

UNITED NATIONS OFFICE FOR OUTER SPACE AFFAIRS



UNOOSA

*The creative conquest of space will serve as a wonderful substitute for war.
—James Smith McDonnell
Founder, McDonnell Aircraft Corporation*

Committee: United Nations Office for Outer Space Affairs

Agenda:

Potential risks posed to human survival by Near Earth Objects along with emphasis on collision of satellites which can potentially cause catastrophe in the low earth orbit.

Chair: Devyansh Arora

Introduction

The United Nations Office for Outer Space Affairs (UNOOSA), located in Vienna, is the United Nations Office (a part of the UN Secretariat) responsible for promoting international cooperation in the peaceful uses and Exploration of Outer Space. UNOOSA serves as the Secretariat for the General Assembly's only committee dealing exclusively with International Cooperation in the peaceful uses of outer space: the United Nations Committee on the Peaceful Uses of Outer Space (COPUOS).



" international cooperation is a necessary driver for bringing the growing number of benefits derived from space science and technology applications to both developing and developed countries in their common pursuit of attaining the objectives of the global development agenda beyond 2015 "

(Simonetta Di Pippo, STSC 2015)



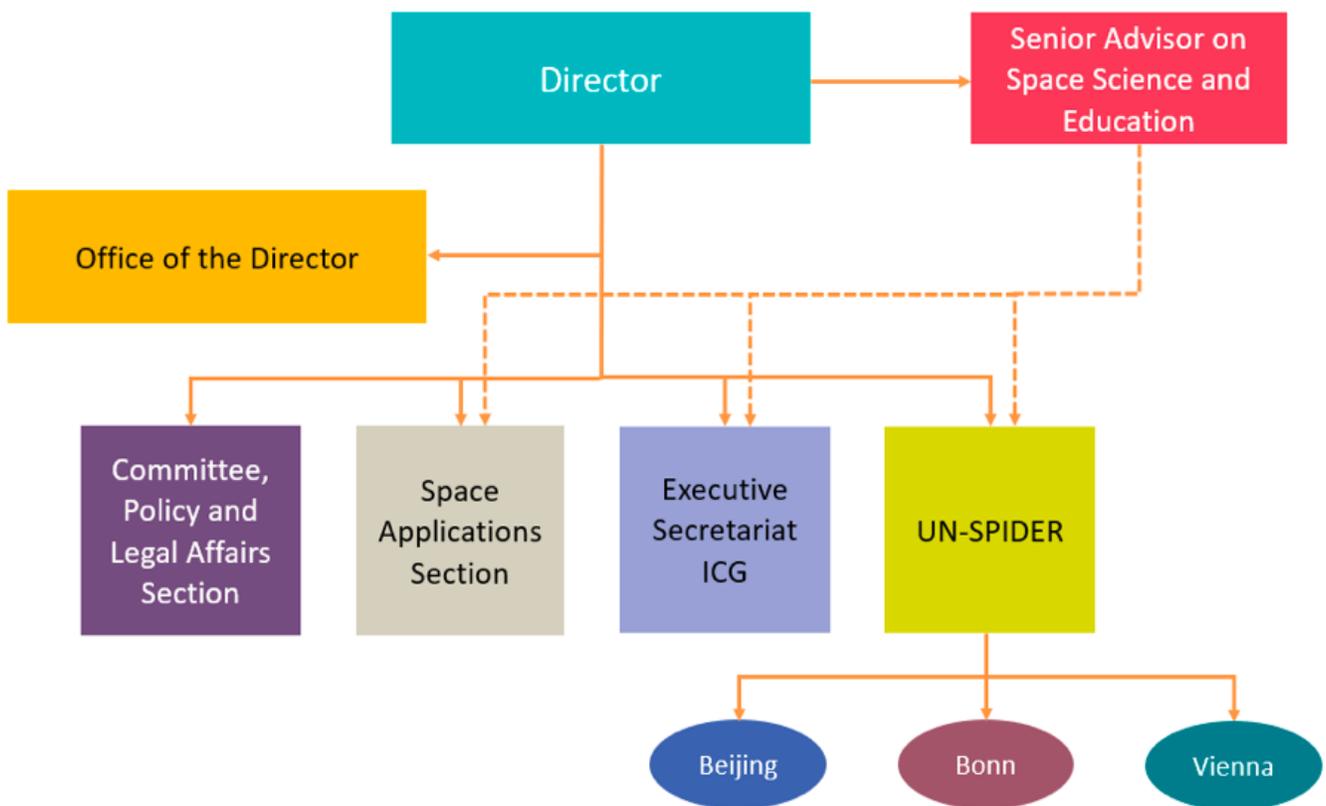
AIM OF UNOOSA

The United Nations Office for Outer Space Affairs (UNOOSA) works to promote International Cooperation in the peaceful use and exploration of space. It also aims in the utilisation of Space Science and Technology for Sustainable Economic and Social Development.

Seeking to concoct and bolster the legal and regulatory framework for space activities, the UNOOSA also aims to strengthen the capacity of developing countries to use Space Science Technology and Applications for development by helping them in integrating their space-exploration capabilities into National Development Programmes. Furthermore, UNOOSA also prepares and distributes reports, studies and publications on various fields of Space Science and Technology, its Applications and International Space Law. Documents and reports are available in all official languages of the United Nations on their website.

STRUCTURE OF UNOOSA

UNOOSA Organisational Chart



A BRIEF DESCRIPTION OF KEY TERMS

● Space Law

Space law can be described as a set of laws governing, regulating and scrutinizing Space- related activities. Space law's framework is much like general international law; it comprises a variety of International agreements, Treaties, Conventions, United Nations General Assembly resolutions as well as rules and regulations of international organizations.

The term "space law" is most often associated with the rules, principles and standards of international law appearing in the five international treaties and five sets of principles governing outer space which have been developed under the auspices of the United Nations.

Space law addresses a variety of matters, such as, for example, the preservation of the space and Earth environment, liability for damages caused by space objects, the settlement of disputes, the rescue of astronauts, the sharing of information about potential dangers in outer space, the use of space-related technologies, and international cooperation. A number of fundamental principles guide the conduct of space activities, including the notion of space as the province of all humankind, the freedom of exploration and use of outer space by all states without discrimination, and the principle of non-appropriation of outer space.

- **International cooperation**

The interaction between representatives representing various Nations in the pursuit of a common goal or interest or to resolve a matter of dispute/conflict. Resolution 51/122 of the General Assembly describes the role of International Cooperation in Outer Space Exploration.

- **Regulatory frameworks**

These comprise of procedures, regulations, guidelines, codes of conduct, and other regulatory documents – complements electoral laws by clarifying or filling in gaps, and should be regularly reviewed.

Regulatory frameworks are legal mechanisms that exist on national and international levels. They can be mandatory and coercive (national laws and regulations, contractual obligations) or voluntary (integrity pacts, codes of conduct, arms control agreements). However, they do not suffice on their own and must be accompanied by positive incentives and other building integrity measures.

- **Space (Science) Technology**

Space technology is technology developed by the Space Science Industry or the Aerospace Industry to be used in Space Exploration. Space technology includes technology utilized in Spacecraft, Satellites, Space Stations, support infrastructure, equipment, and procedures and space warfare.

- **Committee on the Peaceful Uses of Outer Space (COPUOS).**

The Committee on the Peaceful Uses of Outer Space (COPUOS) was set up by the General Assembly in 1959 to govern the exploration and uses of space for the benefit of all humanity: for peace, security and development. The Committee was tasked with reviewing international cooperation in peaceful uses of outer space, studying space-related activities that could be undertaken by the United Nations, encouraging space research programmes, and studying legal problems arising from the exploration of outer space.

The Committee has two subsidiary bodies: the Scientific and Technical Subcommittee, and the Legal Subcommittee, both established in 1961. The Committee reports to the Fourth Committee of the General Assembly, which adopts an annual resolution on international cooperation in the peaceful uses of outer space.

SPACE APPLICATIONS SECTION

(SAS)

As a result of the shifting emphasis from scientific exploration of outer space to the practical applications of space technology, the Office has been increasingly involved in implementing decisions of the Committee and its subsidiary bodies related to the promotion of international cooperation in the uses of space technology for economic and social development. Beginning with the first United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE) in 1968, the Office has carried out programmes designed to disseminate information and provide training in the practical applications of space technology, in particular for developing countries.

After the Second Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE 82) in 1982, the General Assembly, in its resolution 37/90 of 10 December 1982, expanded the mandate to include promoting the development of indigenous capabilities in the developing countries.

PROGRAMME ON SPACE

APPLICATIONS (PSA)

The Programme on Space Applications (PSA), since its creation in 1971, has made substantial progress in furthering knowledge and experience of space applications around the world. Provision of country capacity-building, education, research and development support and technical advisory services by the Programme have all helped to reduce the gap between the industrialized and developing countries. Much more, however, remains to be accomplished. The support of Member States and their participation in the Programme on Space Applications are vital. It is only through the commitment of all nations that the Programme can achieve its primary objective of putting space technology to work for sustainable economic and social development, not just in individual countries but on a global basis.

MAJOR COUNTRIES/AGENCY INVOLVED

- 1) EUROPEAN SPACE AGENCY (ESA)
- 2) ALGERIAN SPACE AGENCY
- 3) AUSTRALIAN SPACE AGENCY
- 4) BRAZILIAN SPACE AGENCY (AEB)
- 5) CANADIAN SPACE AGENCY (CSA)
- 6) CHINA NATIONAL SPACE ADMINISTRATION (CNSA)
- 7) INDIAN SPACE RESEARCH ORGANIZATION (ISRO)
- 8) ISRAEL SPACE AGENCY (ISA)
- 9) JAPAN AEROSPACE EXPLORATION AGENCY (JAXA)
- 10) KENYA SPACE AGENCY (KENSA)
- 11) NATIONAL AERONAUTICS AND SPACE ADMINISTRATION (NASA)
- 12) UK SPACE AGENCY (UKSA)
- 13) NATIONAL SPACE AGENCY of KAZAKHSTAN
- 14) NADA (NORTH KOREA)
- 15) COLUMBIAN SPACE AGENCY
- 16) SOUTH AFRICAN SPACE AGENCY
- 17) ROSCOSMOS STATE CORPORATION FOR SPACE ACTIVITIES (RUSSIA)

- 18) AGENCIA ESPACIAL MEXICANA (MEXICO)
- 19) IRANIAN SPACE AGENCY
- 20) PHILIPPINES SPACE AGENCY
- 21) VIETNAM SPACE AGENCY
- 22) SINGAPORE SPACE AND TECHNOLOGY ASSOCIATION
- 23) AUSTRALIAN SPACE AGENCY
- 24) UKRAINE SPACE AGENCY
- 25) SUPARCO (PAKISTAN)

TIMELINE OF EVENTS

Time-line of Events:

Date	Event
1961	International Co-operation in the Peaceful Uses of Outer Space
1967	Outer space Treaty
2000	International Cooperation in the Peaceful Uses of Outer Space
2007	Recommendations on enhancing the practice of States and international intergovernmental organizations in registering space objects
2013	Recommendations on national legislation relevant to the peaceful exploration and use of outer space
2017	Declaration on the fiftieth anniversary of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies

SIGNIFICANT TREATIES

The treaties commonly referred to as the "Five United Nations Treaties on Outer Space" are:

- **The "Outer Space Treaty"**

- [Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies](#)
- Adopted by the General Assembly in its [resolution 2222 \(XXI\)](#), opened for signature on 27 January 1967, entered into force on 10 October 1967

- **The "Rescue Agreement"**

- [Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space](#)
- Adopted by the General Assembly in its [resolution 2345 \(XXII\)](#), opened for signature on 22 April 1968, entered into force on 3 December 1968.

- **The "Liability Convention"**

- [Convention on International Liability for Damage Caused by Space Objects](#)
- Adopted by the General Assembly in its [resolution 2777 \(XXVI\)](#), opened for signature on 29 March 1972, entered into force on 1 September 1972.

- **The "Registration Convention"**

- [Convention on Registration of Objects Launched into Outer Space](#)
- Adopted by the General Assembly in its [resolution 3235 \(XXIX\)](#), opened for signature on 14 January 1975, entered into force on 15 September 1976.

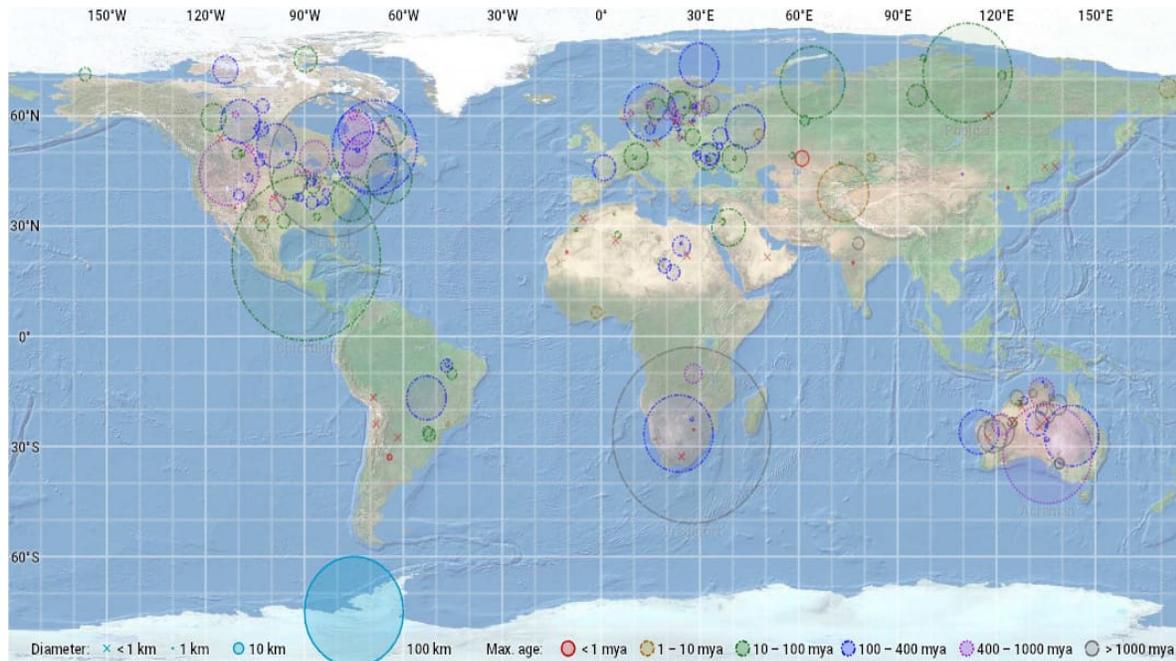
- **The "Moon Agreement"**

- [Agreement Governing the Activities of States on the Moon and Other Celestial Bodies](#)
- Adopted by the General Assembly in its [resolution 34/68](#), opened for signature on 18 December 1979, entered into force on 11 July 1984.

KEY PROBLEMS

- **NEAR-EARTH OBJECTS:**

Near-Earth Objects, or NEOs, are objects that pose potentially catastrophic threats to Earth. A Near-Earth object may be an asteroid or comet which passes close to the Earth's orbit. Technically, a NEO is considered to have a trajectory which brings it within 1.3 astronomical units of the Sun and hence within 0.3 astronomical units, or approximately 45 million kilometres, of the Earth's Orbit. NEOs generally result from celestial objects that have experienced Gravitational Perturbations from nearby planets, moving them into orbits that allow them to come close to the Earth.



- **MEGA CONSTELLATION OF SATELLITES:**

With a number of developments in Space Science and Technology, the previous decade has been evidence to the fact that an exceedingly large number of satellites were launched into the Earth's Orbit for various purposes. Not only this, but also, clusters of satellites were launched on various instances. Some of them include GPS by USSF, GLONASS by Roscosmos, Galileo by GSA & ESA, BeiDou by CNSA, QZSS & JAXA and the list goes on. The risk of causing a chain reaction due to the collision between space debris objects (the well-known Kessler syndrome) has been analysed in numerous studies, and concludes that in the event of such collisions, the LEO (Low Earth Orbit) regime could become accessible at High risk or Inaccessible at High Risk, and would remain so for hundreds of years, endangering Future Manned flights. This would also deter Space Exploration, thereby posing a threat to UNOOSA's mandate. Owing to the aforementioned reasons, several recent studies have tried to highlight how the risk of collision would be greatly affected by the appearance of the mega-constellations.



STEPS TAKEN TO AVOID THREATS POSED BY NEOs

The International Asteroid Warning Network (IAWN) Est. 2013 and the Space Mission Planning Advisory Group (SMPAG) are two entities/groups that were established in 2014 as a result of United Nations-endorsed recommendations, and represent important mechanisms at the Global Level for strengthening coordination in the domain of planetary defence, which is need of the hour.

UNOOSA works with IAWN, which maintains an Internationally Recognized clearing house for the receipt, acknowledgement and processing of all NEO observations, especially those posing a threat, which are collected from Observatories worldwide by facilitating the dissemination of information related to Near-Earth objects to Member States.

Palermo Technical Impact Hazard Scale, a logarithmic scale, is used by astronomers to rate the potential hazard of impact of a Near Earth Object. A rating of 0 means the hazard is equivalent to background hazard. A background hazard is the average risk posed by an object of hitting the Earth till the day it hits i.e. till the day its probability of hitting becomes 1. Some asteroids have been classified hazardous or ones posing higher risk according to this scale.

Such scales can help us to determine Asteroids which can impact Earth.

APPENDIX

1. https://en.m.wikipedia./wiki/United_Nations_Office_for_Outer_Space_Affair
2. <https://www.unoosa.org>
3. https://26828f15-da9b-481a-bb0e-aacffddd2f0a.filesusr.com/ugd/074067_520137848b214482bcd8fd39cabfe763.pdf
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5. https://ndupress.ndu.edu/Portals/68/Documents/jfq/jfq-74/jfq-74_110-115_DeFrieze.pdf
6. https://www.unoosa.org/oosa/oosadoc/data/documents/2017/aac.105/aac.1051112add.2_0.html
7. <https://conference.sdo.esoc.esa.int/proceedings/sdc8/paper/246>

ALL THE BEST
