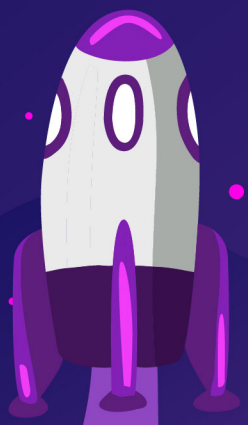

OS 2022

OUTER SPACE SECURITY CONFERENCE

01-02 NOV 2022

CONFERENCE REPORT

ALMUDENA AZCÁRATE ORTEGA,
MANON BLANCAFORT AND
SARAH ERICKSON

UNIDIR UNITED NATIONS INSTITUTE FOR DISARMAMENT RESEARCH

ACKNOWLEDGEMENTS

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ABOUT UNIDIR

UNIDIR is a voluntarily funded, autonomous institute within the United Nations. One of the few policy institutes worldwide focusing on disarmament, UNIDIR generates knowledge and promotes dialogue and action on disarmament and security. Based in Geneva, UNIDIR assists the international community to develop the practical, innovative ideas needed to find solutions to critical security problems.

CITATION

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NOTE

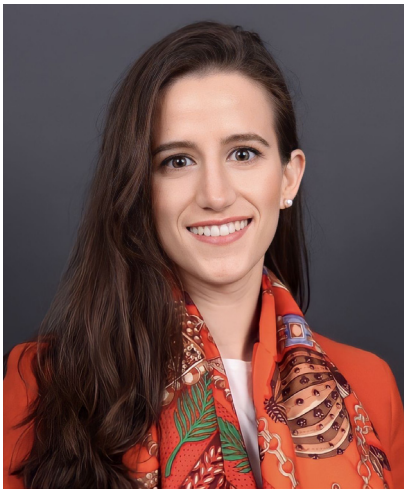
This report constitutes both a summary and analysis of the discussions and exchanges that took place at UNIDIR's Outer Space Security Conference held at the Palais des Nations in Geneva on 1–2 November 2022. Where this document reports or refers to statements made by panellists, every effort has been made to provide a fair representation of their views. The actual content and flow of the report, however, may differ slightly from the panellists' delivery and their presentations. Videos of all sessions are available on UNIDIR's website at unidir.org/watchOS22.

ABOUT UNIDIR'S STRATEGIC PARTNERS FOR OS22

Secure World Foundation is a private operating foundation dedicated to the secure and sustainable use of space for the benefit of Earth and all its peoples. It works with governments, industry, international organizations and civil society to develop and promote ideas and action for international collaboration. The Foundation's aim is to achieve secure, sustainable and peaceful uses of outer space.

Fondation pour la Recherche Stratégique is an independent, non-profit organization recognized in France as a public utility foundation. Its missions are to analyse strategic and international security issues, notably military- and defence-related issues, and to contribute to the strategic debate in France and the diffusion of French ideas abroad. It is the only major independent French think tank to work exclusively on these questions. Its experts cover the whole range of security and defence issues, from international relations to scientific, technological and operational questions, as well as the defence industry and the economy, the analysis of cross-cutting threats, and health and environmental risks.

ABOUT THE AUTHORS



ALMUDENA AZCÁRATE ORTEGA is an Associate Researcher in the Space Security and Weapons of Mass Destruction Programmes at UNIDIR. Her research focuses on space security and missiles. Prior to joining UNIDIR, Almudena was a Research Assistant at Georgetown University Law Center, United States, where she is currently a doctoral candidate. She also holds a master's degree in National Security Law from Georgetown University and was the recipient of its Thomas Bradbury Chetwood, S.J. Prize for the most distinguished academic performance in the programme. She received her bachelor's degree from the University of Navarra, Spain.

MANON BLANCAFORT is a Graduate Professional for the Weapons of Mass Destruction and Space Security Programmes at UNIDIR. She holds a master's degree from the Université Libre de Bruxelles in Security, Peace and Conflicts, and a University Diploma in International Humanitarian Law from the Université Côte d'Azur. She has previously worked at the International Commission of Jurists and at the Office of the Special Coordinator on Improving the United Nations Response to Sexual Exploitation and Abuse.

SARAH ERICKSON is a Research Assistant for the Space Security and Weapons of Mass Destruction Programmes at UNIDIR. She holds a dual master's degree from the Middleburry Institute of International Studies at Monterey and Moscow State Institute of International Relations in WMD Nonproliferation, Nuclear Policy and Global Security. Her research focuses on space security, and the history and future development of national space strategies. She has worked with the James Martin Center for Nonproliferation Studies, received the IAEA Marie-Sklodowska Curie Fellowship in 2021–2022, and a Fulbright Fellowship in 2019–2020.

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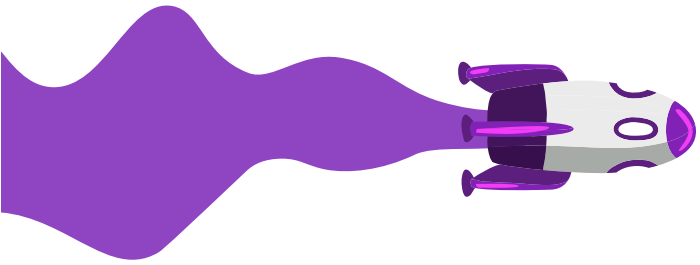
LIST OF ACRONYMS

ASAT	Anti-Satellite Technology
ESG	Environmental, Social, and Governance
GGE	Group of Governmental Experts
OEWG	Open-Ended Working Groups
OS22	UNIDIR 2022 Outer Space Security Conference
OST	Outer Space Treaty
PAROS	Prevention of an arms race in outer space
PPWT	Draft Treaty on the Prevention of the Placement of Weapons in Outer Space, the Threat of Use of Force against Outer Space Objects
SSA	Space situational awareness
TCBM	Transparency and confidence-building measure



INTRODUCTION

INTRODUCTION

UNIDIR's 2022 Outer Space Security Conference (OS22) was held on 1 and 2 November 2022 both virtually and in-person at the Palais des Nations in Geneva, Switzerland. This two-day flagship event provided a unique forum for the diplomatic community and experts from military, industrial and academic backgrounds to jointly consider challenges and solutions related to security in outer space.

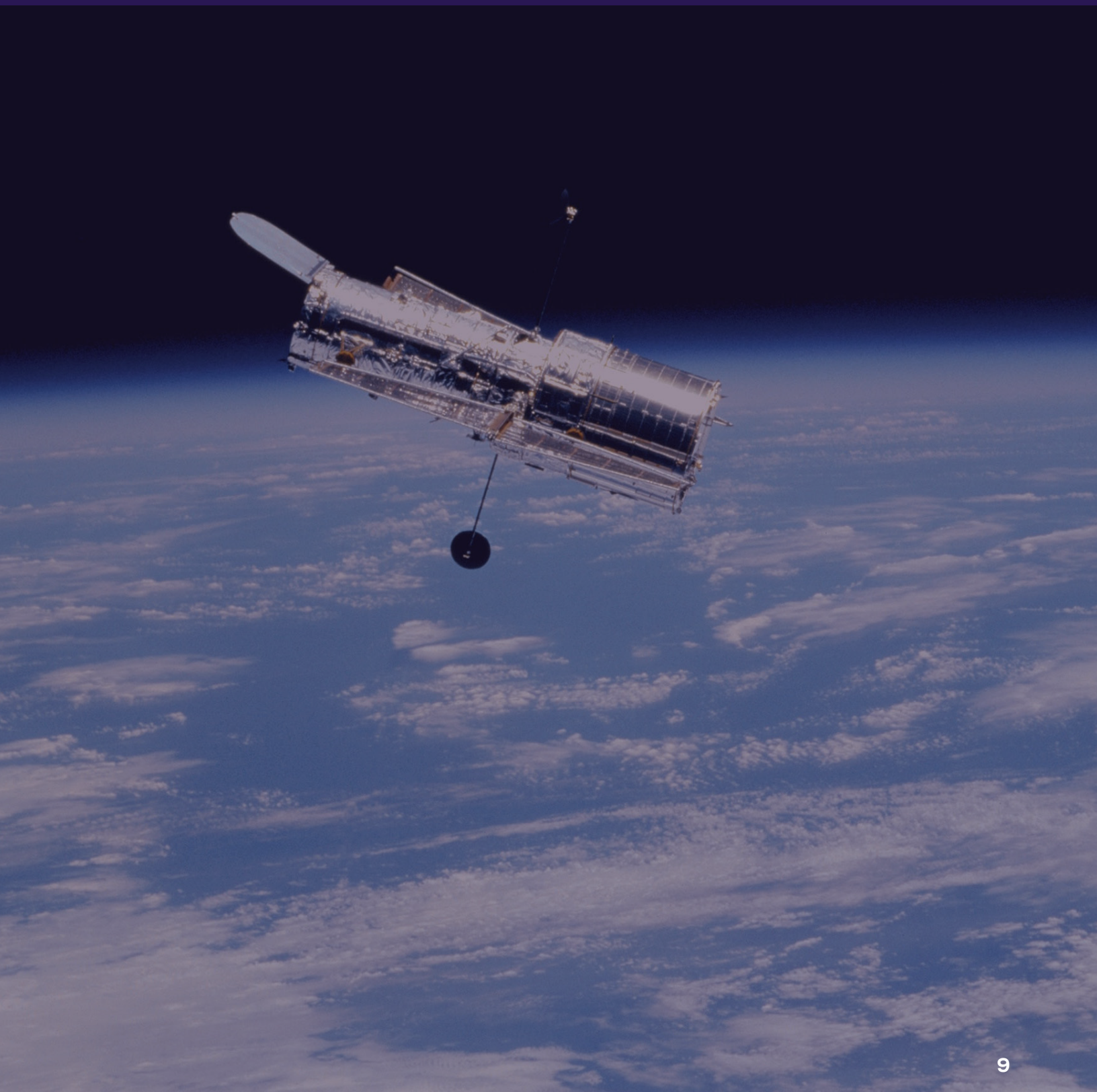
Participants at this event underscored the fact that space has become essential for human life and its relevance will only continue to increase as more actors —both States and non-governmental entities like the commercial industry— engage in space activities. In a period of fast-paced technological change and growing geostrategic tension, creating a safe, secure and stable space environment is a challenge that the international community must prioritize, or risk devastating consequences for humankind should outer space become a theatre of conflict. Building common understanding to ensure peace and security in space is therefore of paramount importance.

To understand and address these issues, on the first day participants focused their discussions on the importance of understanding the outer space domain as well as the significance of outer space security. Only through such understanding can the international community effectively achieve security in space. On the second day, participants discussed threats to space security and went on to consider the crafting of effective mechanisms to mitigate such threats.

The discussion over the course of OS22 is summarized in this document, which also identifies key takeaway points.

PANEL I

How to make space security work: understanding the space domain and space systems



PANEL I – How to make space security work: understanding the space domain and space systems

Outer space is a unique environment, composed of distinct characteristics which make the application of traditional disarmament mechanisms difficult. This panel emphasized the need for policymakers to understand the physical conditions of outer space, as well as the nature of space systems, in order to be able to develop measures that are applicable and effective in governing outer space.

Panellists discussed how natural phenomena in space, such as solar winds, plasmas, radiation belts, and cosmic rays, create a challenging environment for the operation of space systems. Human-created dangers, like the development, testing and use of counterspace capabilities, pose a significant threat that serve to exacerbate an already complex and challenging space environment.

One panellist suggested these challenges were compounded by resource-related issues. For example, it was indicated that outer space resources are finite and can be exhausted. Resources such as the electromagnetic spectrum and orbital slots are becoming scarcer, posing further challenges for space actors as entities must negotiate with each other to gain access to these limited resources.

Panellists proceeded to discuss how the orbital environment has undergone profound change in recent years, with thousands of satellites now in operation. It was pointed out that the number of pieces of orbital debris is now orders of magnitude greater than the number of operational satellites. This poses an increased danger to space systems. However, it is not only the number of objects in orbit that has evolved, but also their functions, capabilities, and complexity.

Monitoring and surveillance through space situational awareness (SSA) has evolved to allow enhanced tracking of certain objects in orbit. This can help detect unusual events, such as fragmentations, or uses of space assets that deviate from the norm. Developments in SSA allow for monitoring of space objects and inform understandings of where objects are and where they should be at a given time. However, SSA cannot keep track of every object posing a potential threat to space systems. Moreover, SSA cannot be used to track cyber or electronic interference, nor can it determine the intent or reasoning behind an action or movement. For these reasons, SSA, although providing extremely useful data, cannot be a stand-alone solution for issues of monitoring and verification in space security. The panel underscored that in conjunction with SSA, additional communication channels and transparency measures are required to better

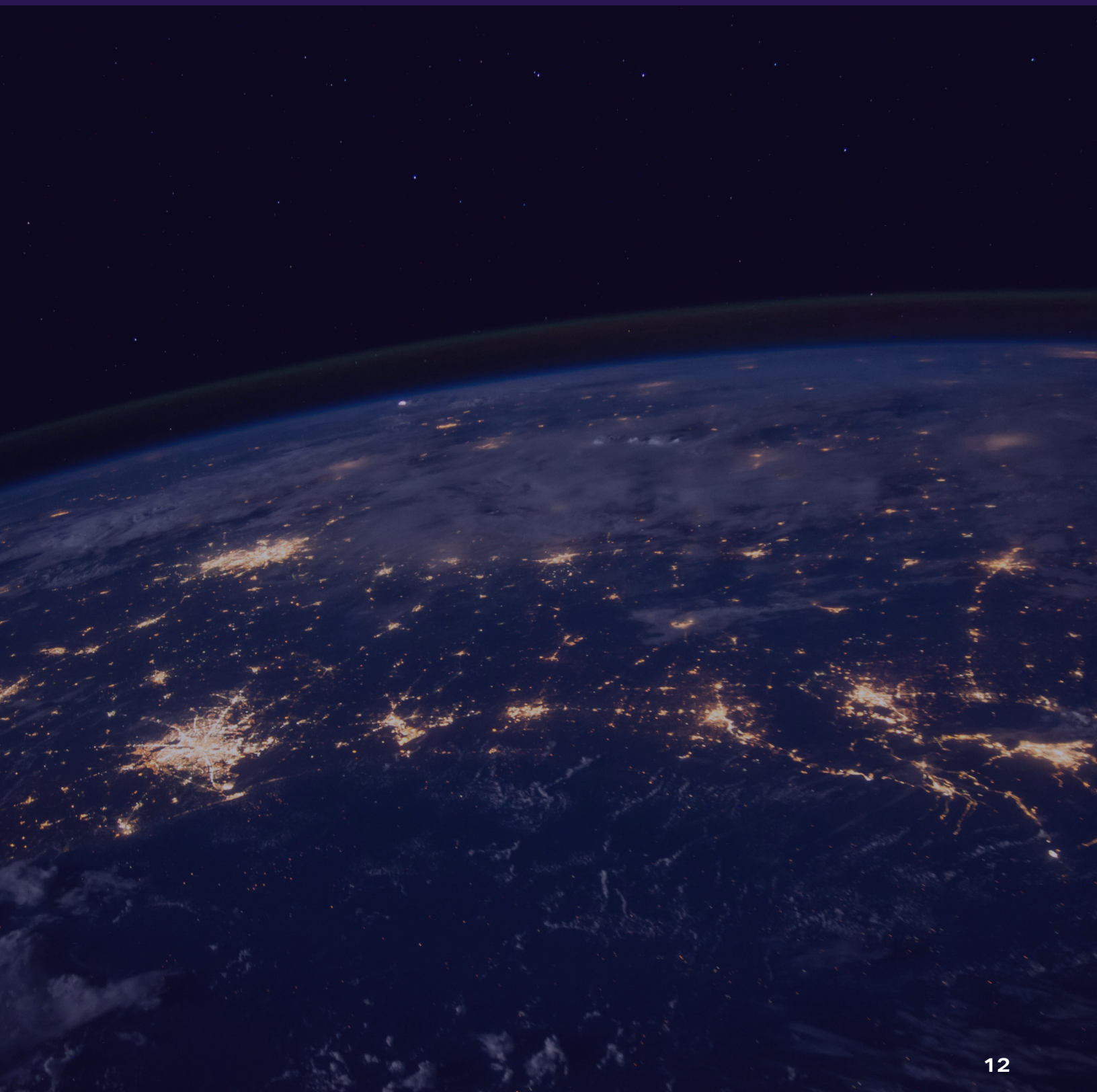
understand intent; inform decision-making around responses and build trust and confidence among different actors.

The panel also discussed the development of the commercial space sector. This topic raised questions about current regulatory systems and how governments could effectively govern space activities in a manner compatible with economic growth and innovation. One panellist spoke of the private sector's increasing appetite to meet environmental, social, and governance (ESG) criteria to expand investment opportunities and improve corporate reputations. It was stressed that this growing appetite presented an opportunity for regulators to capitalize on their ongoing efforts to establish and implement enhanced space governance mechanisms.

Finally, one panellist shared eight key lessons learned from interactions with the space industry to consider for the future of outer space governance: (1) technology used across borders needs to be regulated internationally through the development of basic universal standards; (2) cooperative endeavours are inherently more sustainable; (3) sustainable use of and access to resources needs to be considered early in the development of space governance measures; (4) regulatory systems should be sufficiently flexible to adapt to evolving technology; (5) regulatory processes should consider options for the integration of additional participants in the future and seek input from a wide range of stakeholders; (6) there needs to be a mechanism that establishes common understanding and expectations as to what constitutes responsible behaviour in outer space; (7) an international multidisciplinary approach to normative governance frameworks is crucial; and (8) the power of effective and ongoing industry, government and international diplomatic engagement should not be underestimated.

PANEL II

How can space security be achieved: past, present, future efforts and practical measures for PAROS



PANEL II – How can space security be achieved: past, present, future efforts and practical measures for PAROS

Over the years, many different mechanisms have been proposed to address space security concerns and to achieve the goals of preventing an arms race in outer space (PAROS). This panel reflected on these different mechanisms and considered how the groundwork laid by past and present activities could foster success in the future.

Some panellists pointed to the diverging positions on legally binding versus non-legally binding mechanisms that have permeated space security discussions since the emergence of PAROS as central issue. Panellists underscored that the division of the international community into these two positions —which are often viewed as incompatible and mutually exclusive— has been one of the inhibitors to reaching the consensus needed for initiatives to succeed. It was argued that the current Open-ended Working Group (OEWG) provides States an opportunity to move beyond such an outlook, and instead view non-legally binding and legally binding proposals as complementary. In this sense, one panellist argued that the OEWG opens the door for States to pursue different forms of governance in a sequential manner that can pave the way towards a legally binding instrument.

Some panellists stated that one of the primary routes to space security is to establish a legally binding treaty on PAROS. It was expressed that support for this idea had been reflected in the adoption of the annual General Assembly resolution on PAROS at successive annual meetings. It was argued that the negotiation of the (PPWT) in the Conference on Disarmament is key to advancing this international goal. One panellist explained that the PPWT proposal, built on more than two decades worth of deliberation and collective effort among Member States in the Conference on Disarmament, remains ripe for revision with a view to achieving agreement.

Some panellists expressed the view that voluntary measures are neither a substitute nor a precondition for legally binding negotiations, and that legally binding mechanisms remain the most effective tools in the field of arms control and disarmament. Other panellists highlighted that while non-legally binding mechanisms, such as norms, may be seen as less ambitious, they serve as important steps to creating common understandings among States, which in turn, could help ensure the effectiveness of any regime. To support this view, the example of the Group of Governmental Experts (GGE) on advancing responsible State behaviour in cyberspace in the context of international security was discussed. It was pointed out that successfully reaching consensus among major competing powers in the cyber domain was fundamentally an important first step for further progress in aspects of space security. Another panellist pointed to the Hague

Code of Conduct as an example of a voluntary measure with many State signatories that serves as a focal point for dialogue and exchange on space security-related issues. Moreover, the Hague Code of Conduct includes several important transparency and confidence-building measures (TCBM) such as voluntary on-site visits, notifications, and information-sharing. Ultimately, panellists shared the view that non-legally binding mechanisms can exist in complementarity to legally binding instruments, and that they have historically been used in conjunction to establish existing governance mechanisms for outer space, such as the Outer Space Treaty.

Panellists also pointed to the need to modernize PAROS. Some panellists spoke to the need to take a holistic approach to threat considerations, examining the roots of certain threats in escalatory policy language or military drills. One panellist stressed that diplomacy should seek to avoid being outpaced by industry developments, adding that the international community needs to invest as much effort into modernizing arms control as it does in modernizing weapons and military strategies.

One panellist proposed that PAROS is too narrowly focused on non-weaponization and non-use of force, adding that arms control is broader than that and that there is a need to invest in and establish peaceful machinery for space governance. To this end, panellists suggested initiatives, such as the organization of a review conference to the Outer Space Treaty or the establishment of information-exchange deconfliction mechanisms. Panellists also emphasized the need to bring space security 'back to Earth', underscoring the fact that space security is closely tied to Earth geopolitics. In that vein, panellists indicated that there is a need to introduce more human-based perspectives and inclusive drivers to the space security debate, with support from set of actors as large and geographically representative as possible. It was argued that the OEWG process is opening new avenues for stakeholder engagement and discussions, pointing to the need for PAROS to evolve from a narrow-insulated box to a wider more diverse community.

PANEL III

Why is space security not just in space: the intersection between outer space and other domains

PANEL III – Why is space security not just in space: the intersection between outer space and other domains

As panellists discussed in Panel I, outer space is unique, with distinct characteristics that make the application of traditional disarmament mechanisms difficult. However, even though it is often thought of in isolation, space is not a domain separate from others. Rather, it intersects with other security fields and impacts the wider arms control and disarmament agenda. Activities in space impact geopolitics on Earth and vice versa. Moreover, space is not only crucial for military operations but important also for civilian sectors, commercial activity, critical infrastructure, and for humanitarian organizations and actions.

Panellists pointed out that military operations on land, sea and air rely significantly on space systems including positioning, navigating, and timing services, satellite communications and Earth observation services. Space systems are also closely interconnected with cyberspace, as the functioning of satellites are dependent on digital components but also cyber connections between systems and capabilities. It was noted that the data linkage between space and ground segments is particularly vulnerable to among other things corruption, denial and deletion. Moreover, the electromagnetic spectrum is important to space systems as radio frequencies are crucial for space segments to communicate with ground segments, and are also vulnerable to interruption or interference.

The intersection between outer space and arms control, disarmament and non-proliferation was also discussed. Specifically, panellists pointed out that space capabilities have played a historical role in facilitating monitoring and verification processes as well as supporting early warning systems and command and control centres in managing defence and enabling deterrence. Some panellists pointed to lessons to be learned from arms control treaties, such as the Comprehensive Nuclear-Test-Ban Treaty and the New START Treaty. For example, it was noted that these agreements contain obligations for parties not to interfere with national technical means, including satellite-based observations.

The panel also spoke to the increasing complexity and entanglement of space and other systems. For example, one panellist pointed to a trend among militaries around the world to focus on deepening integration of air, land, and sea capabilities with outer space and cyberspace. This is further reflected in the growing use of terms such as ‘multidomain operations’ and ‘multidomain integration’ in military strategies.

The intersection of space with the commercial sector was also discussed. Panellists warned that with a growing space industry comes a larger ‘attack surface’ as the number of actors and supply

chains increase potential vulnerabilities. Some panellists provided an industry perspective, stating that space security and space threats are considered in commercial business modelling, as well as life-cycle assessments of products, services and manufacturing, including end-of-life assessments. Panellists further discussed how industry risk-assessment processes are informed by stakeholders, clients, insurance, partners, reputation, international and domestic legislation, and customers. The growing presence of the commercial sector in space demands the inclusion of industry perspectives in policymaking discussions. Moreover, these companies can provide important practical insights as the international community works to create regulatory frameworks for space security.

As panellists discussed the importance of the intersection among sectors, the conversation turned towards the internal processes of the United Nations. The cross-fertilization of issues within space security and space safety was discussed. Some panellists expressed support for teaming up different entities working on space. The work of the recent joint First and Fourth Committee in the General Assembly was identified as a good example that positively contributed to the discussion on space security, as issues —for example space debris—cannot be dealt with effectively in siloes. The discussion concluded with panellists addressing the important role of international organizations in facilitating intersectoral participation in space governance.

PANEL IV

What threatens space security: space systems and the threat vectors

PANEL IV – What threatens space security: space systems and the threat vectors

There is a range of space security threats including space-to-space activities (e.g. co-orbital anti-satellite weapons), space-to-ground (e.g. space debris re-entry), ground-to-space (e.g. direct-ascent anti-satellite weapons) or ground-to-ground (e.g. network attack on a ground station) activities. The security of space has long been a concern as societies rely on space technologies for economic, social and security purposes. Any disruption of this constantly expanding and fragile environment could have important consequences in terms of its impact across sectors and geographies. The development of various types of counterspace capabilities presents yet further challenges in this environment. This panel explored existing threats with a view to determining how best to mitigate and prevent them.

Panellists identified the development and use of kinetic capabilities as currently among the most impactful counterspace technologies. Kinetic capabilities are widely considered a particularly dangerous source of potential escalation. Moreover, the inevitable production of space debris derived from the testing and use of kinetic weapons against other space objects in a hit-to-kill manner has been recognized by States and non-governmental entities alike to be one of the most pressing threats to space security.

However, threats to space systems are not uniquely kinetic and panellists also expressed concerns over non-kinetic counterspace systems. One panellist argued that non-kinetic counterspace technologies present their own set of dangers and are of particular concern because of the difficulty of attributing responsibility for them and predicting and preventing them. One panellist proposed that, while kinetic threats are sometimes seen as 'low-hanging fruit', non-kinetic threats are considered a more realistic and indeed likely threat. Moreover, non-kinetic weapons are difficult to regulate, in part due to the difficulties of attribution. However, efforts to develop frameworks for space security must consider these threats as well.

Panellists highlighted that chief among the problems that States face with regard to space security is the lack of trust that surrounds activities in outer space. This lack can cause actors to interpret others' activities and behaviours in space through a lens of suspicion which in turn can serve to escalate tensions. To counter this, one panellist advocated the adoption of TCBMs in order to contribute to the creation of predictability in space activities and to build trust among actors.

A key part of building trust is the creation of common understanding, and in this sense, panellists argued that when considering the establishment of new regulations, common understanding is needed in several areas, including in relation to the application of international law, or the interpretation of key outer space law principles, such as 'due regard'. Any future developments in space security-related measures that seek to limit activities or behaviours, whether through binding legislation or voluntary norms, must recognize States' existing legal commitments.

PANEL V

Who can achieve space security: the need for diversity to reach PAROS

PANEL V – Who can achieve space security: the need for diversity to reach PAROS

Access to outer space is no longer limited to a select number of States. There is an increasing number of stakeholders and actors that have a vested interest in keeping space peaceful and secure. Regional perspectives, multi-stakeholder participation, and a gender inclusive approach are therefore more important than ever. This panel discussed the value of diversity in achieving the goals of PAROS.

Panellists indicated that diversity, inclusion, and equity are necessary factors for sustainable space security measures. In terms of geographical diversity, it was recognized that the perception of threats and security depends on experiences and contexts. As the number of space actors expands and interests in space grow, space security discussions will need to include a wider range of participation, including but not limited to spacefaring States. Geographically diverse participation is also important in capturing a full range of threat perceptions. Efforts towards capacity-building in this field also need to integrate voices from different geographical areas and build sustainable region-specific expertise. Cross-regional cooperation and dialogue were underlined as being key components to improve regional policies and to build upon lessons learned from other regions. Panellists highlighted that the decrease of the costs of launching space objects —aided by the emergence and growth of the commercial space industry— has allowed developing countries to establish space programmes. The diffusion of technologies that are reliant on space infrastructure —such as digital banking or e-commerce— positively influence the economy of certain developing countries as well. Today there are more space actors than ever before, and in light of this, panellists argued that space security discussions should not fall only to spacefaring States but must also include wider participation, even outside the contexts of Geneva and New York.

In line with meaningful participation, panellists emphasized the important role of women in the context of multilateral engagements generally and space particularly. Beyond advancing the representation of women across different sectors, panellists argued that priority should be placed on including women in decision-making processes and empowering them as agents of action. Other panellists highlighted the broader role of women in space-related activities suggesting that the effective contribution of women should be reflected in practice as well. One panellist went further and proposed the language of article I of the Outer Space Treaty —"the province of all mankind"— should be updated to ensure gender neutrality.

Another panellist suggested that as the space environment evolves, more active participation from non-traditional and emerging space actors (including commercial companies, interest groups, think tanks, civil society, and academia) is important. Achieving this, it was argued, requires greater outreach using accessible materials to avoid excluding or alienating stakeholders. It was suggested that there could also be benefits to addressing potential misconceptions around responsible behaviours and fostering common understandings of this concept.

In moving forward towards a more unified global space economy, one panellist highlighted the value of investing in the next generation of space security actors. Referring to the current 'talent gap' faced by companies, one panellist pointed to the value of mentorship programmes as a means to build capacity among next-generation actors.

PANEL VI

What is space security: striving towards common understanding

PANEL VI – What is space security: striving towards common understanding

A lack of common understanding, miscommunication and limitations in transparency can heighten tensions in a dangerous manner that, if unchecked, can lead to conflict. This panel explored the importance of these issues and the areas where common understanding is most urgently needed, as well as technical and political mechanisms designed to build space security.

To find tangible areas for cooperation, panellists emphasized the need for stakeholders and processes, including the OEWG, to provide detailed proposals with measurable goals and activities. Panellists also noted the importance of definitions of key concepts and principles. Indeed, it was pointed out that there are many terms regularly used in space security discussions —such as space militarization, space weapons, arms race, or use of force— that are interpreted differently by different actors. In the absence of common understandings, the use of such terms could result in misunderstandings in the future and potentially exacerbate tension. As such, caution is required in the use of certain terms.

Other panellists pointed to the value of work done in the private sector that could advance common understandings. Many industry actors have worked towards the development of best practices and standards to ensure the sustainability of their operations and of the broader space domain. States could draw from such initiatives in the creation of legal and regulatory frameworks. For example, industry initiatives designed to facilitate data-sharing could be useful for States to consider further. Moreover, panellists pointed out that increased involvement of industry actors could contribute to mitigating the risk of misunderstandings in relation to commercial space activities.

One panellist encouraged States to pursue unilateral space security measures, such as the U.S. voluntary moratorium on destructive direct-ascent anti-satellite missile tests, as a means to lead the development of common understandings. It was acknowledged that this moratorium was relatively 'low hanging fruit'. However, it was suggested that focusing on such initiatives where some international support is forthcoming could be an effective way of building measures to ensure space security.

Within the United Nations context, panellists highlighted the progress made by the OEWG and the United Nations Disarmament Commission where States have reached agreements on transparency and confidence-building measures, which are essential for the establishment of common understandings. Some of these measures include the recommendation to exchange

information on matters such as launches, manoeuvres in orbit, or national space policies; the pursuit of dialogue to mitigate tensions; and the elaboration of consultation mechanisms. Panellists also recalled how the 2019 GGE on further effective measures for PAROS identified several terms that would need to be clarified in future negotiations on a legally binding instrument, such as space weapons or the placement of weapons in orbit. Clarification of these terms could lead to increased common understandings and ultimately help States to agree on effective and long-lasting mechanisms to ensure a peaceful and secure space domain.

KEY TAKEAWAYS

KEY TAKEAWAYS

UNDERSTANDING THE OUTER SPACE DOMAIN AND SPACE SYSTEMS IS PARAMOUNT FOR THE EFFECTIVE ESTABLISHMENT OF SPACE SECURITY REGULATIONS

Only through an understanding of the unique characteristics of outer space, as well as space systems, can the international community successfully agree on a regulatory framework that will be effective in ensuring that space is kept as a peaceful and secure domain. The increase in stakeholders in recent years, a trend that shows no signs of abating, only makes such understanding of the orbital environment even more of an imperative. To operate peacefully in space, actors must be aware of the hazardous nature of the domain and avoid intentional actions that would endanger the space environment as well as space systems and their activities, such as the testing and use of counterspace capabilities.

Law and policy can be used in conjunction with technology to ensure peace and security in outer space. In this sense, technology such as space situational awareness can be useful for the purposes of monitoring and verification. To maximize the effectiveness of technology when used in conjunction with law and policy, cooperation remains a necessity, not just among States, but also with non-governmental entities, in particular the space industry. Increased cooperation will result in increased accuracy of the verification and monitoring of compliance with regulations. Such cooperation would lead to greater transparency in space activities, which is a prerequisite to building the trust that will ensure that the goals of PAROS are achieved.

PROPOSED MEASURES TO ADDRESS SPACE SECURITY ARE COMPLEMENTARY AND FUTURE PROPOSALS MUST TAKE PREVIOUS INITIATIVES INTO ACCOUNT

Throughout the history of exploration of the space domain, and particularly in recent years, there have been many proposals that have sought to ensure space security. These initiatives have been varied in nature, with some advocating for legally binding solutions, and others suggesting the use of normative frameworks. States have traditionally perceived these two approaches as incompatible and mutually exclusive, when they are, in fact, complementary. Current and future proposals need to take this complementarity into account, and use the work that has been done in the past as pillars upon which to build new initiatives. New proposals should not seek to drastically break away from previous initiatives, but rather aim to build common understanding among various stakeholders by taking into account the views, concerns and approaches raised and proposed in the past. It is also important to remain cognizant of the fact that no new proposal will singlehandedly eradicate all space security concerns, since new dangers will continue to emerge as new technology is developed and geopolitics continue to evolve.

OUTER SPACE IS NOT A DOMAIN ON THE MARGINS OF EARTHLY GEOPOLITICS

Outer space is often perceived as a domain separate from Earth and States' relationships therein; however, space and its security —or lack thereof— is merely a mirror image of geopolitics on Earth. As such, tensions on Earth can have their reflection in space activities, and in the same manner, tensions emerging from operations in orbit could have effects on State relationships on Earth. Space technology is essential for our lives on Earth, and our dependence on its services will continue to exist and even increase with time. As such, space's geopolitical relevance will also continue to increase, making space security a priority for the international community. Building common understanding among space actors, increasing cooperation, transparency and communication is therefore key to achieving space security, but also for security and disarmament more generally.

COMMON UNDERSTANDING IS KEY TO ACHIEVING SPACE SECURITY AND PAROS CAN ONLY BE ACHIEVED THROUGH A DIVERSITY-BASED APPROACH

Humankind as a whole has a vested interest in keeping space peaceful and secure, since all States, regardless of whether they are spacefaring or not, benefit from the services provided by space technology. A greater number of States than ever before are active in outer space, but stakeholders go beyond just States, and today space exploration and technological developments are being driven by commercial actors, civil society and academia, alongside governments.

This greater diversity of stakeholders should be reflected in decision-making processes, as only through an inclusive approach —that considers regional perspectives and multi-stakeholder participation— and a gender-inclusive outlook can the objectives of PAROS effectively be achieved. In the past, proposals that have failed to be inclusive in any of these respects have failed to ensure space security. In contrast, cooperation among stakeholders would benefit all parties and serve to optimize space security governance measures.

ANNEX: CONFERENCE PROGRAMME

DAY 1, 1 November 2022

Understanding outer space and outer space security

Conference opening, 10:30–11:00 CEST

Opening remarks:

- Robin Geiss, Director, UNIDIR

Keynote addresses: Building common understanding: the road to space security

- Izumi Nakamitsu, Under-Secretary-General and High Representative for Disarmament Affairs, United Nations Office for Disarmament Affairs (UNODA)

Panel I – How to make space security work: understanding the space domain and space systems 11:00–12:30 CET

Speakers:

- Hellmut Lagos, Chair of the UN OEWG on Reducing Space Threats through Norms, Rules and Principles of Responsible Behaviours
- Hui Du, Senior Engineer, China Academy of Space Technology
- Regina Peldszus, Space Policy Officer, European External Action Service
- Joanne Wheeler, Managing Partner, Alden Legal Limited

Moderator:

- Almudena Azcárate Ortega, Associate Researcher, Space Security and WMD Programmes, UNIDIR

Panel II – How can space security be achieved: past, present, future efforts and practical measures for PAROS, 13:30–15:00 CET

Speakers:

- Guilherme de Aguiar Patriota, Ambassador of Brazil, Consul General in Tokyo and former Chair of the GGE on PAROS
- Andrey Belousov, Deputy Permanent Representative of the Russian Federation in Geneva
- Ji Zhaoyu, Counsellor (Disarmament), Permanent Mission of the People's Republic of China to the United Nations Office at Geneva
- Xavier Pasco, Director, Fondation pour la Recherche Stratégique
- Jessica West, Senior Researcher, Project Ploughshares

Moderator:

- Cécile Aptel, Deputy Director, UNIDIR

Panel III – Why is space security not just in space: the intersection between outer space and other domains, 15:30–17:00 CET

Speakers:

- Beyza Unal, Head, Science and Technology Unit, UNODA
- Eric Desautels, Acting Deputy Assistant Secretary for Arms Control, Verification and Compliance, United States State Department
- Sabrina Alam, Senior Specialist, Space Sustainability and ESG Programme Manager
- James Black, European Lead, Space Enterprise Initiative, RAND Europe
- Elina Morozova, Executive Director, Intersputnik International Organization of Space Communications

Moderator:

- Laetitia Cesari Zarkan, Consultant, Space Security and WMD Programmes, UNIDIR

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Panel IV – What threatens space security: space systems and the threat vectors, 10:30–12:00 CET

Speakers:

- Aidan Liddle, Ambassador and Permanent Representative, United Kingdom Delegation to the Conference on Disarmament in Geneva
- Raji Rajagopalan, Director, Centre for Security, Strategy and Technology at the Observer Research Foundation
- Guoyu Wang, Dean, Academy of Air, Space Policy and Law
- Cassandra Steer, Deputy Director, Australian National University Institute for Space

Moderator:

- Victoria Samson, Washington Office Director, Secure World Foundation

Panel V – Who can achieve space security: the need for diversity to reach PAROS, 13:00–14:30 CET

Speakers:

- Anuradha Damale-Day, Policy Fellow and Programme Manager, BASIC
- Benjamin Silverstein, Research Analyst, Space Project, Carnegie Endowment for International Peace
- Nivedita Raju, Researcher, Stockholm International Peace Research Institute
- Kim Macharia, Executive Director, Space Prize
- María Antonieta Jáquez Huacuja, Counselor, Coordinator for Disarmament and Nonproliferation at the Ministry for Foreign Affairs of Mexico

Moderator:

- Patricia Lewis, Research Director, International Security Programme, Chatham House

Panel VI – What is space security: striving towards common understanding, 15:00–16:30 CET

Speakers:

- Aya Iwamoto, Director, Japan Space Policy, Astroscale Japan
- Bleddyn Bowen, Associate Professor of International Relations, University of Leicester
- JJ Domingo, Political-Security Officer, Philippines Mission to the United Nations in Geneva
- Rene Holbach, Political Affairs Officer, Science, Technology and International Security Unit, UNODA
- Anna Izbitskikh, Department for Nonproliferation and Arms Control, Ministry of Foreign Affairs of the Russian Federation

Moderator:

- James Revill, Head of Programme, Weapons of Mass Destruction, UNIDIR

Concluding remarks

- Robin Geiss, Director, UNIDIR