



UNIDIR

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DISARMAMENT
RESEARCH

UNIDIR Space Security Conference 2019

**SUPPORTING DIPLOMACY:
CLEARING THE PATH FOR DIALOGUE**

28–29 May 2019

UNIDIR RESOURCES

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About UNIDIR

The United Nations Institute for Disarmament Research (UNIDIR)—an autonomous institute within the United Nations—conducts research on disarmament and security. UNIDIR is based in Geneva, Switzerland, the centre for bilateral and multilateral disarmament and non-proliferation negotiations, and home of the Conference on Disarmament. The Institute explores current issues pertaining to a variety of existing and future armaments, as well as global diplomacy and local tensions and conflicts. Working with researchers, diplomats, government officials, NGOs and other institutions since 1980, UNIDIR acts as a bridge between the research community and Governments. UNIDIR activities are funded by contributions from Governments and donor foundations.

About the Organizers

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. The Secure World Foundation works with governments, industry, international organizations, and civil society to develop and promote ideas and actions for international collaboration that achieve the secure, sustainable, and peaceful uses of outer space.

The Simons Foundation Canada is a private foundation committed to advancing positive change through education in peace, disarmament, international law, and human security. Jennifer Allen Simons established The Simons Foundation Canada in 1985 to foster a greater understanding of global barriers to peace and to work with key parties on a common agenda. The Simons Foundation Canada has been a supporter of the UNIDIR Space Security Conference series since its inception as well as the principal NGO contributor to the Space Security Index, an annual publication surveying development in the use of outer space relevant to its security and sustainability.

The **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 as well as to 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 defence industry and economy, the analysis of cross-cutting threats as well as health and environmental risks.

Note

This report was drawn up by Daniel Porras and constitutes both a summary and analysis of the discussions and exchanges that took place at UNIDIR's Space Security Conference held at the Palais des Nations in Geneva on 28–29 May 2019.

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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 slightly differ from delivery, as it may likewise with panellists' presentations and transcripts; the latter are made available on UNIDIR's website and hereinafter via appropriate links.

Table of Contents

1. Introduction	1
2. Summary Outline of Proceedings.....	2
2.1. Panel 1—Taking Stock.....	2
2.2. Panel 2—What is a Space Force?.....	3
2.3. Panel 3—Emerging Rocket and Missile Dual-Use Challenges	4
2.4. Panel 4—On-orbit Proximity Operations: Friend or Foe?	4
2.5. Panel 5—Gathering Evidence in Orbit	5
2.6. Panel 6—Next Steps for Multilateral Dialogue.....	6
3. Key Takeaways	7
Annex 1.....	10

List of acronyms and abbreviations

ASAT	anti-satellite
CD	Conference on Disarmament
COPUOS	United Nations Committee on the Peaceful Uses of Outer Space
OS19	UNIDIR Space Security Conference 2019
PAROS	prevention of an arms race in outer space
SSA	space situational awareness
TCBMs	transparency and confidence-building measures

UNIDIR Space Security Conference 2019

Conference Report

SUPPORTING DIPLOMACY: CLEARING THE PATH FOR DIALOGUE

The 2019 UNIDIR Space Security Conference (OS19), entitled Supporting Diplomacy: Clearing the Path for Dialogue, was held on 28–29 May 2019 at the Palais des Nations in Geneva, Switzerland. OS19 brought together experts and diplomats from around the world to examine some of the technical and policy questions impacting multilateral dialogues on space security and to seek possible paths forward towards stability in space. In particular, OS19 sought to identify areas of convergence where all space actors might agree on the need for collective action that may serve as initial steps in building greater trust in space activities. The exchanges that took place during OS19 were forthright and informative and identified several areas that could be the subject of further dialogue among States.

The central conversations at OS19 are condensed in this document, as well as several key takeaway points raised during the final session.

1. Introduction

There is ample evidence of the importance of space activities to daily human life. One need only look at the growth of the space economy, which was valued at US\$ 385 billion in 2017, and is predicted to continue rising for the foreseeable future.¹ Yet there are several indications that threats to stability and security in space, which could impede peaceful access and use, are increasing. Space systems are becoming the targets of increasingly frequent, persistent and deliberate interference from a variety of technologies. Electronic disruption technology, for example, is becoming more widely employed to deny satellite communications and global positioning services.² At the same time, strategic competition in space capabilities is also more evident. In March 2019, for example, India demonstrated its anti-satellite (ASAT) interceptor capabilities. This was the first time in more than a decade that a kinetic ASAT demonstration was conducted. Several States are moving towards the establishment of dedicated military forces for space activities, with both defensive and offensive objectives.

Given the above, there is a renewed emphasis among Member States on the prevention of an arms race in outer space (PAROS), which has been raised in a variety of forums. The General Assembly, the Conference on Disarmament, the Disarmament Commission, and the Group of Governmental Experts on further effective measures for the prevention of an arms race in outer space have all sought to make headway on space security challenges, and States have even raised these concerns in the United Nation's Committee on the Peaceful Uses of Outer Space (COPUOS). While considerable efforts have been invested into each of these groups, results so far have been limited. Both political and technical constraints have prevented all States from coming together on a single

¹ See Brian Higgenbotham, "The Space Economy: An Industry Takes Off", US Chamber of Commerce, 11 October 2018, <https://www.uschamber.com/series/above-the-fold/the-space-economy-industry-takes>.

² See Rajeswari Pilai Rajagopalan, "Electronic and Cyber Warfare in Outer Space", UNIDIR Space Dossier 3, May 2019, <http://www.unidir.org/files/publications/pdfs/electronic-and-cyber-warfare-in-outer-space-en-784.pdf>.

agreed-upon approach to security and stability in space. And while many of the hurdles go beyond the scope of space security, some are of a technical and policy nature, such as difficulties in discerning the intent of dual-use/multi-use space objects, or obstacles to sharing data about rocket/missile launches.

2. Summary Outline of Proceedings

2.1. Panel 1—Taking Stock

Acknowledging growing security threats to space systems, several United Nations bodies undertook to address these issues throughout 2018 and early 2019. Despite considerable efforts, however, results were limited and it was widely felt that the momentum that existed in early 2018 is now beginning to falter.

- In the Conference on Disarmament (CD), Subsidiary Bodies sought the means to effectively move discussions forward on specific agenda items, including PAROS.³ In 2018, Subsidiary Body 3 adopted a report outlining specific concerns that should be addressed and some possible steps that the CD could take.⁴ In 2019, the CD was unable to reconstitute the Subsidiary Bodies and no further work is scheduled.
- In the United Nations Disarmament Commission, Working Group II took up the topic of implementing transparency and confidence-building measures (TCBMs) for space activities.⁵ Yet political tensions prevented formal discussions by the Commission on this tasking.⁶
- A Group of Governmental Experts convened for two two-week sessions (from 6 to 18 August 2018, and from 18 to 29 March 2019), with the intent to result in recommendations about elements for a legally binding instrument on PAROS. However, the Group did not reach consensus on a report.⁷
- In COPUOS, the development of Long-Term Sustainability Guidelines was not yet concluded, with 21 adopted Guidelines and 7 outstanding guidelines. Following OS19, it was agreed to transmit the 21 Guidelines to the General Assembly.
- General Assembly resolutions related to space security that were traditionally adopted without a vote were challenged last year, such as the resolutions on PAROS and TCBMs.⁸ Only the initiative on No First Placement of Weapons in Outer Space saw modest progress over the last year, though it remains a controversial resolution.⁹

³ Conference on Disarmament, CD/2119, <https://undocs.org/CD/2119>.

⁴ Conference on Disarmament, Subsidiary Body 3: Prevention of an arms race in outer space, CD/2140, <https://undocs.org/CD/2140>.

⁵ 2018 United Nations Disarmament Commission Secretariat Non-Paper, <https://s3.amazonaws.com/unoda-web/wp-content/uploads/2018/03/WG2-secretariat-non-paper-outer-space-TCBMs-FINAL.pdf>.

⁶ UN Disarmament Commission, 2019 Session (informal session), <https://www.un.org/disarmament/institutions/disarmament-commission/session-2019/>.

⁷ Group of Governmental Experts on further practical measures for the prevention of an arms race in outer space, Note by the Secretary-General, <https://undocs.org/en/A/74/77>.

⁸ See resolutions of the seventy-third session of the General Assembly, <https://www.un.org/en/ga/73/resolutions.shtml>.

⁹ “Pakistan, Russia sign statement on ‘no first placement of weapons in outer space’”, The Express Tribune, 22 May 2019, <https://tribune.com.pk/story/1978387/1-pakistan-russia-sign-statement-no-first-placement-weapons-outer-space/>

Participants of these processes generally agree that the existing governance framework for space activities is insufficient to ensure long-term stability in that environment. The increased importance of space systems, combined with the ongoing development of counter-space capabilities, increases the potential for military competition to lead to open conflict in space. Moreover, commercial and military space activities are becoming less distinguishable, blurring the line between civilian and military space systems. Yet States remain divided over the best approach to address these challenges. A lack of trust among certain military powers currently makes it difficult to seek effective solutions that bridge the differences of opinion among States. Nevertheless, the discussions that took place over the last year helped unpack some of the specific questions that need answers to move forward on new rules for space security. These include the scope of agreements, specific definitions, and monitoring/verification challenges for possible space arms control.

2.2. Panel 2—What is a Space Force?

In February 2019, the United States President issued Space Policy Directive 4 (SPD-4), which orders the Secretary of Defense to submit a proposal for the establishment of a sixth branch of the US military, namely a Space Force.¹⁰ While this is not the first time that a military has created a dedicated unit for space activities (China and the Russian Federation already have specialized units), SPD-4 came at a time of heightened competition in space, leaving many to wonder what this development means for stability in the space environment. While the US government has still not (at the time of drafting this report) authorized a Space Force, it is arguably already a watershed moment: other States, such as India, have begun their own internal discussions about the value of a dedicated military space unit.¹¹

With space activities playing an increasingly important role for modern military forces, it seems logical that measures will be taken to protect and reinforce space systems. Yet the question remains how existing international rules will be applied to these forces in the space environment. For example, it is unclear how civilian satellites conducting military operations should be treated under international law. This and other similar questions give further strength to the argument that the existing legal framework is not enough to ensure the long-term sustainability of space activities in the current geopolitical environment.

Another of the major challenges presented by the concept of a Space Force is that there are many disparate interpretations of the objectives of such a military branch. In the case of the United States, a Space Force is largely intended to maintain national access to space and ensure continued service of space systems, particularly in combat situations. However, others, particularly those that might be considered rivals in space, see this as a step towards exerting US dominance in space. More specifically, other States are concerned that a Space Force will deploy weapon systems in orbit that can target space objects as well as targets on the ground. Whether or not this is true or even feasible, the mere perception of orbiting threats can further fuel a possible arms race in outer space. To prevent such escalation, increased communication and transparency will be necessary between both allies and rivals.

¹⁰ Space Policy Directive 4: Establishment of the United States Space Force, 19 February 2019, <https://www.whitehouse.gov/presidential-actions/text-space-policy-directive-4-establishment-united-states-space-force/>.

¹¹ “Government finalises broad contours of defence space agency”, The Economic Times, 11 June 2019, <https://economictimes.indiatimes.com/news/defence/government-finalises-broad-contours-of-defence-space-agency/articleshow/69745921.cms>; see also Ajey Lele, “India needs its own space force”, SpaceNews, 28 May 2019, <https://spacenews.com/op-ed-india-needs-its-own-space-force/>.

2.3. Panel 3—Emerging Rocket and Missile Dual-Use Challenges

The emergence of small-satellite launch vehicles is raising concerns about the further proliferation of missile technology. There is a possibility that smaller, lighter rockets, which can be deployed in a much shorter period than larger conventional rockets, could be used as the basis for new missile technology. While this technology is not necessarily well suited for long- or even medium-range missiles, it can be used as a platform for short-range missiles. As space technology becomes accessible from a wider range of sources around the world, it could lead to a black market for missile components.

In this context, two existing frameworks currently play a role in mitigating the possibility of small-launcher rocket technology from being misused. The first is The Hague Code of Conduct against ballistic missile proliferation. This voluntary Code obliges States to give notice about missile and rocket launches and to report on missile and rocket capabilities annually. The Code promotes trust among signatories and promotes transparency about the types of technology being developed or used. It also serves as a platform where signatories without rocket/missile technology can promote their interests. However, there remain questions as to the effectiveness of such voluntary measures at a time when multilateral agreements are under considerable strain and new missile technologies, such as boosted hypersonic glide systems, are proliferating.¹²

The second framework is the Missile Technology Control Regime, which regulates specific types of equipment and technology. These voluntary guidelines are intended to help States limit the proliferation of delivery vehicles. However, the emergence of small launcher technology presents new challenges for the regime because it does not necessarily capture rocket technology. New or strengthened regulations will be needed to address this threat, but even these should be tempered so as not to unnecessarily impede technological developments.

2.4. Panel 4—On-orbit Proximity Operations: Friend or Foe?

‘Co-orbital vehicles’ are small, manoeuvrable satellites capable of coming very close to or even docking with another satellite in what are referred to as on-orbit or rendezvous proximity operations. These objects can serve as platforms for a multitude of applications, including repairing, refuelling or even removing other satellites from orbit. As an example, recently, the University of Surrey conducted a series of experiments with a platform called RemoveDEBRIS, a vehicle intended to remove space debris from orbit. It deployed a net as well as a harpoon to catch its targets, which could then be dragged out of orbit.¹³

This technology presents difficulties for discussions on possible space arms control because platforms using such technologies could also be used for a variety of adverse or hostile applications. The Soviet Union developed the earliest co-orbital vehicle which carried an explosive charge that detonated when near a target.¹⁴ Indeed, these platforms can be equipped with a variety of mechanisms that can destroy, disrupt or engage in espionage. To date, several militaries, along with several commercial and civilian entities, have developed on-orbit proximity-related technology. The

¹² See John Borrie, Amy Dowler and Pavel Podvig, *Hypersonic Weapons: A Challenge and Opportunity for Strategic Arms Control*, United Nations, February 2019, <http://www.unidir.ch/files/publications/pdfs/hypersonic-weapons-a-challenge-and-opportunity-for-strategic-arms-control-en-744.pdf>.

¹³ See RemoveDEBRIS’s Harpoon captures space debris, 15 February 2019, <https://www.youtube.com/watch?v=dtJ6KWPnPx0>.

¹⁴ Secure World Foundation, “Global Counterspace Capabilities: an open-source assessment”, April 2019, p. 2-1, https://swfound.org/media/206408/swf_global_counterspace_april2019_web.pdf.

challenge, then, is how to regulate this technology so that it does not disrupt stability in space without unnecessarily restricting useful developments.

Current geopolitical tensions that exist among major space powers add to the challenge in achieving this balance. In 2018, the United States and France, on two separate occasions, accused the Russian military of developing or employing malicious co-orbital technology.¹⁵ However, because of the difficulties of monitoring and verifying activities in outer space, no conclusive evidence was presented. These instances demonstrate how a lack of information and data about a space object can raise tension between strategic rivals, even if the act itself is not overtly hostile. Not having any baseline standards for behaviour means that any close-proximity activities can appear hostile to a rival actor.

Despite a lack of progress at the multilateral level to establish ‘rules of the road’ for this technology, there is a movement among the private sector to develop best practices for on-orbit proximity operations that might serve as the basis for future intergovernmental discussions.¹⁶

2.5. Panel 5—Gathering Evidence in Orbit

Discussions in several OS19 panels underlined that one thorny challenge for space-related arms control is that of monitoring and verification, particularly because of the technical, evidentiary challenges that apply to space activities. Current ‘space situational awareness’ (SSA) is based on optical telescopes that can track objects in space larger than 10cm. These telescopes produce images of dots which can then be used to approximate where an object is relative to the stars and, to some degree, how the object is operating. However, even the most sophisticated telescopes have limitations: they cannot tell *exactly* where an object is; they cannot track during the day; they cannot detect objects smaller than 10 cm; they cannot distinguish between two objects less than 1km apart. And while some data can be collected about an object’s appearance or heat/radio emissions, it is not yet possible to be certain about an object’s technical capabilities without observing its movements or activities.

At present, there are several SSA systems regularly tracking space objects. Some are operated by militaries (such as those of China, the Russian Federation and the United States) while others are operated by civilian/commercial entities. These systems operate independently of each other to track objects and have different data sets for their exact locations. Compiling this data could enhance the accuracy of SSA, but there is, as yet, limited cooperation among SSA service providers, particularly between militaries. However, there are some other entities, including commercial actors, that are already compiling SSA data to build a more accurate picture of space activities that could serve as the basis for future data-sharing.¹⁷

Technological developments will continue to enhance SSA capabilities and provide additional data about the location and nature of space objects. However, these developments come with drawbacks. First, new SSA systems will permit tracking of objects down to 1 cm in size, expanding the catalogue of total objects being detected. The downside of this development is that there will be many more objects in the existing catalogue, which could generate an unmanageable number of

¹⁵ See United States Remarks at the Conference on Disarmament as delivered by Assistant Secretary of State for Arms Control, Verification and Compliance Yleem D.S. Poblete, 14 August 2018,

<https://geneva.usmission.gov/2018/08/14/remarks-by-assistant-secretary-yleem-d-s-poblete-at-the-conference-on-disarmament/>; see also Déclaration de Mme Florence Parly, ministre des armées, sur la défense spatiale, à Toulouse le 7 septembre 2018, <http://discours.vie-publique.fr/notices/183001732.html>.

¹⁶ <https://www.satelliteconfers.org/>.

¹⁷ <http://astria.tacc.utexas.edu/AstriaGraph/>.

collision warnings for space operators. Second, light detection and ranging systems (LIDAR) will enable imaging of objects down to 1 cm at a range of 1,000 km, enabling new forms of real-time satellite assessment. However, these assessments will be limited to what can be seen on the surface of a satellite. Thirdly, new approaches to establishing attribution of space activities could deter actors from engaging in harmful activities by ensuring that actions in space will be detected and correctly attributed to a source. However, this approach will not necessarily be able to determine the real intent behind an action. While all these capabilities will improve the effectiveness of monitoring activities in space, it will be important to coordinate the sharing of data among a variety of actors—namely militaries, space agencies, and companies—to ensure the best quality of information. Otherwise, all of those entities operating in space will continue to operate with only fragmented pictures of space activities.

2.6. Panel 6—Next Steps for Multilateral Dialogue

The final panel of the 2019 Space Security Conference set out several key takeaways from its proceedings and offered several ideas for possible next steps for multilateral dialogue on space security. Many of these ideas are elaborated in the following section of this report, but a few common themes are highlighted here.

There are two trends that are increasing mistrust around space activities: developing technology and growing tensions between geopolitical rivals. New technologies are continually emerging, leaving many space actors in the dark about new possible threats to their space systems. Given that relations between certain military powers are already strained, new space technologies raise anxieties about how they might be used in a hostile context. As such, there is a need to strengthen lines of communication, particularly among rivals, to reduce fears and uncertainties that could lead to misperceptions or even prompt a dangerous escalation in response.

To achieve progress on space security challenges, there is a need for major parties to indicate their willingness to move from increasingly adversarial postures towards more cooperation. This is likely to require some restraint and compromise in the shorter run but will be of greater benefit in the longer run not least because it will help to avoid or minimize ‘tragedy of the commons’-type situations like those the creation of space debris would cause. It will also require a political commitment to achieve results, even if those results are limited or focused in their scope. Even small steps can help build trust among space actors and clear the path for productive diplomacy.

Finally, there was an emphasis on expanding the scope of participation in multilateral dialogue. There appears to be a growing recognition among States, if OS19 is taken as an indication, that commercial space actors are not only driving technological change, they could also be participants in space security dilemmas. As such, these actors can provide expertise about space operations but should also be aware of the geopolitical climate in which they operate. By including a wider range of actors in space security dialogue, there is likely to be greater scope for developing meaningful, effective solutions on space security-related questions.

3. Key Takeaways

OS19's purpose was to encourage engagement among different stakeholders in space security, and prompt collective 'brain storming' as how to unblock the path forward. Throughout OS19, panellists and other participants raised a range of points and offered a diversity of ideas. These have been grouped into the following key takeaways, which is not to imply consensus but merely a preponderance of views expressed.

The existing space security regime is inadequate.

There is an existing international framework that governs how States conduct space activities. However, *the current regime is not enough to prevent or even contain growing geopolitical competition in outer space or the outbreak of conflict in that environment.* There are several areas, such as the deployment and use of conventional weapons in space, where existing laws are either silent or there is no clarity as to how the laws apply in practice.

The growing importance of space systems for national security and the evolution of counter-space capabilities make it increasingly likely that future conflicts will have a space component. Without any further rules, the consequences of such conflict on third parties and non-military combatants could be considerable, particularly as military and civilian space systems become increasingly interconnected. As such, there is a need to elaborate how existing rules should be applied in outer space as well as a need to elaborate new standards of conduct in that environment.

The existing framework for discussions may not be the most useful.

While multilateral discussions on space security have been of some use to date, future engagement could be improved in at least three key areas.

First, there is a need to *broaden participation*. Space exploration and technological developments are being driven by commercial actors and academia as much as they are by governments. Some of the resulting capabilities are dual use, meaning that even private entities can have an impact on space security by developing technology that appears threatening to others. On the more positive side, these entities can also be instrumental in developing capabilities (such as SSA) that could support eventual cooperative security arrangements among States. It is therefore important to include these non-State actors in discussions regarding new rules for space security.

Secondly, *long-standing silos within United Nations forums regarding the types of space activities to be addressed should be rethought.* Traditionally, COPUOS has been the forum for discussing 'peaceful activities' while PAROS has been dealt with in the CD. Yet some space activities cut across both categories, such as space debris and dual-use technology. To deal with these issues effectively, it will be necessary to have coordinated approaches, particularly if different bodies are addressing the same technology. In this context, there should be greater coordination among all the United Nations bodies dealing with space security. One forum that might enable greater cooperation is the joint meeting of the First and Fourth Committees of the General Assembly. This could be a useful platform to address those cross-cutting issues that have both civil- and security-related implications, such as space debris. In order to realize the latent potential of these two Committees, the joint meeting would have to progress beyond a largely symbolic half-day affair, to a longer session with a specific thematic focus and serious preparation.

Thirdly, it may be worth *reconsidering if PAROS is the right objective that the United Nations should be seeking to achieve.* Indeed, there is little agreement as to what is an arms race in space or what such a race would look like. This is largely because much of the existing space technology is dual use

and it is hard to know if certain capabilities signal an arms race or simply developments in a civilian space programme. As such, the parameters of preventing an arms race in outer space may be too constricting for what Member States want to achieve. It may be worth re-examining what the precise goal of the United Nations should be in relation to space security.

Discussions should be more focused.

Until now, space security discussions in multilateral forums have sought to address all space technology that could be used in an aggressive or hostile manner. However, the technology is widely varied and has unique features that make comprehensive regulation challenging. And while there might be differences of opinion about how to approach certain threats, these differences currently tend to halt all conversations, even those in which there is convergence. In this context, rather than seeking a comprehensive approach, *efforts could be made to address specific issues or technologies in a series of agreements*. For example, some specific areas that could be addressed separately include space debris, SSA, ASAT test guidelines, and guidelines for on-orbit proximity operations. By identifying specific areas of convergence that already exist, States could improve the probability that an initiative on space security will succeed without having discussions hindered by contentious issues where there is no agreement yet. Yet this also requires States to relinquish some of the linkages they have established that serve to impede this.

There is a need for a baseline set of behaviours.

Space activities are relatively new, so there is not a great body of evidence to draw upon when it comes to establishing norms of behaviour. As such, it is difficult to determine when an object is behaving erratically or in a hostile manner. By developing an explicit set of norms, possibly in the form of guidelines or rules of the road, the *international community can establish a standard against which to measure all other activities*. This would make it easier to monitor those objects that appear as outliers to normal behaviour. Such an approach could be especially useful when it comes to co-orbital vehicles and proximity operations. A harmonized standard for approaching space objects could provide comfort to operators that nearby objects are not hostile.

It will also be important to ensure that standards of behaviour are adapted to a variety of factors, including “culture and capabilities”. An action taken by a highly developed and technically sophisticated space power could be considered irresponsible, yet the same action might be the best that an emerging space actor can do. Any norms of behaviour should, therefore, consider the technical capabilities of emerging space actors, as well as those of more sophisticated ones.

Data and policies should be more widely shared.

One major source of mistrust among States is uncertainty about the nature of space operations. While existing technologies permit space objects to be tracked and monitored, along with some of their activities, this data provides limited information regarding the objective of or intent behind a space object. In an environment beset by mistrust, this can make any activity seem threatening, further exacerbating tension between rivals. To ameliorate this situation, all operators should seek to provide more data or information that can be checked and verified by national technical means. Moreover, there is a need for data from a greater diversity of sources, which will facilitate a more accurate understanding of the position and activities of space objects for all space actors. In this context, international actors should consider sharing data on a common, international platform.

Greater SSA can also be the foundation for space traffic management, namely the application of baseline rules of behaviour in space. This heightened awareness about space activities can act as a deterrent against prohibited actions in space because there is a greater likelihood that such actions

will be correctly attributed to a source. Such a deterrence would be applicable to both governmental and private actors.

In addition to technical information, States should seek to adopt and share space doctrines and policies to provide greater context for space activities. Again, in an environment in which there is mistrust among competitors, even benign activities can appear hostile. This is often the result of not having any context about the nature and intended use for certain space objects. By providing a space policy, and carrying out activities consistent with those policies, space actors can provide some confidence to others about the nature of their operations. Such transparency of policy could be especially useful in cases that involve dual-use technologies, such as co-orbital vehicles.

States can lead by example.

While multilateral discussions are currently stalled, this does not prevent States from unilaterally adopting best practices or guidelines under their national regulations. The provisions of the Long-term Sustainability Guidelines, for example, could be implemented by States to mitigate space debris, provide launch notifications and promote international cooperation. This approach has the benefit of obliging commercial actors to come into compliance with international standards and strengthening the argument that norms of behaviour exist for space actors. Adopting such standards can also help to create better conditions for discussions on instruments or measures that relate to more complex aspects of outer space security.

Annex 1

UNIDIR Space Security Conference 2019 Conference Agenda

SUPPORTING DIPLOMACY: CLEARING THE PATH FOR DIALOGUE

*28 and 29 May 2019 Palais des Nations, United Nations Office at Geneva (UNOG)
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Tuesday 28 May 2019

13:30–14:00 Coffee and Refreshments

14:00–14:20 Opening Remarks

- Dr Peter Martinez, Director, Secure World Foundation
- Dr Xavier Pasco, Director, Fondation pour la recherche stratégique

14:20–16:00 Panel 1. Taking Stock

With multiple United Nations processes meeting, cooperation and coordination among groups will be important to maximize efforts. This panel will take stock of developments over the previous year in United Nations forums.

- Moderator Dr Renata Dwan, Director, UNIDIR
- Conference on Disarmament
Amb Li Song, Deputy Permanent Representative of the People's Republic of China to the United Nations in Geneva
- United Nations Disarmament Commission Working Group II
Amb Jeroen Cooreman, Deputy Permanent Representative of Belgium to the United Nations
- Group of Governmental Experts on Further Practical Measures for the Prevention of an Arms Race in Outer Space
Amb Guilherme Patriota, Special Representative of Brazil to the Conference on Disarmament
- General Assembly and First Committee
Mr Andrey Belousov, Deputy Permanent Representative of the Russian Federation to the United Nations in Geneva
- Committee on the Peaceful Uses of Outer Space
Dr Natália Archinard, Head of the Swiss Delegation to COPUOS, Federal Department of Foreign Affairs of Switzerland

16:00–16:15 Tea and Coffee Break

16:15–17:45 Panel 2. What is a ‘Space Force’?

The announcement of a US Space Force made headlines, but it is not the first time a military has established specialized units for space operations. Visiting experts will explore the reasons and functions behind a dedicated military body to space operations.

- Moderator Dr John Borrie, Research Coordinator & Programme Lead—WMD & Other Strategic Weapons, UNIDIR
- Mr Doug Loverro, former US Deputy Assistant Secretary of Defense on Space Policy
- Dr Rajeswari Piali Rajagopalan, Distinguished Fellow, Observer Research Foundation
- Dr Jessica West, Program Officer, Project Ploughshares

19:30–21:30 Special film screening

UNIDIR, in cooperation with CineONU, is organising a special film screening to explore the wider societal implications of international cooperation in space. This screening will feature two short films, followed by a panel of special guest speakers.

Empire Cinema, Rue de Carouge 72–74, 1205 Genève, Tuesday 28 May from 19:30

Films: *The Overview Effect, A Beautiful Planet*

- Moderator Ms Jeanne Meserve, Former Anchor and Correspondent, CNN & ABC News
- Panel Mr Jean-Francois Clervoy, Former ESA Astronaut
- Dr Renata Dwan, Director, UNIDIR
- Mr Niklas Hedman, Chief of Committee, Policy and Legal Affairs Section, United Nations Office for Outer Space Affairs

Wednesday 29 May 2019

08:30–9:00 Coffee and Refreshments

09:00–10:30 Panel 3. Emerging Rocket & Missile Dual Use Challenges

As more States acquire sophisticated launch capabilities, exercising their freedom of access to space, there is a constant threat of misperception. This is particularly true as rockets get smaller and can be deployed much faster by private actors. This roundtable discussion will focus on current trends in rocket/missile technology and its impacts on global security. It will also examine how voluntary mechanisms, like The Hague Code of Conduct, can strengthen global security.

- Moderator Dr Xavier Pasco, Director, Fondation pour la recherche stratégique
- Panel Amb Anne Sofie Nilsson, Swedish Ambassador for Disarmament and Non-Proliferation
- Ms Isabelle Sourbes, Research Director, Centre national de la recherche scientifique
- Mr Tal Inbar, Head of the Space Research Center, Fisher Institute for Air &Space Strategic Studies

10:30–10:45 Tea and Coffee Break

10:45–12:15 Panel 4. On-orbit Proximity Operations: Friend or Foe?

Numerous States and actors are seeking on-orbit vehicles for satellite life extension operations and debris removal, yet this technology also could raise suspicions about the weaponization of space. This panel will examine on-orbit service vehicles and how to prevent this technology from disrupting space security.

- Moderator Amb (ret) Michael Biontino, Adviser
- Panel Prof Guglielmo Aglietti, Surrey Space Centre Director, University of Surrey
- Ms Victoria Samson, Washington Office Director, Secure World Foundation
- Ms Alexandra Stickings, Research Fellow for Space Policy and Security within the Military Sciences, Royal United Services Institute
- Mr Daniel Porras, Space Security Fellow, UNIDIR

12:15–12:45 Buffet Luncheon

12:45–14:00 Special Lunchtime Event: Shaping Perceptions of Space Security

UNIDIR will host a special discussion on how journalists portray space security challenges and how public opinion can generate momentum towards greater space security measures.

- Moderator Mr Torsten Kriening, Editor, SpaceWatchGlobal
- Speaker Ms Jeanne Meserve, Former Anchor and Correspondent, CNN & ABC News

14:30–16:00 Panel 5. Gathering Evidence in Orbit

Experts will have a technical discussion on the feasibility of gathering evidence for PAROS-related space activities. In particular, they will examine what new technologies can reveal about space activities, what monitoring strategies might these technologies enable and how such capabilities can be reflected in future space security instruments.

- Moderator Ms Vanessa Wood, Counsellor Disarmament, Australian Delegation to the Conference on Disarmament
- Panel Dr Douglas Hendrix, CEO, ExoAnalytic Solutions
- Col (ret) André Dupuis, President, Space Strategies Consulting Ltd.
- Dr Moriba Jah, Associate Professor of the Department of Aerospace Engineering and Engineering Mechanics, University of Texas at Austin
- Mr Stewart Bain, CEO, NorthStar Earth & Space Inc.

16:00–16:15 Tea and Coffee Break

16:15–17:45 Panel 6. Next Steps for Multilateral Dialogue

With several United Nations processes reaching the end of their mandates, new steps will be needed to keep moving towards stability and security in space. This roundtable discussion will seek to identify viable options to move multilateral dialogues forward.

- Moderator Mr Niklas Hedman, Chief of Committee, Policy and Legal Affairs Section, United Nations Office for Outer Space Affairs

- Panel Dr Renata Dwan, Director, UNIDIR
- Dr Peter Martinez, Director, Secure World Foundation
- Amb (ret) Paul Meyer, Senior Fellow, The Simons Foundation Canada
- Dr Xavier Pasco, Director, Fondation pour la recherche stratégique

17:45–18:00 Closing Session

- Amb (ret) Paul Meyer, Senior Fellow, The Simons Foundation Canada

18:00–20:00 Opening Reception—A Peaceful Place or So it Looks from Space

Join us for the opening reception of a multimedia art exhibit by the award-winning Swiss Photographer Marco Grob. The exhibit will feature pieces from his series Space Flight and A Year in Space, including portraits and short films. Refreshments will be served.

Salle des Pas Perdu | Palais des Nation, 18:00



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UNIDIR Space Security Conference 2019

SUPPORTING DIPLOMACY: CLEARING THE PATH FOR DIALOGUE

28–29 May 2019

The 2019 UNIDIR Space Security Conference (OS19), entitled Supporting Diplomacy: Clearing the Path for Dialogue, was held on 28–29 May 2019 at the Palais des Nations in Geneva, Switzerland. OS19 brought together experts and diplomats from around the world to examine some of the technical and policy questions impacting multilateral dialogues on space security and to seek possible paths forward towards stability in space. In particular, OS19 sought to identify areas of convergence where all space actors might agree on the need for collective action that may serve as initial steps in building greater trust in space activities. The exchanges that took place during OS19 were forthright and informative and identified several areas that could be the subject of further dialogue among States.

UNIDIR RESOURCES