DISEC Study Guide for Simulations of the Disarmament and International Security Committee (DISEC) at the NUST International Model United Nations

Establishing International Cooperation for Peaceful Use of Outer Space

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Introduction

The United Nations (UN) Disarmament and International Security Committee (DISEC) was created as the first of the Main Committees in the General Assembly when The charter of the United Nations was signed in 1945. According to the UN Charter, the purpose of DISEC in the General Assembly is to establish general principles of cooperation in the maintenance of international peace and security, including the principles governing disarmament and the regulation of armaments and to give recommendations regarding such principles to the Members or to the Security Council. The UN Charter explains that DISEC can suggest specific topics for Security Council consideration. Aside from its role in the General Assembly, DISEC is also an institution of the United Nations Office for Disarmament Affairs (UNODA), formally named in January 1998. The UNODA is concerned with disarmament at all levels—nuclear weapons, weapons of mass destruction, and conventional weapons—and assists DISEC through its work conducted in the General Assembly for substantive norm-setting support to further its disarmament initiatives.

This committee functions under the frameworks of the UN charter, specifically Articles 11 and 26. Article 11 outlines the general assembly's powers to discuss and make recommendations on any matters related to peace and international security, while article 26 emphasizes the importance of promoting disarmament and regulating armaments to maintain peace.
DISEC's mandate includes addressing a broad range of peace and international security issues. This includes promoting treaties that limit or regulate the quantity of weapons and military capabilities, which is known as arms control. Additionally, DISEC aims to eradicate weapons of mass devastation.

DISEC has been involved in a number of important fields and noteworthy gatherings in recent years. With an emphasis on bolstering the treaty's provisions and tackling issues pertaining to nuclear proliferation, DISEC has played a crucial role in the continuous debates and evolutions of the NPT. In order to strengthen the international nonproliferation regime, the committee has supported the discussions and put forward solutions. Moreover, DISEC has arranged a number of forums to discuss new international security issues. The peaceful usage of space has been a topic of notable discourse; DISEC has examined the necessity of international standards to stop an arms race in space. Furthermore, by creating plans for better control and disarmament, DISEC has addressed problems pertaining to the spread of light and small weaponry. Additionally in light of the growing significance of cybersecurity, DISEC has organized meetings to talk about the dangers of cyberwarfare and safeguarding vital infrastructure. Recommendations for improved cybersecurity and international cooperation have resulted from these talks.

The United Nations established the committee on the peaceful uses of outer space (COPUOS) to promote international cooperation for peaceful use of outer space IN 1958.

Important Terms:

Important Terms regarding the topic are following:

1. ***Outer Space***: Refers to the realm beyond Earth's atmosphere, including the Moon and other celestial bodies, where the treaty applies.

2. ***Non-Appropriation****:* No nation can claim sovereignty, ownership, or control over outer space or celestial bodies.

3. ***Exploration and Use****:* Outer space is free for exploration and use by all countries, irrespective of their economic or scientific development.

4. ***Space Treaty:*** Establishes guidelines for the exploration and use of outer space.

5. ***Space Contamination****:* Refers to a harmful substance or material released into outer space or on celestial bodies as a result of a nation's space activities.

6. ***Astronauts as "Ambassadors":*** Astronauts are regarded as representatives of humanity, and all nations are obligated to assist them in emergencies.

7. ***Liability for Damage***: States are liable for damages caused by their space objects, whether to other states, people, or property.

8. ***Weapons of Mass Destruction****:* Refers to nuclear, chemical, and biological weapons, which are prohibited from being placed or tested in outer space under the Outer Space Treaty.

9. ***Celestial Bodies****:* Includes the Moon, planets, asteroids, and other natural entities in space, subject to specific rules under the treaty.

10. ***Freedom of Exploration***: All countries have equal rights to explore outer space without discrimination.

11. ***Jurisdiction and Control****:* States retain jurisdiction and control over their registered space objects and personnel, even in outer space.

12. ***Preservation of Space****:* Refers to actions that are to be taken to maintain long-term usability of space.

13. ***Space Debris:*** Non-functional objects in Earth's orbit.

14. ***Space Treaty:*** **I**nternational agreements governing space activities.

15. ***Orbital Slot:*** Designated positions in space for satellites.

Historical Context

Since the dawn of the space age, the United Nations has been active in space-related activities. The United Nations has been dedicated to the peaceful use of space since the first satellite orbited the planet in 1957. One of the major steps towards the international cooperation of peaceful use of outer space was the establishment of the committee of peaceful use of outer space (COPOUS) by the United Nations general assembly in 1959. With the first artificial satellites launched during the International Geophysical Year (1957–1958), space exploration was progressing quickly at this time. The intention was to guarantee that space exploration and utilization would advance peace, security, and development for the benefit of all people.
The Moon Agreement and the rules Governing the Use by States of Artificial Earth Satellites for International Direct Television Broadcasting are two treaties and rules that regulate the peaceful use of space that were developed in large part thanks to the COPUOS.

The rule of law in space should be gradually developed in accordance with the real needs of international cooperation in this new area of human activity, and all decisions in this regard should be adopted by consensus, according to the understanding that existed when the COPUOS and its Legal Subcommittee started considering the subject.
A draft Declaration of the Basic Principles Governing the Activities of States Pertaining to the Exploration and Use of Outer Space, put forth by the Union of Soviet Socialist Republics (USSR), was one of the documents presented to the first session of the Legal Subcommittee in the spring of 1962 (A/AC.105/C.2/L.1). A set of guidelines that the proposal's sponsor believed were essential for any future or current space-related activity were included. Not all of the COPUOS member states instantly supported the draft Declaration or, more specifically, some of its tenets. However, the concept gained traction, and a successful negotiation of such a Declaration took place in 1963. The Statement of Legal Principles Controlling State Activities
Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies

Moreover, the Outer Space Treaty was signed by diplomats in 1967, at the height of the Cold War. With its emphasis on the peaceful use of space and the pursuit of exploration for the benefit of all nations, this convention established the framework for international space law. It was a major step in the direction of global space cooperation.

The Outer Space Treaty was not a complete instrument that would encompass all current and predictable aspects of space activity, even if it provided suitable solutions to many challenging issues. Furthermore, it lacked the explanations required for a specific interpretation of certain of the general phrases employed in that document. Therefore, phrases like "outer space," "space object," "orbit around the Earth," "peaceful purposes," "exploration and use of outer space," and "celestial bodies" were not defined in the Outer Space Treaty.

In a single language found in article IX, the Outer Space Treaty only offers minimal protection for the space environment. The introduction of extraterrestrial materials is the sole instance in which the protection of Earth is discussed. However, it should be remembered that the United Nations only subsequently became concerned about environmental issues in general and the seriousness of the threat posed by the production of space debris in particular.
Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies

Keeping the legal regimes of 1963 and 1979 in mind along with the establishment of UNCOPUOS and the Artemis Accords it should also be clearly stated that while there is a general agreement that an arms race in outer space should be prevented, a treaty to comprehensively prevent it has not yet been negotiated. The United States argues that an arms race in outer space does not yet exist, the rest of the international community agrees that now is the time to prevent the weaponization of space.

Legal Frameworks for Outer Space Governance

Since humanity's first step in space, several important legal frameworks and treaties have been signed by international stakeholders. These include the Outer Space Treaty 1967, Rescue Agreement (1968), Liability Convention (1972), Moon Agreement (1984), Principles Governing the Activities of States in the Exploration and Use of Outer Space (1986) and etc.

Delegates should have the following two objectives in mind while going through the legal frameworks for outer space**.**

Assessing Existing Treaties: Effectiveness of the Outer Space Treaty and Registration Convention in preventing non-peace activities in space.

Proposals for New Agreements: Explore potential international agreements aimed at curbing non-peace activities and promoting peaceful uses of outer space.

Main Points of the existing space treaties are given below**.**

1- Outer Space Treaty:

Officially titled the Treaty on *Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies*, is the foundational agreement that shapes international space exploration. It was adopted by the United Nations in 1966 and became effective in 1967, with over 110 nations as signatories. Think of it as the rulebook for how countries—and increasingly, private companies—should conduct themselves in outer space.

Key Highlights

- *Article I: Freedom of Use and Exploration*

    - *Outer space is open for exploration and use by all nations, without discrimination. Activities must benefit all humankind and prioritize international cooperation.*
- *Article II: Non-Sovereignty*
    - *No nation can claim ownership of outer space or celestial bodies through sovereignty, occupation, or any other means.*
- *Article III: Compliance with International Law*
    - *Space activities must adhere to international law and the principles of the United Nations Charter.*
- *Article IV: Demilitarization*
    - *Prohibits placing nuclear weapons or weapons of mass destruction in orbit or on celestial bodies. Ensures the Moon and other celestial bodies are used exclusively for peaceful purposes.*
- *Article V: Astronaut Assistance*
    - *Astronauts are recognized as envoys of humanity, and states must assist them in emergencies, regardless of nationality.*
- *Article VI: National Responsibility*
    - *Countries are responsible for their space activities, including those by private entities. Governments must authorize and supervise private companies operating in outer space.*
- *Article VII: Liability for Damage*
    - *States are liable for damage caused by their space objects on Earth, in space, or on celestial bodies.*
- *Article VIII: Ownership and Jurisdiction*
    - *States retain ownership of objects they launch into outer space, even when these objects are in orbit or on celestial bodies. Jurisdiction and control remain with the state of registry.*
- *Article IX: Prevention of Harmful Activities*
    - *States must avoid actions that could harm celestial bodies or contaminate Earth's environment. Activities should respect other nations' interests and avoid harmful interference.*
- *Article X: Transparency and Observation*
    - *Encourages mutual observation of space activities to build trust and transparency among nations.*
- *Article XI: Notification of Activities*
    - *Requires nations to inform the United Nations and other states about the nature and conduct of space activities.*

Access full text of the "Outer Space Treaty (1967)" here for further research.

2. Rescue Agreement (1968):

This reflects the global commitment to cooperation and mutual responsibility in space exploration, prioritizing the safety of astronauts and the return of space objects.

Key highlights include:

- Commitment to Aid (Article 1):
    - Nations are obligated to assist astronauts in distress, reflecting a shared humanitarian duty.
- Safe Return (Article 2):
    - Astronauts landing outside their home territory must be promptly returned to their launching state.
- Clear Communication (Article 3):
    - States must notify relevant parties about astronauts in danger.
- Recovery of Space Assets (Articles 4-5):
    - Recovered space objects must be returned to their origin.

This agreement underscores collaboration and accountability in global space ventures.

Access full text of the "Rescue Agreement (1968)" here for further research.

3. Moon Agreement (1984):

Officially titled the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, was established by the United Nations in 1979 and came into effect in 1984.

Key Articles and Highlights of the treaty are below.

- Scope of Application (Article 1)
    - Covers the Moon and all celestial bodies within the solar system (excluding Earth), including activities on their surfaces and sub-surfaces.
- Prohibition of Ownership (Article 2)
    - Confirms that no state, organization, or individual can claim sovereignty or ownership over any part of the Moon or other celestial bodies.
- Peaceful Use (Article 4)
    - Mandates that all activities on celestial bodies be for peaceful purposes. Military installations or weapons testing are explicitly banned.
- Collaboration and Transparency (Article 5)

- Encourages international cooperation in research and exploration. States must share their findings and inform the United Nations of their activities.

- Environmental Protection (Article 6)
    - Requires that activities prevent harm to the lunar environment and avoid contamination. States are accountable for mitigating environmental impacts.
- Resource Utilization (Article 7 & 11)
    - Regulates the extraction and use of lunar resources, ensuring that such activities do not harm the Moon's environment.
    - Declares lunar resources the "common heritage of mankind," requiring international governance to ensure benefits are shared equitably.
- Ownership of Installations (Article 8)
    - Any structures or equipment placed on the Moon remain the property of the entity that established them but must not obstruct the activities of others.
- Dispute Resolution (Article 15)
    - Provides for the peaceful resolution of disputes, including arbitration or judicial processes.

LIMITATIONS: Despite its forward-looking vision, the treaty has limited adoption, with only 18 ratifying countries, none of which are major spacefaring nations.

Access full text of the "Moon Agreement (1984)" here for further research.

4. Liability Convention - 1972

Officially the *Convention on International Liability for Damage Caused by Space Objects*, is a foundational treaty in international space law. The treaty builds on the principles established in the Outer Space Treaty to define liability for damages caused by space objects and outline procedures for resolving disputes.

Adopted in 1972, it has been ratified by over 100 countries. The convention is essential for maintaining accountability and trust in global space activities, especially as both governmental and private actors increase their presence in space.

Key Articles and their brief details are below;

- *Article I: Definitions*
    - Damage: Includes harm to individuals, property, and the environment on Earth or in space.
    - Launching State: Refers to any state that launches or procures the launching of a space object or whose territory or facilities are used for the launch.
- *Article II: Absolute Liability for Surface Damage*
    - A launching state is liable for damage caused by its space objects on Earth or to aircraft in flight, regardless of fault.
- *Article III: Fault-Based Liability in Outer Space*
    - For damage occurring in space (e.g., collisions between space objects), liability is based on fault. A launching state is liable if it is proven to be at fault.
- *Article IV: Joint and Several Liability*
    - If multiple states are involved in launching a space object, they share joint and several liability. Victims can claim full compensation from any involved state.
- *Article V: Exoneration from Liability*
    - A launching state may be exonerated from liability if it proves that the damage resulted from gross negligence or intentional misconduct by the claimant.
- *Article VII: Claims Process*
    - Claims for compensation must be presented through diplomatic channels.
    - If a claimant's state is not satisfied with the outcome, the dispute may be referred to a Claims Commission.
- *Article VIII: Claims Commission*
    - Establishes an ad hoc Claims Commission to mediate unresolved disputes.
    - The commission's decisions are binding only if both parties agree.
- *Article IX: Time Limits*
    - Claims must be filed within one year of the occurrence of damage or its identification.
- *Article X: Compensation Principles*
    - Compensation must fully restore the damaged party to the condition it would have been in if the damage had not occurred.

Access full text of the "Liability Convention (1972)" here for further research.

5. Registration Convention (1976)

Officially the *Convention on Registration of Objects Launched into Outer Space* was adopted in 1976 to enhance the **Outer Space Treaty**'s principles of transparency and accountability in space activities. It establishes a system for tracking and identifying space objects.

Registration Convention - 1976 requires states to maintain a national registry of launched space objects and provide information to the United Nations Office for Outer Space Affairs (UNOOSA), which maintains an international registry.

Its key articles are described briefly below.

Article I: Definitions

- Defines key terms:
    - Launching State: A state that launches, procures the launch, or provides facilities for the launch of a space object.
    - Space Object: Includes satellites, payloads, and parts of spacecraft.

Article II: National Registry

- Launching states must maintain a **national registry** of all space objects launched into orbit or beyond.

Article III: International Registration

- Launching states must furnish details of space objects to the United Nations, including:
    - Name of the launching state.
    - Designation or registration number of the space object.
    - Date and location of the launch.
    - General function of the object.
    - Orbital parameters, such as inclination, period, and altitude.

Article IV: Joint Launches

- For jointly launched objects, involved states must agree on which state will register the object.

Article V: Changes to Registration

- States must promptly inform the UN of any significant changes to a registered object, such as its orbital status or operational purpose.

Article VI: United Nations Registry

- The **UN Secretary-General** is responsible for maintaining an international registry of space objects, ensuring public access to this information.

Article VII: Liability Link

- Emphasizes the connection between registration and liability under the **Liability Convention (1972)**. Registration helps establish responsibility for damage caused by space objects.

Article VIII: Applicability

- The treaty applies to all space objects launched into orbit or beyond, regardless of their function.

Article IX: Entry into Force

- Outlines the procedural requirements for states to ratify or accede to the treaty.

Article X: Non-Compliance

- No explicit penalties for non-compliance, but non-registered objects may complicate liability claims and dispute resolution.

Access full text of the "Registration Convention (1976)" here for further research.

6. ITU Constitution and Convention – 1865 (Modified Continuously)

- Regulations: Allocation of orbital slots and radio frequencies.
- Role: Ensures fair use of space-based communication systems.

Access full text of the "ITU Constitution and Convention" here for further research.

7. UN Principles Relating to Space Activities

- Non-binding guidelines issued by the UN General Assembly, including:
    - Principles on the Use of Satellites for International Direct Television Broadcasting (1982) (Full Text here)
    - Principles on Remote Sensing of the Earth from Outer Space (1986) (Full Text Here)
    - Principles on Nuclear Power Sources in Outer Space (1992) (full Text Here)

8. Guidelines for the Long-Term Sustainability of Outer Space Activities – 2021

- Developed by the UN Committee on the Peaceful Uses of Outer Space (COPUOS).

- Focuses on sustainable practices to mitigate risks such as space debris and resource exploitation.
- Access full text here

9. Artemis Accords – 2020

- Initiated by NASA and signed by multiple nations.
- Establishes voluntary principles for sustainable lunar exploration, emphasizing transparency, interoperability, and responsible resource use.
- Access full text here
- Access List of signatories here

10. Space Debris Mitigation Guidelines – 2007 (Updated 2010)

- Issued by COPUOS and supported by the International Organization for Standardization (ISO).
- Encourages minimizing the creation of space debris and ensuring safe disposal of defunct satellites.
- Access full text here

11. Outer Space-Related National Laws:

- Many nations, such as the United States, Luxembourg, and Japan, have enacted national space laws:
    - Example: U.S. Commercial Space Launch Competitiveness Act (2015) (full text here) allows private companies to own and sell resources extracted from celestial bodies.

12. Emerging Discussions:

- Legal frameworks for:
    - Space traffic management (STM).
    - Resource utilization (e.g., mining on the Moon and asteroids).
    - Space governance in private and military contexts.

Role of space Technology in Conflict Zones

Space technology plays a crucial role in conflict zones, contributing significantly to international cooperation for the peaceful uses of outer space. It plays a role in addressing humanitarian needs, particularly in conflict zones where traditional methods of data collection and communication are often disrupted. The integration of satellite

communications, Earth observation data, and global positioning systems provides essential support for crisis management and humanitarian assistance in these challenging environments.
In every military conflict, having or not having access to communications can have a significant impact. The Ukrainian conflict has demonstrated how crucial EO/ISR, PNT, and SATCOM services are to situational awareness and command and control (C2) in the contemporary battlefield. Additionally, it has shown how the competition for information and decision advantage has converged with competition in space. Since the beginning of the conflict, Russian attempts have been made to spoof, jam, or hack satellite networks that support the Ukrainian Armed Forces. For instance, Russia attempted a cyberattack on ViaSat's KA-SAT network's ground-based infrastructure in February 2022, just one hour before the invasion, disrupting thousands of European customers, including the Ukrainian military and administration.
Here are some keyways in which space technology is utilized in conflict zones:

1. Monitoring and Verification:
Remote sensing and Earth observation are two examples of space-based satellite technologies that offer unbiased, almost instantaneous views into conflict areas. These tools aid in tracking military movements, keeping an eye on ceasefires, and confirming adherence to international agreements1. Having this talent is crucial to preserving openness and confidence between disputing parties.
Remote Sensing for International Peace and Security: Its Role and Implications

2. Humanitarian Aid and Disaster Response:
In disaster relief and humanitarian assistance, space technology is essential. Monitoring urban devastation, the expansion of refugee settlements, and environmental changes surrounding camps2 is made easier by satellite photography and mapping. Humanitarian teams can more efficiently organize and carry out relief efforts with the use of this information. Satellite data is used by agencies such as the European Commission's Copernicus Emergency Management Service (CEMS) and the United Nations Office for Project Services (UNOPS) to assist in crisis response and disaster management.

3. Communication and Connectivity:
In war areas, satellite communications (SATCOM) are essential because they offer dependable channels of communication in the event that terrestrial networks are destroyed or unavailable. This guarantees that civilians, military personnel, and humanitarian groups can stay in touch, coordinate their operations, and exchange vital information.

4. Navigation and Positioning:
For military operations, the Global tracking System (GPS) and other satellite-based navigation systems are crucial because they guarantee precise troop and equipment tracking and navigation. In locations afflicted by violence, this technology also facilitates

civilian operations like logistics and transportation.

5. Intelligence, Surveillance, and Reconnaissance (ISR):
Military forces benefit greatly from space-based ISR capabilities, which enable them to plan operations, evaluate threats, and obtain information on adversary activity. Making wise decisions and preserving situational awareness depend on this knowledge.

6. Peacekeeping and Security:
By offering real-time data on conflict areas, space technology aids peacekeeping operations and improves the security and efficiency of peacekeepers. Additionally, it aids in border surveillance and the prevention of illicit operations like trafficking and smuggling.

7. International Cooperation:
By bringing together governments, humanitarian organizations, and space agencies, the use of space technology in conflict areas promotes international cooperation. The International Charter "Space and Major Disasters" and other collaborative initiatives make it possible to share satellite data and resources to aid in crisis management and relief efforts.

In conclusion, space technology has a variety of uses in conflict areas, including communication, navigation, intelligence, humanitarian assistance, monitoring, and international collaboration3. Space technology uses these capabilities to support development, peace, and security in areas affected by conflict.

Geopolitical Tensions and Non-Peace use of Space

Geopolitical tensions, especially during the Cold War, played a crucial role in shaping space policies and international cooperation for the peaceful uses of outer space. The rivalry between the United States and the Soviet Union led to a space race, with both nations striving to demonstrate their technological and military superiority. This competition highlighted the need for international agreements to prevent the non peaceful usage of space and ensure that space activities were conducted for peaceful purposes.
The Outer Space Treaty of 1967 was a direct response to these geopolitical tensions. It established key principles, such as the prohibition of nuclear weapons in space and the use of space for peaceful purposes1. This treaty laid the foundation for international space law and emphasized the importance of using space for the benefit of all humanity
After the Cold War, the geopolitical landscape shifted, and space activities became more collaborative. The end of the Cold War led to a stronger multilateral cooperation, as seen in the establishment of the International Space Station (ISS), which involved multiple countries working together on space missions. This cooperation helped to build trust and reduce tensions among nations

In recent years, geopolitical tensions have resurfaced, with countries forming astropolitical alliances and competing for influence in space. For example, the **Artemis Accords** and the **International Lunar Research Station (ILRS)** reflect the geopolitical dynamics of the modern era. These alliances highlight the importance of international cooperation in managing space activities and preventing conflicts.
International Geopolitics and Space Regulation | Oxford Research Encyclopedia of Planetary Science

Apart from those non-peaceful uses of space, such as the deployment of weapons and military satellites, have posed significant challenges to international cooperation for the peaceful uses of outer space. Some key factors include**.**

1. Weaponization of Space:
One of the primary concerns regarding the non-peaceful use of space is the weaponization of space. This includes:

- **Anti-Satellite Weapons (ASATs)**: These are designed to disable or destroy satellites for strategic military advantage. Testing and deployment of ASATs increase tensions and pose risks to the space environment due to space debris.
- **Orbital Weapons**: The potential deployment of weapons in orbit, including nuclear weapons, has been a major concern. The Outer Space Treaty of 1967 addresses this by prohibiting the placement of nuclear weapons and other weapons of mass destruction in space.

2. Military Satellites:
Military satellites serve various functions, such as:

- **Reconnaissance and Surveillance**: Satellites used for gathering intelligence, monitoring enemy activities, and assessing battlefield conditions.
- **Communication**: Secure communication networks for military operations are often reliant on satellites.
- **Navigation and Targeting**: Satellites like GPS play a crucial role in guiding missiles and other precision weaponry.

3. Space-Based Missile Defense:
The concept of deploying missile defense systems in space has been a subject of debate and concern. Such systems could intercept and destroy incoming missiles, but they also risk escalating the arms race and undermining global security.

4. Space Warfare:
The potential for conflicts extending into space raises significant concerns. This includes:

- **Satellite Jamming and Spoofing**: Disrupting or deceiving satellite signals to impair military operations.
- **Cyber Attacks**: Targeting space infrastructure through cyber means to gain control or disable critical systems.

5. Space Debris:
Military activities in space, such as ASAT tests, contribute to the growing problem of space debris. Debris poses a threat to all space activities, including peaceful uses, by increasing the risk of collisions and damaging satellites and other space assets.

International Cooperation and Non-Peaceful Uses

To address the challenges posed by non-peaceful uses of space, the international community has taken several steps:

- **Outer Space Treaty**: Establishes the foundation for the peaceful use of space and prohibits the placement of weapons of mass destruction in space.
- **UN Resolutions**: Various United Nations resolutions call for the prevention of an arms race in outer space (PAROS) and promote the peaceful use of space.
- **Diplomatic Dialogues**: Ongoing diplomatic efforts aim to establish norms, rules, and agreements to prevent conflicts and promote transparency in space activities.

Despite the challenges, international cooperation has continued to evolve, with countries recognizing the need for collaboration to ensure the sustainability and security of space for all. By addressing the threats posed by non-peaceful uses of space, the global community aims to maintain space as a domain for peaceful exploration and development.

Peaceful Use of Outer Space: Non-Militarization, Non-Aggression and Prevention of Weaponization by Jin yuan Su: SSRN

Importance of International Collaboration in Space Exploration

International collaboration in space exploration is fundamental to promoting the peaceful use of outer space. International collaboration aids in sharing of resources and expertise; it also allows various advancement of technology to be made available to all collaborators which helps in long term and short-term space exploration.
The Importance of International Collaboration in the Space Industry | KDC Resource
Some key factors include:

1. Shared Costs and Resources

Space exploration is incredibly expensive and resource intensive. By collaborating, countries can share the costs and resources required for missions, making it more feasible for all involved. This pooling of resources allows for larger and more ambitious projects that no single country might be able to undertake alone.

2. Sharing Expertise and Technology:

Different countries bring different strengths to the table. International collaboration allows for the sharing of expertise, technology, and scientific knowledge. This cross-pollination of ideas and skills leads to innovation and technological advancement, benefiting not just space exploration but also other industries.

3. Enhancing Scientific Research:

Collaborative missions expand the scope and depth of scientific research. For example, the International Space Station (ISS) is a joint project involving space agencies from the United States, Russia, Europe, Japan, and Canada. This collaboration has resulted in significant scientific discoveries and technological advancements that have applications both in space and on Earth.

4. Promoting Peace and Diplomacy:

Working together on space missions helps to build trust and foster diplomatic relationships between countries. The shared goal of exploring and understanding space serves as a unifying force, promoting peace and reducing geopolitical tensions. Collaborative projects like the ISS are symbols of international cooperation and peaceful coexistence.

5. Addressing Global Challenges:

Many of the challenges faced in space exploration, such as space debris and planetary defense, are global in nature. These issues require international cooperation to develop effective solutions. Collaborative efforts ensure that the benefits of space exploration are shared globally, addressing issues like climate change, natural disasters, and sustainable development.

6. Capacity Building in Developing Countries:

International collaboration provides opportunities for developing countries to participate in space exploration. Through partnerships and knowledge transfer, these countries can build their own space capabilities, contributing to global scientific and technological advancements. This inclusiveness ensures that space exploration benefits all of humanity.

7. Legal and Regulatory Frameworks:

Collaborative efforts help establish and reinforce international legal and regulatory frameworks for space activities. Treaties like the Outer Space Treaty set the foundation for peaceful use of outer space. Continued cooperation ensures that these frameworks evolve to address new challenges and technologies, promoting responsible behavior in space.

Emerging Technologies and Their Implications on Outer Space Peace

Emerging technologies are rapidly transforming space exploration and have significant implications for maintaining peace in outer space. The rapid advancement of these emerging technologies underscores the importance of international cooperation in space exploration. Collaborative efforts can help address shared challenges, share resources and expertise, and promote the peaceful use of outer space3. By working together, countries can ensure that space remains a domain for peaceful exploration and development, benefiting all of humanity.
Here are some key emerging technologies and their implications:

1. Artificial Intelligence (AI) and Machine Learning (ML):
AI and ML are revolutionizing space exploration by enabling autonomous operations, data analysis, and decision-making. These technologies can enhance the efficiency and safety of space missions, reducing the need for human intervention and minimizing risks1. However, the militarization of AI in space raises concerns about the potential for autonomous weapons systems and the escalation of conflicts.
2. Advanced Satellite Systems:
The development of advanced satellite systems, such as CubeSats and NanoSats, has made space exploration more accessible and cost-effective. These small satellites can perform a variety of functions, including Earth observation, communication, and scientific research3. However, the increasing number of satellites in orbit also raises concerns about space debris and the potential for collisions, which could disrupt peaceful space activities.

3. Space Robotics:
Space robotics are essential for performing tasks that are too dangerous or impractical for humans. Robotic systems can be used for satellite repair, space station maintenance, and exploration of distant planets1. While these technologies enhance the capabilities of space missions, they also raise questions about the militarization of robotic systems and the potential for their use in hostile activities.

4. Space Traffic Management:
As the number of satellites and space missions increases, effective space traffic management becomes crucial to prevent collisions and ensure the safety of space assets. Emerging technologies, such as advanced tracking systems and AI-based algorithms, are being developed to manage space traffic and mitigate the risks of space debris3. International cooperation is essential to establish standardized protocols and regulations for space traffic management.

5. Space-Based Solar Power:
Space-based solar power involves capturing solar energy in space and transmitting it to Earth for use as a renewable energy source. This technology has the potential to provide clean and sustainable energy, reducing dependence on fossil fuels and mitigating climate change4. However, the deployment of space-based solar power systems requires international collaboration to address legal, technical, and security challenges.

6. Quantum Communication:
Quantum communication offers secure and reliable communication channels for space missions. This technology can enhance the security of data transmission and protect against cyber threats. International cooperation is essential to develop and implement quantum communication systems for space applications, ensuring the peaceful use of outer space.
The Militarization of Space Technology: Impacts and Implications - Total Military Insight

Exploring space technologies for sustainable development

Disarmament Initiatives Related to Outer Space (Case studies)

Efforts in the United Nations to maintain outer space for peaceful purposes began in 1957, months prior to the launch of the first artificial satellite into Earth's orbit. Early proposals for prohibiting the use of space for military purposes and the placement of weapons of mass destruction in outer space were considered in the late 1950s and early 1960s by the United Nations.

Majority of legal frameworks discussing disarmament have been discussed in Legal Frameworks above. Details of a few others are below;

1.Anti-Ballistic Missile (ABM) Treaty (1972)

The ABM Treaty between the U.S. and the Soviet Union indirectly contributed to space

disarmament by limiting the development of space-based missile defence systems.

Key Provisions:

- Restricted the development of space-based anti-ballistic missile systems.
- Encouraged dialogue between superpowers to prevent an arms race in space.

Impact:

- Stabilized Cold War-era space relations.
- Lapsed in 2002, leading to renewed interest in space-based defence systems.

Sources:

1. Federation of American Scientists (FAS)
2. Council on Foreign Relations (CFR)

3. Prevention of an Arms Race in Outer Space (PAROS)

The PAROS initiative was proposed at the United Nations Conference on Disarmament to prevent the weaponization of outer space.

Key Provisions:

- Advocated for a binding treaty to ban all weapons in space.
- Called for transparency and confidence-building measures.

Impact:

- Faced opposition from major spacefaring nations, particularly the U.S., which argued existing treaties were sufficient.
- Remains a focal point for space disarmament discussions.

Sources:

1. United Nations Disarmament Affairs (UNODA)
2. Chatham House

Refer to United Nations Disarmament Affairs (UNODA) for further research.

The Role of Non-State Actors and Private Enterprises

Non-state actors include non-governmental organizations (NGOs), academic institutions, and other entities that are not part of any government. These actors contribute to international cooperation in space exploration by:

- **Advocacy and Awareness:** NGOs and advocacy groups raise awareness about the importance of peaceful uses of outer space and promote international cooperation. They often work to ensure that space activities are conducted in a manner that benefits all of humanity.

- **Research and Development:** Academic institutions and research organizations contribute to the scientific and technological advancements necessary for space exploration. They often collaborate with space agencies and private companies to develop recent technologies and conduct research.
- **Capacity Building:** Non-state actors help build capacity in developing countries by providing training, resources, and expertise. This helps these countries participate in international space missions and benefit from the advancements in space technology.

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On the other hand, Private enterprises, such as SpaceX, Blue Origin, and other commercial space companies, have become integral to space exploration. Their role in establishing international cooperation includes:

- **Innovation and Cost Reduction**: Private companies drive innovation and reduce the costs of space missions through competitive practices and recent technologies. This makes space exploration more accessible and encourages international collaboration.
- **Partnerships with Governments**: Private enterprises often partner with government space agencies to undertake joint missions and share resources. These partnerships help pool expertise and resources, leading to more ambitious and successful space projects.
- **Space Tourism and Commercialization**: The emergence of space tourism and commercial space activities opens new opportunities for international cooperation. Private companies can offer services and infrastructure that support space missions, creating a market for space-related goods and services.
- **Regulatory Frameworks**: Private enterprises work with governments and international organizations to develop and adhere to regulatory frameworks that ensure the peaceful use of outer space. This helps maintain a stable and cooperative environment for space activities.

The involvement of non-state actors and private enterprises in space exploration has several implications for international cooperation:

- **Enhanced Collaboration**: The diverse capabilities and resources of non-state actors and private enterprises enhance collaboration between countries and organizations. This leads to more comprehensive and successful space missions.

- **Global Benefits**: The advancements in space technology and exploration benefit all of humanity, promoting global development and addressing shared challenges such as climate change and natural disasters.
- **Peaceful Uses of Outer Space**: The combined efforts of non-state actors, private enterprises, and governments ensure that space remains a domain for peaceful exploration and development. This fosters international cooperation and reduces the risk of conflicts in space.

Non-state actors and private enterprises play a vital role in establishing international cooperation for the peaceful uses of outer space by driving innovation, reducing costs, and fostering collaboration. Their contributions help ensure that space exploration benefits all of humanity and promotes global peace and development.

Impact of Regional Conflicts on Space Security

Multiple regional conflicts are posing grave impacts on space security including the following key conflicts:

1. Syrian Civil War

The Syrian Civil War, which began in 2011, has involved multiple regional and international actors. The conflict has led to the destruction of infrastructure, including communication and satellite systems, impacting space security. The involvement of various countries in the conflict has also complicated international cooperation efforts in space.

2. Yemeni Civil War

The ongoing conflict in Yemen has resulted in significant damage to the country's infrastructure, including its space capabilities. The involvement of regional powers like Saudi Arabia and Iran has further strained international cooperation in space, as these countries have competing interests in the region.

3. South China Sea Dispute

The territorial disputes in the South China Sea involve multiple countries, including China, the Philippines, and Vietnam. The militarization of the region, including the deployment of military satellites, has raised concerns about space security. International cooperation is essential to manage these tensions and ensure the peaceful use of space in the region.

4. Korean Peninsula

The tensions on the Korean Peninsula, particularly between North Korea and South Korea, have implications for space security. North Korea's missile tests and satellite launches have raised concerns about the potential for space-based conflicts. International cooperation is crucial to address these threats and promote peace in the region.

5. Middle East Conflicts

Conflicts in the Middle East, such as the wars in Iraq and Afghanistan, have had significant implications for space security. The destruction of infrastructure and the involvement of multiple regional and international actors have complicated international cooperation efforts in space.

6. India-Pakistan Conflicts

The ongoing conflicts between India and Pakistan, particularly over the disputed region of Kashmir, have implications for space security. Both countries have developed space capabilities, including military satellites, raising concerns about the potential for space-based conflicts. International cooperation is essential to manage these tensions and promote peaceful uses of space.

These conflicts are causing numerous tactical issues halting the progress of space security leading towards lower and lower international cooperation. Regional conflicts have a significant impact on space security and the establishment of international cooperation for the peaceful uses of outer space. By addressing the challenges posed by militarization, space debris, cybersecurity threats, economic and political implications, legal and regulatory frameworks, and diplomatic efforts, the international community can work together to ensure the peaceful exploration and use of outer space.

1. Militarization of Space

Regional conflicts often lead to the militarization of space as countries seek to enhance their national security by deploying military satellites and other space-based assets. This militarization can escalate tensions and increase the risk of conflicts extending into space2. For example, the use of anti-satellite (ASAT) technology by countries like China, India, and Russia has raised concerns about the potential for space-based conflicts.

2. Space Debris

Regional conflicts can contribute to the generation of space debris, which poses a threat to all space activities. The destruction of satellites during conflicts can create a large number of debris, increasing the risk of collisions with other satellites and space assets1. This debris can hinder peaceful space exploration and satellite operations, necessitating

international cooperation to address the issue.

3. Cybersecurity Threats

Regional conflicts can also lead to cybersecurity threats in space. Cyber attacks on space systems can disrupt communication, navigation, and other critical functions, impacting both military and civilian operations1. International cooperation is essential to develop and implement cybersecurity measures to protect space assets and ensure their peaceful use.

4. Economic and Political Implications

Regional conflicts can have economic and political implications for space security. The destruction or disruption of space assets can affect global communication, navigation, and other services that rely on space technology1. This can lead to economic losses and political instability, highlighting the need for international cooperation to maintain space security and promote peaceful uses of outer space.

5. Legal and Regulatory Frameworks

Regional conflicts underscore the importance of legal and regulatory frameworks for space security. International treaties and agreements, such as the Outer Space Treaty, provide a foundation for the peaceful use of outer space4. However, the evolving nature of space technology and regional conflicts necessitates the development of new legal and regulatory frameworks to address emerging threats and ensure space security.

6. Diplomatic Efforts

Diplomatic efforts play a crucial role in mitigating the impact of regional conflicts on space security. International organizations, such as the United Nations, facilitate dialogue and cooperation among countries to address space security challenges3. These efforts help build trust and promote peaceful uses of outer space, reducing the risk of conflicts extending into space.

Public Awareness and Global Perception of Outer Space Peace

Public awareness and global perception of outer space peace play a crucial role in establishing international cooperation for the peaceful uses of outer space. Here's a detailed explanation:

1. Public Awareness

Public awareness refers to the level of knowledge and understanding that the public has

about space activities and their implications. Increased public awareness can lead to greater support for peaceful space initiatives and international cooperation. When people understand the benefits of space exploration and the potential risks of militarization, they are more likely to advocate for policies that promote peace and collaboration.

2. Global Perception

Global perception encompasses the collective views and attitudes of people around the world regarding space activities. Positive global perception can foster international cooperation by creating a shared sense of responsibility and common goals. When countries and their citizens view space as a domain for peaceful exploration and development, it encourages collaborative efforts and reduces the likelihood of conflicts.

3. Importance in Establishing International Cooperation

Public awareness and global perception are essential for establishing international cooperation for the peaceful uses of outer space because they influence policy decisions and international relations. When there is widespread public support for peaceful space activities, governments are more likely to prioritize and invest in cooperative initiatives. Additionally, positive global perception can lead to the development of international agreements and frameworks that promote peace and stability in space.

4. Examples of Public Awareness Initiatives

- Educational Programs: Schools and universities can incorporate space science and international cooperation into their curricula, helping students understand the importance of peaceful space activities.
- Public Outreach: Space agencies and organizations can engage in public outreach activities, such as open days, public lectures, and social media campaigns, to raise awareness about the benefits of space exploration and the need for international cooperation.
- Media Coverage: Media outlets can play a significant role in shaping public perception by reporting on space activities and highlighting the importance of peace and collaboration in space.

5. Challenges and Opportunities

While public awareness and global perception can be powerful tools for promoting international cooperation, they also face challenges. Misinformation, political agendas, and competing interests can hinder efforts to build a positive perception of space peace. However, by addressing these challenges and leveraging opportunities for education and outreach, the global community can work towards a more peaceful and cooperative space

environment.

Future of Space Cooperation

The future of international space cooperation involves navigating complex challenges while capitalizing on opportunities for innovation, exploration, and sustainability. As space becomes increasingly crowded with state and non-state actors, collaboration will be essential to address shared concerns and maximize benefits.

Challenges

1. *Geopolitical Tensions:* Competition among major space powers, such as the U.S., China, and Russia, could hinder cooperative initiatives.
    - Potential arms races in space.
    - Competing national interests may slow progress on shared goals.
2. *Legal Gaps:* Current space treaties, such as the Outer Space Treaty, are outdated and lack provisions for modern issues like resource extraction or private-sector participation.
    - Difficulty in drafting consensus-driven frameworks.
3. *Space Debris:* Increased satellite launches, and military activities create debris, threatening space operations and infrastructure.
    - Need for global coordination on mitigation efforts.
4. *Commercialization:* The rise of private companies complicates governance, as current laws are primarily state-centric.
5. *Access Inequality:* Developing countries often lack the resources to participate in space activities, leading to disparities.

Opportunities

1. *Scientific Collaboration:* Joint projects like the International Space Station (ISS) demonstrate the benefits of pooling resources for research.
    - Prospects for similar partnerships in Moon and Mars missions.
2. *Sustainability Initiatives:* Collective efforts to manage space debris and establish guidelines for sustainable space exploration.
    - Global frameworks can ensure responsible behavior by all actors.
3. *Economic Growth*: Partnerships between nations and private entities can drive innovation in space technologies, creating jobs and advancing industries like communications, navigation, and energy.
4. *Capacity Building:* Developed countries can support emerging spacefaring nations through technology transfer and training programs, fostering inclusivity.

5. *Security Cooperation:* Collaborative norms and confidence-building measures can reduce the risks of conflict and promote peaceful use of space.

Delegates should refer to following links for further research.

1. United Nations Office for Outer Space Affairs (UNOOSA) – Governance and cooperation frameworks.
2. Secure World Foundation – Challenges in space governance and debris management.
3. NASA Space Policy – Collaborative scientific missions and future projects.
4. European Space Agency (ESA) – International partnerships and sustainability efforts.

Brookings Institution – Policy discussions on commercial space and legal challenges.

Emerging Space Powers and Their Ambitions

As space becomes a critical domain for national security and technological advancement, emerging space powers are increasingly focusing on the militarization of their capabilities. These ambitions include satellite-based intelligence, communication systems, anti-satellite (ASAT) weapons, and space-based defence technologies.

Key Developments and Trends

1. *China*
   - A rapidly growing space program with military applications, including ASAT systems and advanced satellite constellations.
   - Investments in space-based early warning systems and dual-use technologies for both civilian and military purposes.
2. *India*
   - Demonstrated military space capabilities with its 2019 ASAT test ("Mission Shakti").
   - Focus on integrating space technology for national defence and surveillance, supported by the Defence Space Agency (DSA).
3. *Russia*
   - Expanding military use of space with advanced satellites for intelligence and navigation.
   - Continued testing of ASAT weapons and space-based missile defence systems.
4. *Middle Eastern Nations*
   - Countries like Iran and the UAE are developing satellite programs, with potential implications for surveillance and regional security.
5. *Private Sector's Role*
   - Non-state actors and private companies are increasingly developing technologies that could be leveraged for military purposes.

6. Japan's Space Défense Expansion
7. Australia's Space Effort

Challenges

- The militarization of space risks escalating tensions and conflict between nations.
- Legal gaps in international treaties leave room for ambiguous or dual-use technologies.

Opportunities

- Emerging space powers can collaborate on confidence-building measures and transparency.
- Global frameworks for responsible behavior could mitigate risks and promote peaceful use of space.

Delegates should refer to these sources for further research;

1. United Nations Office for Outer Space Affairs (UNOOSA) – International treaties and emerging actors in space.
2. Secure World Foundation – Analysis of ASAT tests and military trends.
3. Carnegie Endowment for International Peace – Space militarization policies.
4. Brookings Institution – Emerging space powers and security implications.
5. Centre for Strategic and International Studies (CSIS) – Space race dynamics and military technologies.

Current International Disputes

Modern Era warfare has seen increased usage of space technologies. Details of a few are stated below.

1.Israel-Palestine Conflict

Surveillance and Security:
Israel uses advanced satellite technology for intelligence and monitoring activities in the region, aiding in border security and counterterrorism operations.

Communication: Space-based technologies enhance real-time communications for defence purposes in the conflict.

For further research, refer to;
UNOOSA on regional space programs
Israel's satellite capabilities

2. Israel-Lebanon Tensions

Border Monitoring:

Israel employs satellites to monitor Hezbollah activities along the Lebanese border.

Défense Preparedness:
Space-based early warning systems detect missile threats from Lebanon.

For further research, refer to;
Secure World Foundation - Regional conflicts
Carnegie Middle East Centre on space in conflicts

3. Russia-Ukraine Conflict

Satellite Reconnaissance:
Both sides rely on satellite imagery for troop movements and battlefield analysis.

Cyber Threats:
Space assets have been targeted through cyberattacks, impacting navigation and communication systems.

Private Sector Involvement:
Companies like SpaceX's Starlink provide communication support to Ukraine during the conflict.

For further research, refer to;
CSIS on space in Ukraine conflict
Brookings Institution - Space's role in warfare

4. North Korea's Space Program

Missile Technology Development:
North Korea's space program is intricately linked to its ballistic missile ambitions, raising concerns over dual-use technologies.

Surveillance and Propaganda:
Limited satellite capabilities are used for domestic propaganda and monitoring.

Global Tensions:
Space developments exacerbate regional security tensions with South Korea, Japan, and the U.S.

For further research, refer to;
UN Reports on North Korea's space activities
Carnegie Endowment on North Korea's dual-use technologies

5. Middle Eastern Conflicts and Space Capabilities (Israel-Iran Tensions)

Surveillance Race:
Both Israel and Iran leverage satellite systems for reconnaissance and military readiness.

Missile Guidance: Space-based navigation systems enhance missile targeting capabilities in the region.

Geopolitical Influence: Iran's space program showcases its technological growth, while Israel's established capabilities provide a strategic edge.

For further research, refer to;
Space capabilities in regional conflicts - SWF
Iran's space ambitions - CSIS

Current Important Stakeholders (UNCOPUOS, UNOOSA)

As space activities expand and diversify, the *United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS)* and *the United Nations Office for Outer Space Affairs (UNOOSA)* play vital roles in ensuring the sustainable, peaceful, and cooperative use of outer space. Their mandates align with addressing modern challenges like space debris, militarization, and commercial activities.

1. United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS)

- *Establishment:*
  Formed in 1959, UNCOPUOS oversees the peaceful exploration and use of outer space.
- *Key Functions:*
  - *Legal Framework Development:* Responsible for drafting foundational treaties like the Outer Space Treaty (1967) and Moon Agreement (1979).
  - *Policy Recommendations:* Provides guidance on issues like space debris, space traffic management, and international collaboration.
  - *Global Representation:* Includes over 100 member states, ensuring diverse perspectives in decision-making.
- *Current Relevance:*
  - Addresses emerging issues like the privatization of space and dual-use technologies.
  - Focuses on long-term sustainability through guidelines to mitigate space debris.
  -

For further research, refer to;

- UNCOPUOS Official Website
- UNCOPUOS Legal Instruments

2. United Nations Office for Outer Space Affairs (UNOOSA)

- *Role and Mandate:*
  - Established as the administrative arm of UNCOPUOS, UNOOSA facilitates the implementation of international space law and policies.
  - Acts as a global coordinator for capacity-building in space-related activities.
- *Key Contributions:*
  - *Promoting Inclusivity:* Supports emerging space nations with education, technical assistance, and infrastructure development.

  - *Advancing Transparency:* Maintains the Register of Objects Launched into Outer Space, enhancing accountability.
  - *Facilitating Collaboration:* Organizes forums and initiatives like the Space Law Conference and International Space Weather Initiative.
- *Current Focus Areas:*
  - Addressing challenges related to space debris and congestion.
  - Advocating for the peaceful use of outer space amidst rising militarization.

For further research, refer to;

- UNOOSA Official Website
- UNOOSA Space Sustainability Guidelines

Possible Future Scenarios

Delegates should study through the resources provided in each heading.

1. Increased Space Arms Race

Countries may accelerate the development of advanced space weapons such as anti-satellite (ASAT) systems, leading to heightened geopolitical tensions and an increased risk of space-based conflicts.

Key Points:

- Space is increasingly seen as a strategic military domain.
- Testing and deployment of space weapons could destabilize global security.
- Escalation risks and high costs may divert resources from peaceful uses.

Sources:

1. Union of Concerned Scientists - Space arms race risks.
2. UNIDIR - Publications on space security.
3. Secure World Foundation - Space weapons analysis.

2. Formation of Multilateral Treaties

To counter the militarization of space, nations may establish binding treaties to regulate space weaponization and encourage cooperative security measures.

Key Points:

- Treaties can build trust and prevent conflicts in space.
- Potential agreements may ban space-based weapons and promote transparency.

- Achieving consensus among major space powers remains challenging.

Sources:

1. UNOOSA - Space treaty frameworks.
2. Arms Control Association - Analyses of space treaties.
3. Chatham House - Research on multilateral cooperation.

3. Rise of Space Debris and Its Implications

The increase in military and commercial space activities could worsen space debris issues, endangering satellites and space missions.

Key Points:

- Military actions like ASAT tests contribute significantly to debris.
- Space debris poses threats to operational satellites and the ISS.
- Effective debris mitigation requires global collaboration.

Sources:

1. NASA Orbital Debris Program - Data on debris trends.
2. European Space Agency (ESA) - Debris management reports.
3. The Aerospace Corporation - Debris risk analyses.
4.

4. Incorporation of AI in Space Warfare

AI integration in space systems could enhance military capabilities but also lead to rapid conflict escalation if misused or unregulated.

Key Points*:*

- AI can improve satellite defense, navigation, and situational awareness.
- Risks include unintended escalations and ethical challenges in regulation.
- Cooperative AI tools could enhance space safety and trust.

Sources*:*

1. RAND Corporation - AI applications in space.
2. CSET - AI governance in space contexts.
3. ITU - Guidelines on AI in space technology.

5. Non-State Actors in Space

The growing involvement of private companies in space activities introduces new challenges for governance and accountability.

***Key Points**:*

- Private entities like SpaceX and OneWeb dominate satellite launches.
- Existing legal frameworks are state-centric and may need updates.
- Public-private partnerships are essential for sustainable growth.

***Sources**:*

1. Space Policy Online - Updates on private sector activities.
2. World Economic Forum - Public-private collaboration in space.
3. OECD Space Economy - non-state actor impact studies.

6. Increased Cybersecurity Threats in Space Operations

As space systems become more interconnected, they face growing risks of cyberattacks targeting satellites, ground stations, and communication networks.

***Key Points**:*

- Cyberattacks could disrupt navigation, communications, and military operations.
- Encryption, resilient architectures, and coordinated defenses are crucial.
- International norms for responsible behavior in cyberspace are urgently needed.

***Sources**:*

1. CISA - Cybersecurity guidelines for critical infrastructure.
2. NIST - Satellite cybersecurity standards.
3. Council on Foreign Relations - Cybersecurity risks in space.

Conclusion

The discussion on strengthening international cooperation to promote the peaceful use of outer space is critical for maintaining global peace and security. Engaging in proactive dialogue and collaboration among nations will be essential to address the complexities of this issue effectively.

QARMA

- What are the key principles for the peaceful use of outer space?

- What constitutes "peaceful use" in outer space, and how do we differentiate it from military or hostile activities?
- How can states effectively prevent the militarization or weaponization of space?
- Can existing treaties such as the Outer Space Treaty (OST) be strengthened, or do new legal frameworks need to be introduced?
- What role will existing international frameworks, such as the United Nations, play in promoting space cooperation?
- How can the UN work with private actors and space agencies to implement its resolutions?
- How will states ensure transparency and accountability in space activities?
- What measures should be taken to ensure emerging space nations have access to outer space for peaceful purposes?
- What role should the United Nations, and particularly (COPUOS), play in space governance and conflict prevention?
- What mechanisms will be established for monitoring space missions, especially to prevent military uses disguised as peaceful?
- How will space-faring and non-space-faring nations collaborate?
- How will space debris be managed, and who will be responsible for mitigating its risks to peaceful activities in space?
- What kind of international frameworks can ensure equitable use of space resources and technology?
- How will space exploration be monitored for peaceful development without infringing on national sovereignty?

References

Important Articles:

- Outer Space Treaty (1967)
- Rescue Agreement (1968)
- Moon Agreement (1984)
- Liability Convention (1972)
- Registration Convention (1976)
- ITU Constitution and Convention
- Principles on Direct Television Broadcasting
- Principles on Remote Sensing
- Principles on Nuclear Power Sources
- Guidelines for Long-Term Sustainability (2021)
- Artemis Accords
- Artemis Accords Signatories
- Space Debris Mitigation Guidelines
- U.S. Commercial Space Launch Act
- Militarization of Space Technology
- Remote Sensing for Peace
- International Geopolitics and Space Regulation
- UNOOSA
- Secure World Foundation
- Carnegie Endowment
- Brookings Institution
- CSIS
- RAND Corporation on AI in Space
- OECD Space Economy Studies
- NIST Satellite Cybersecurity Standards
- CISA Cybersecurity Guidelines

Important Websites:

- United Nations Office for Outer Space Affairs (UNOOSA)
- Secure World Foundation (SWF)
- NASA
- European Space Agency (ESA)
- Carnegie Endowment for International Peace
- Brookings Institution
- Centre for Strategic and International Studies (CSIS)
- International Telecommunication Union (ITU)
- OECD – Space Economy
- RAND Corporation
- United Nations Disarmament Affairs (UNODA)
- Federation of American Scientists (FAS)

- International Astronautical Federation (IAF)
- Space Policy Online
- World Economic Forum – Space Initiatives
- Arms Control Association
- Union of Concerned Scientists (UCS)
- Chatham House – Space Policy
- International Academy of Astronautics (IAA)
- International Institute of Space Law (IISL)
- The Aerospace Corporation
- International Telecommunication Satellite Organization (ITSO)
- European Union Space Programme Agency (EUSPA)
- United Nations Institute for Disarmament Research (UNIDIR)
- International Organization for Standardization (ISO) – Space Standards
- Planetary Society
- Space Generation Advisory Council (SGAC)
- Space Foundation
- Global Network Against Weapons and Nuclear Power in Space (GN)