with other entities;

(c) Ensuring that the entity's commitment to the long-term sustainability of outer space activities is reflected in its management structure and procedures for planning, developing and conducting outer space activities;

(d) Encouraging, as appropriate, the sharing of the experiences of the entity in the conduct of safe and sustainable outer space activities as a contribution by the entity to the promotion of long-term sustainability of outer space activities;

(e) Designating a contact point within the entity responsible for communication with relevant authorities to facilitate efficient and timely sharing of information and coordination of potentially urgent measures to promote the safety and sustainability of outer space activities.

Space agencies or entities under their jurisdiction, are encouraged to establish a responsible entity to assess and coordinate space activities that support sustainable development goals and process as well as COPUOS guidelines for the long-term sustainability of outer space activities.