



COMMERCIAL ACTORS AND CIVIL SOCIETY CONSULTATION REPORT

HOW CAN NON-GOVERNMENTAL ENTITIES CONTRIBUTE TO REDUCING THREATS TO OUTER SPACE SYSTEMS?

MANON BLANCAFORT, SARAH ERICKSON AND ALMUDENA AZCÁRATE ORTEGA



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INTRODUCTION

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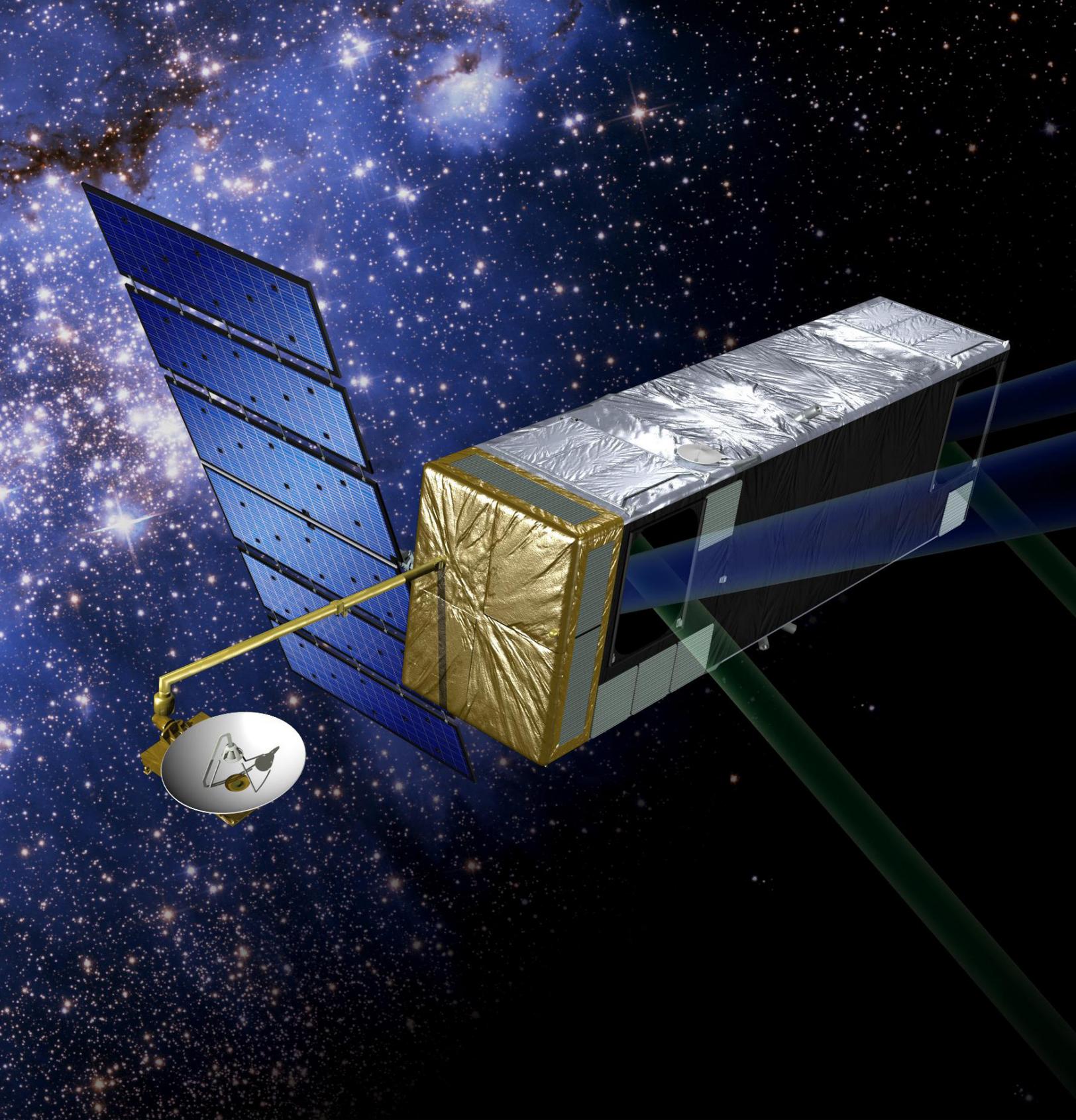
Outer space is a domain of increasing importance for humankind. This is reflected in the increasingly diverse range of stakeholders, which no longer includes only States, but also industry, civil society and academia. These non-governmental entities have traditionally engaged in space security discussions in a limited manner, but they have become increasingly vocal in expressing the need to maintain space security.

Today there is a growing fear that, as space becomes more economically and strategically important, it could become a theatre of conflict. This is compounded by the ongoing development of counterspace capabilities by several States. The resulting rising tensions affect both States and non-governmental entities. With the development of new technologies, and the emergence of new actors, new threats to space systems and the space environment have also surfaced. Such developments underline the need to build confidence among different stakeholders in order to determine effectively how best to ensure that the space domain can be kept peaceful and secure.

The unique perspective and know-how that non-governmental entities possess have the potential to provide States with valuable insight that could aid in the optimization of policymaking. This becomes particularly important as the international community engages in processes that seek to reach common understanding for the purpose of addressing space security concerns. This has also been recognized by the General Assembly of the United Nations, which specified that the Open-ended Working Group (OEWG) established pursuant to resolution 76/231 on reducing space threats through norms, rules and principles of responsible behaviours should take place with the attendance of international organizations, commercial actors and civil society representatives, in accordance with established practice.

In this context, the United Nations Institute for Disarmament Research (UNIDIR) and the United Nations Office for Disarmament Affairs (UNODA) co-organized an intersessional consultative meeting of interested representatives of commercial actors and civil society representatives with the Chair of the OEWG, in accordance with paragraph 6 of General Assembly resolution 76/231. This consultation, held on 25 January 2023, in advance of the third session of the OEWG, aimed to explore these entities' perspectives related to space security and sustainability and look at how non-governmental entities can contribute to creating a peaceful and secure space environment. The consultation brought together representatives from different sectors of the space community. It was able to provide insightful perspectives to the Chair and to give State representatives a broader understanding of perceptions of threats to space systems.

To encourage free and frank discussion, the meeting was held under the Chatham House Rule. As such, "participants were free to use the information received, but neither the identity nor the affiliation of the speaker(s), nor that of any other participant, may be revealed".



SESSION I
THREATS TO SPACE SYSTEMS

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The discussion during the first session focused on what non-governmental entities consider to be threats to space systems and their operation. The following threat perspectives were identified.

Cyber Threats To Space Systems

Many participants shared the view that one of the most pressing concerns to space systems are cyber threats. Participants explained that ground terminals, telecommunications ports, and user terminals are especially vulnerable components of a space system, as there is a higher probability of these components suffering from cyber interference compared to the components located in space, which have more advanced protections. In addition, participants spoke about the complex and interdependent supply chain creating new vectors for cyber attacks. Some participants pointed to the need for data to be better protected. Several participants suggested that frameworks at the international level are needed to protect space systems from cyber threats.

Deliberate Creation Of Debris

Several participants expressed concern regarding the impact on the long-term sustainability of outer space of the intentional creation of debris. Participants suggested the intentional creation of debris, especially as a result of destructive direct-ascent anti-satellite testing, threatened the operations, longevity, and security of space systems. Furthermore, it was suggested that lack of universal standards for the design of space systems to minimize further creation of debris and post-mission disposal was also of major concern, as lack of such standards can lead to further creation of debris in the future.

Proliferation Of Counterspace Capabilities And Destabilizing Behaviour

Various participants spoke about the threat of intentional interference from counterspace capabilities including cyber interference (discussed above), but also kinetic anti-satellite attacks, electronic interference, directed energy attacks, and co-orbital threats. Concern was expressed about the increasing research and development of such capabilities, as well as the growing trend in destabilizing behaviours, including direct-ascent anti-satellite missile testing and uncoordinated rendezvous and close proximity operations.

Information Deficit And Inequality Across Regions

Several participants spoke about the insufficiencies of monitoring systems and information about space systems, their capabilities and their activities. Moreover, participants expressed concern that not all States possess the technology and tools necessary to effectively monitor space activities. Additionally, some participants warned against the dangerous assumption that there is enough scientific understanding to comprehensively grasp satellite behaviour and dangers—both risks and threats—to space systems. Some participants proposed that further scientific understanding and cooperation are needed, including cross-border academic cooperation, to monitor and understand satellite behaviour and to create future mechanisms for compliance. Some argued this should be pursued in parallel with the development of legal and normative frameworks, which can encourage data-sharing.

Concern Over International Relations

Some participants indicated there is a lack of trust among members of the international community, but especially among geopolitical rivals, and that this is one of the greatest threats to space systems. One participant underscored that lack of trust and communication between geopolitical powers could lead to escalatory pathways towards conflict. Such tensions would only increase with the growing number of actors in space.



SESSION II
**HOW TO MITIGATE THREATS
TO SPACE OPERATIONS**

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HOW TO MITIGATE THREATS TO SPACE OPERATIONS

The discussion during the second session revolved around possible mechanisms to avoid or mitigate threats and risks to space systems and operations. These mechanisms include the following.

Strengthening National Legal Implementation

Several participants agreed that space sustainability heavily depends on the rule of law at the national level. Some participants indicated that although new international legally binding mechanisms could greatly benefit space actors, the national implementation of legal principles already established in the Outer Space Treaty still needs to be strengthened. In this regard, some participants highlighted the valuable role of non-governmental actors in governmental processes for building national guidelines to control certain types of behaviours, such as the uncontrolled re-entry of space objects.

Establishing Information-Sharing Mechanisms

Some participants recommended more transparent communications among commercial space actors, with a view to establishing an international platform or hub to foster information exchanges and the communication of intentions among space actors on particular activities. Such activities include launches, rendezvous and proximity operations, and even the malfunction of space objects that could lead to harmful interference with others' space activities. These participants proposed that exchanging information on these matters could aid space actors in gauging the intent of others, thus contributing to the alleviation of some existing tensions.

Tracking And Managing Space Objects And Debris

Some participants indicated the need to properly register space objects —both at the national level and with the UN Register of Objects Launched into Outer Space— in order to facilitate monitoring and tracking. Other participants expressed concern regarding the presence in orbit of space objects approaching the end of their lifespan. Many older generation satellites are not equipped with post-mission disposal capability, which could endanger space activities, as they represent a source of future debris and potential accidents. Some participants suggested that an effective trust-building measure would be for the launching States of these legacy spacecraft to cooperate with one another, as well as with industry, on their removal. This would have the added benefit of aiding in the development of active debris removal and could increase trust among space actors.

Clarifying Terminology

Some participants highlighted the importance of all space actors engaging in dialogue to create a common understanding of terms and agree upon standards of responsible behaviour. Developing a common lexicon was proposed as a means to help facilitate further deliberations on policy in this field.

Improving Verification And Accountability

A number of participants warned against the lack of consequences for actors that do not undertake activities in a responsible manner. They suggested that the creation of normative frameworks should consider incentives for compliance and include processes to address possible violations of norms. Such incentives, processes and recourses should start, they suggested, with educating concerned stakeholders widely on established normative frameworks and relevant avenues to address norm violations. Some participants proposed the establishment of a new legal or normative framework that would include information-sharing requirements. One participant proposed mandatory installation of hardware, such as retroreflectors, in order to improve tracking and effective implementation.



MOVING FORWARD

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As States work towards clarifying existing frameworks and creating new ones for regulating space security, it is important that they consider the perspectives of all stakeholders. Non-governmental entities, such as industry, civil society and academia, can provide a useful perspective regarding threats to space operations, how these can be mitigated, and how stakeholders can build transparency and common understanding to ensure space security.

The UNIDIR and UNODA Commercial Actors and Civil Society Consultation demonstrates the willingness of industry, civil society and academia to engage in the discussion and to aid States in their task of ensuring that space remains a peaceful domain. The consultative process highlighted that these entities share similar concerns with States regarding threats to space systems, and that they can bring novel perspectives into the discussion of how best to mitigate those threats. It is therefore important to continue to consider the views of these actors in the context of multilateral processes that seek to find ways to achieve the goals of the Prevention of an Arms Race in Outer Space (PAROS) and to ensure peace and security in outer space, including the OEWG on reducing threats to space systems through norms, rules and principles of responsible behaviour.

All stakeholders, be they States or non-governmental entities, have a vested interest of keeping space peaceful and secure. Fostering an inclusive dialogue on these issues can aid in optimizing policymaking by bridging the gap that has traditionally existed between States and other stakeholders. Increased and improved communication among all stakeholders will lead to greater awareness of the space domain, increased transparency, and ultimately the reduction of tensions.

The United Nations is well-placed to encourage further engagement between States and non-governmental entities to aid in the pursuit of these goals of peace, security and sustainability of outer space. UNIDIR and UNODA will continue to facilitate engagement and cooperation among all stakeholders by providing forums for non-governmental entities to share their views on space security with the international community.

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