

**UNIDIR Space Security Conference 2011:
Building on the Past, Stepping Towards the Future**

Space Sustainability: Setting a Technical Baseline for New Regimes

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Space sustainability is increasingly a matter of concern for space faring nations and commercial satellite operators. If outer space is not safe, secure or peaceful, the ability to use it could be denied to all and its use becomes unsustainable. We would be unable to use space for national security purposes, for Earth observation, for telecommunications including here data transfer and television, internet, telephone, financial transactions, for navigation, for scientific exploration, or economic development. If outer space becomes unsustainable the human spaceflight in Earth orbit could be under a big threat. Addressing the inputs to space sustainability now means we can prevent trends from becoming norms, and ensure that outer space is useable for all on a long term.

The growing number of actors in outer space activities, both government and private, the effect of space weather on spacecraft, the proliferation of space debris and the development of private human space flight, all call into question the ability to continue operating in a safe space environment. To promote sustainable operations, complete accurate and timely information on objects orbiting the Earth, on the natural space environment and on threats coming from space is needed by all spacefaring parties. This requires international monitoring, communication and coordination.

Before introducing the topic as approached at the level of UN, I want to refer shortly to other existing initiatives to improve space sustainability.

The **International Association for the Advancement of Space Safety (IAASS)** is a non-profit organisation dedicated to furthering international cooperation and scientific advancement in the field of space systems safety. This organization was legally established in 2004 in the Netherlands, and received in 2010 an observer status within UN COPUOS. The main principles promoted by this association are: to ensure that citizens of all nations are equally protected from “unreasonable levels” of risk from overflight by missiles, launch vehicles and returning spacecraft; to ensure that any spacecraft

- manned or unmanned - is developed, built and operated according to uniform minimum safety standards which reflect the status of knowledge and accumulated experience; to prevent the risk of collision or interference during transit in the airspace and on-orbit operations; to ensure the protection of the ground, air and on-orbit environment from chemical, radioactive and debris contamination.

The method of IAASS is top-down, trying to create an international agency to set policies, regulations and do enforcement, proposing that space activities by all commercial and government entities would be required to be certified and approved.

Even if the activity of this association raises questions referring to the interaction with other international organizations as ITU, ICAO, ISO, there are expectations from it to have constructive contributions at the level of COPUOS with respect to the item Long Term Sustainability of Space Activities.

Another initiative dealing with space sustainability is represented by an informal process launched by a group of large satcom companies in November 2007, **Satcom Industry Data Exchange**.

This process aims to standardize orbital prediction models and reporting requirements to ease data exchange and to develop a “Babelfish” program for “translating” from one data model to another, with no need for companies to change their current practices.

Satcom Industry Data Exchange has developed a prototype system for reporting data through neutral third party (Center for Space Standards & Innovation – CSSI - which is a division of Analytical Graphics, Inc., a private software development company focused on spaceflight and national security). CSSI operates the satellite tracking web site CelesTrak, which includes Satellite Orbital Conjunction Reports Assessing Threatening Encounters in Space (SOCRATES), a twice-daily analysis of the probability of satellite collisions based on publicly available data. The center is working on providing automatic close approach/collision warning including debris, using official US data, with the primarily scope of improving Space Situational Awareness. The system could, however, be morphed into global data base that included non-US government data input.

The method proposed by Satcom Industry Data Exchange is informal, voluntary, “self-regulatory”. Representatives of different institutions part of this initiative are participating in informal COPUOS process.

The EU has proposed a draft **Code of Conduct for Outer Space Activities** complementary to the existing framework regulating outer space activities. The revised version from September 2010 of this draft Code of Conduct is a base for larger negotiations with all nations. The EU Draft Code of Conduct is one of the central proposals for a voluntary international agreement to enhance space security. It is, to some extent, designed to serve as an alternative to treaty proposals for prevention of an arms race in outer space or bans on space weapons. Moreover, it is an effort on the part of the EU to play a normative role in space security through the “principled” identity it seeks to achieve. The EU Draft Code of Conduct was deliberately structured outside of traditional multilateral institutions like the UN and the Conference on Disarmament and aims at strengthening the existing international framework for the management of space activities.

At the level of UN, composed of 70 Member States and 29 permanent observers, the **Committee on the Peaceful Uses of Outer Space - COPUOS** is the premier international forum for working out issues of space governance. Matters that come before COPUOS are deliberated first in working groups within one of the two subcommittees and when resolution is reached, the matter is presented to the full committee. After additional deliberation, COPUOS will prepare a report and possibly a resolution for presentation to the General Assembly for its approval as a UN resolution.

Some of the main topics under debate at the level of COPUOS are: Ways and means of maintaining outer space for peaceful purposes; Implementation of the recommendations of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space - UNISPACE III (Vienna, 1999); Spin-off benefits of space technology; Space and society; Space and water; Space and climate change; Use of space technology in the United Nations system; International cooperation in promoting the use of space-derived geospatial data for sustainable development;

In the framework of the scientific and technical subcommittee are debated topics as Space debris, Space-system-based disaster management support, Recent developments in global navigation satellite systems, Use of nuclear

power sources in outer space, Near-Earth objects, International Space Weather Initiative, Examination of the physical nature and technical attributes of the geostationary orbit and its utilization and applications, including in the field of space communications.

Such topics show how actual are problems connected with the reasonable utilization of outer space. As a logic development, according to a first proposal made by France in 2008, a new item in the agenda of STS COPUOS was introduced in February 2010, named “Long-term sustainability of outer space activities”. The topic was introduced as a matter of concern not only for current and aspiring space actors, but also for the international community as a whole.

At its forty-seventh session, the Scientific and technical Subcommittee of COPUOS recalled the importance of ensuring the safe and sustainable future use of outer space and noted, in accordance with the workplan related to this item, that a working group should be established to support the preparation of a report on the long-term sustainability of outer space activities, the examination of measures that could enhance the long-term sustainability of such activities and the preparation of a set of voluntary guidelines focused on practical measures that could be implemented in a timely manner to enhance the long-term sustainability of space activities. The established Working Group conducted its first meeting during the COPUOS session in June 2010. It held the subsequent meetings in February this year during STS COPUOS. There were established: terms of reference, objective and outputs, scope, method of work and a proposed multi-year workplan.

Topics for examination by the Working Group under Long-term sustainability of space activities item include: sustainable space utilization supporting sustainable development on Earth; space debris; space weather; space operations; tools to support collaborative space situational awareness; regulatory regimes; guidance for actors in the space arena.

Sustainability of outer space activities is developing as a concept of increasing interest to wide variety of space stakeholders, and is referring to a comprehensive and coordinated effort which includes developing tools of governance that lead to the reduction and removal of orbital debris, promoting international civil space situational awareness to improve knowledge and transparency, and preventing intentional destruction of spacecraft by debris-causing anti-satellite (ASAT) weapons.

The best way of obtaining stakeholder buy-in on the proposed future norms or recommendations for the Long term sustainability of space activities, based on largely voluntary approaches, is to build on the base of a “bottom up” model (see the successful Space Debris Guidelines of the Inter-agency Space Debris Coordination Committee - IADC). I’m confident that conclusive results in this respect are more easily achieved than negotiated treaties. The voluntary norms or recommendations could be potentially step-by-step translated into formal/legal regimes. For instance, at the on-going session of the Legal Subcommittee of COPUOS the Czech Republic submitted a working paper entitled “Review of the legal aspects of the Space Debris Mitigation Guidelines of COPUOS with the view to transforming the Guidelines into a set of Principles to be adopted by the General Assembly”.

COPUOS and its sub-committees already have experience in analysing and debating on important issues that need regulation, norms or guidelines agreed by all member states. The already existing initiatives referring Space Sustainability will bring in one or another way their input in the work on this subject at the level of COPUOS. It’s obvious that the Long term sustainability of outer space activities will represent an important debate during the next years.