



Canada's Views on Reducing Space Threats through norms, rules and principles of Responsible Behaviour

This submission provides Canada's views on UN GA A/RES/75/36 Resolution "Reducing Space Threats through norms, rules and principles of Responsible Behaviour." This submission responds to a note verbale from the Office for Disarmament Affairs (ODA/2021-00005/Outer space), pursuant to OP5 and 6 of the above-mentioned resolution, requesting the Secretary-General to seek views of Member States.

The importance of Outer Space

Canada is a nation defined by its bold efforts in space. Canada has a rich history of making forward-looking commitments to leverage space science, technology and exploration to improve the lives of not only Canadians, but all people. Today, as for all nations, space is an integral part of daily life in Canada, helping connect and inform us, enabling everything from navigation, cell phone services and television broadcasts to financial transactions. As a vast country with a relatively small population, Canada relies on the information and imagery gathered by space-based systems to observe and monitor our country. These capabilities help us support essential government functions such as environmental monitoring, and search and rescue. Space systems are also vital to the Canadian Armed Forces, which rely on them to conduct operations for the defence of Canada and North America and to contribute to global peace, safety and security.

Beyond national borders, space also helps unite nations as we tackle global challenges. Space-based technologies and data play a key role in climate knowledge and science which is also essential for early warning of potential climate disasters. Data from space based Earth observation satellites can contribute to assessments of the vulnerability of communities to climate change and can help monitor the effectiveness of mitigation strategies. Space is vital for supporting nations facing natural disasters and efforts such as the *International Charter on Space and Major Disasters*, are key to the monitoring and response to these challenges.

The viability of space infrastructure is increasingly threatened by space debris and space weather, as well as by the risk of potential hostile activities in space and from the Earth's surface. The challenge of protecting space infrastructure from both natural and man-made threats is made more complex by the rapid expansion of both the number of space actors as well as the lack of a more developed regime of international norms to govern space activities.

Context:

Space Systems

In order to situate the views on potential threats and security risks to space systems, for purposes of this submission, Canada defines space systems (civilian or military) as:

- the space segment (e.g. satellite, launch vehicle)
- the ground segment (e.g. mission control centre, facilities used to store, process or distribute data),
- the data links (e.g. between spacecraft or user terminals)

Differentiating Between Space Security and Space Sustainability/Safety

Importantly, the UN Committee on the Peaceful Uses of Outer Space (COPUOS) deals with the peaceful uses of space, including space sustainability, safety and related risks and hazards (e.g. existing and new debris, space weather, crowded orbits, light pollution, frequency interference). For Canada, this work is



distinct from the space security issues addressed in this submission, which is focused on actions that could be perceived as deliberate threats by States, or non-State actors, to space systems.

As an example to illustrate the difference between space safety and space security, frequency interference can be accidental, resulting from the close proximity of systems through regular station keeping; this is different from *deliberate* frequency interference (i.e. jamming). Another example is debris: while newer satellites are capable of conducting de-orbiting measures, older satellites will eventually become debris at their end of life – however, this is vastly different from the creation (or potential creation) of debris from an ASAT activity. In both examples the latter instances constitute deliberate acts and should be dealt with under the disarmament agenda, while the former are being addressed in COPUOS.

Threats/Security Risks to Space Systems

Canada notes that space is increasingly contested, congested and competitive. In addition, space is a domain in which knowledge of the operating environment is inherently difficult. These factors create opportunities for misunderstanding and miscalculation of risks and consequences, potentially resulting in unintended escalation. It is in every state's interest to ensure a shared understanding of what actions can be destabilising and lead to an increase in tensions in space.

Responsible Behaviours

Canada views responsible behaviour in space as those behaviours that promote the safety, security, and sustainability of outer space activities and the space environment. Responsible behaviours increase the predictability and general transparency of operations and therefore reduce the potential for hostilities in, from, or through space. Responsible behaviours include actions such as the exchange of information in a timely manner to the appropriate audience in order to reduce adverse impacts to space operations or to avoid misunderstandings. This also includes communicating with the other party or parties when there is a space activity perceived as threatening in order to ensure understanding of the intent. The aim of commonly understood responsible behaviours is to create mutual understanding and trust, through transparency, in order to reduce misperceptions and miscalculations thereby helping to prevent military confrontation and to foster global stability. From Canada's perspective, pragmatic, non-binding standards of responsible behaviours should be applied as soon as possible which, if accepted by a majority of space-faring nations, could become legally binding international law in the future.

As the international community works toward reaching a common understanding of responsible behaviours, in Canada's view, even if an action is lawful under international law, in some contexts, such an action may not be viewed as responsible. States should always strive to act responsibly as well as lawfully.

Ideas on Threats/Security Risks and Responsible Behaviours

The following are some initial ideas from a Canadian perspective on potential threats, irresponsible and responsible behaviours to help advance discussion on norms and responsible behaviours.

Damage to space environment or space system: Actions that would lead to damage to the space environment could be considered as irresponsible. In Canada's view, the most significant risk of damage to the space environment is the creation of **debris**. Debris is any non-functional manmade object of any size or composition in space i.e. a satellite is one piece of debris upon ceasing to perform its designed functions. Behaviours that purposefully or by negligence lead to creation of debris would be irresponsible especially in orbits that could impact human spaceflight, such as the International Space Station. Canada views responsible behaviour as committing to not undertake development, testing and



use of ASAT capabilities which can cause widespread debris. Indeed, Canada supports discussions, in the context of the Conference on Disarmament, on a possible ban on testing and use of ASATs which cause space debris.

In addition, actions/activities that may lead to physical damage of space systems could be considered irresponsible and/or threatening. Responsible behaviour would be refraining from deliberately damaging or destroying space systems.

Interference: An action that interferes with the command and control of a satellite or leads to irreversible loss of functionality could be viewed as irresponsible and/or threatening. This could include interference with the ability of an operator to control a satellite or irreversible loss of satellite capabilities such as imagery, communication, or a general malfunctioning of space systems. Responsible behaviour would be refraining from deliberately causing non-consensual interference, such as outlined above, to space systems.

Rendezvous / Proximity Operations: The conduct of non-cooperative Rendez-vous and Proximity Operations (RPO) could be viewed as irresponsible and/or threatening. For instance, proximity operations such as approaching and/or following another satellite could be viewed as threatening. Norms are needed for safe RPO to prevent misinterpretation and miscalculation. Responsible behaviour could include notification of RPO operations to States that may be affected in order to coordinate operations and avoid potential misinterpretation. It could also include seeking consent in advance for the maneuver. To reduce the potential for a peaceful-use system to be mistaken for a weapon, a responsible behaviour could require States to publish the mission plan of all civil on-orbit servicing missions.

Secondary damage and impact on human life: Actions that disrupt or impair the delivery of critical space-based services, resulting in serious risks for the safety and security of people or property are irresponsible and could be perceived as a threat. For example, actions that disrupt a satellite's ability to provide crucial information to the public, such as navigation information used by aircrafts to avoid collisions or data used by emergency responders to forecast and/or respond to major disasters. These effects and consequences are expected to increase as more terrestrial activities leverage space to deliver services. Responsible behaviour would be refraining from intentionally placing the safety and security of people and critical infrastructure at risk.

Considerations of Possible Next Steps, Further Development of Norms

Reinforce importance of Norm building with adherence to existing treaties and guidelines. Canada remains fully committed to the international legal framework governing the use of space. This includes among others, the four core treaties, especially the Outer Space Treaty (OST), the cornerstone of space governance. Ratification and adherence to key space treaties, as well as national implementation of these treaties and other international instruments, such as the Guidelines for the Long-term Sustainability of Outer Space Activities (LTS) and the Space Debris Mitigation Guidelines, should remain a key priority in developing norms.

Pursue Transparency and Confidence-Building Measures (TCBMs) and communication protocols to mitigate threats and security risks. The exchange of information is a simple and effective way to ensure openness and transparency regarding space activities. In particular, the publication of national policies on the use of outer space, registration of space objects with the UN, and advance notification of



launches in accordance with The Hague Code of Conduct are all TCBMs. Effective and timely communication will help avoid misunderstanding of intentions, particularly in times of heightened tension. This includes how to undertake consultations, share information and engage in dialogue – including communication between governments, both bilaterally and multilaterally. Canada believes work could be undertaken to generate ideas around possible protocols and mechanisms to enhance communication including by leveraging the work done by the 2013 Group Governmental Experts (GGE) on TCBMs.

Recognize the importance of verification to international peace and security, including to ensure confidence that parties are complying. Tangible and realistic verification mechanisms enhance credibility, promote transparency and accountability, and build confidence among participating States. Space Domain Awareness (SDA) and Space Surveillance and Tracking (SST) will be important components of verification. Effective verification could include a number of activities and mechanisms, such as data exchanges, state declarations, advance notification of launches and manoeuvres, and a consultation mechanism. The extensive, and growing, dual-use nature of space systems further complicates verification in space, emphasizing the importance of good communication and transparency to signal intent.

Building on existing expertise: Canada suggests looking at what lessons could be taken from the work achieved in other fora (e.g. COPUOS) to develop protocols such as the Space Debris Mitigation Guidelines and LTS Guidelines or the work by the Inter-Agency Space Debris Coordination Committee (IADC). There may also be value in examining the development of norms and principles of responsible behaviour in other fields such as maritime or cyber for the development of such norms for space.

Importance of engagement by all States and stakeholders: As noted above, because space is critical for all nations, Canada believes that discussions on developing norms should include all States, irrespective of their level of national involvement in space activities. Finding ways to identify shared benefits is important for norms to be accepted by all and norms need to be inclusive and fair for all concerned. As space exploration and use is in the interest and for the benefit of all humankind, factors such as global north/global south, developed/developing and established/emerging space faring nations should also be considered. Private sector entities are also stakeholders in maintaining security in outer space and their views should be sought and considered.

Diversity as a strength: As a champion of the full, meaningful and equal participation of women in all aspects of disarmament, Canada welcomes the emphasis on the full involvement and equal participation of women and men in discussions on reducing space threats through responsible behaviours and the need to assess the possible differentiated impacts of such threats.

Conclusion

Canada believes that developing norms and principles of responsible behaviour will support more security and stability in space thereby creating momentum for more ambitious steps, including the possibility of eventual comprehensive, verifiable and legally-binding regime. Canada is open to considering a variety of next steps / recommendations in the Secretary General's report.

Canada will continue to work to advocate for the development of international norms of responsible behavior in space. By fostering greater confidence and transparency in the space environment, we can create the climate of confidence necessary to develop future measures that could govern space.