



## CHALLENGES TO SECURITY IN SPACE

DEFENSE INTELLIGENCE AGENCY

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Relations internationales

**Although the United States and the former Soviet Union dominated early space activities, space capabilities have multiplied over the past six decades as technological barriers and costs have been removed. These capabilities provide important support for many of society's day-to-day activities, including communications, navigation, financial transactions and weather monitoring.**

proposed translation:

In 2018, more than 1,800 active satellites are owned and operated by more than 50 countries and multinational organizations.<sup>1</sup> Nine countries and one international organization can independently launch spacecraft: China, India, Iran, Israel, Japan, Russia and the North. Korea, South Korea, the United States and the European Space Agency (French Guiana). <sup>2</sup>.

Space has also become more commercialized. The commercial space sector is involved in space launch, communications, space situational awareness, remote sensing and even manned space flight. These companies not only provide products to governments, but also compete in the marketplace.<sup>3</sup>

The number of objects in orbit (active satellites and orbital debris) will continue to grow rapidly, thanks to the greater availability of smaller satellites at lower cost and the prospect of large constellations of thousands of satellites. The problem of space

congestion will increase and actors will need better capabilities for tracking and identifying objects and preventing collisions in space.<sup>4,5</sup>

Space capabilities are at the heart of many military operations, including warning, geolocation and navigation of missiles, monitoring the activities of the adversary. The military and intelligence-gathering capabilities provided by governmental and commercial remote sensing satellites reduce the ability of all countries to remain undetected when conducting sensitive test and evaluation activities or military exercises and operations.<sup>6,7</sup>

Some actors are looking for ways to deny the effectiveness of the United States, which has enjoyed more than 25 years of US military success made possible by space capabilities.<sup>8</sup> China and Russia, in particular, are developing a variety of means to exploit the perceived American dependence on space-based systems and to challenge the American position in space.<sup>9</sup>

Iran and North Korea have also highlighted certain counter-space capabilities that could pose a threat to armed forces using space-based services. While China and Russia are developing anti-space weapons systems, they are promoting agreements at the United Nations limiting the militarization of space. Their proposals do not deal much with space warfare capabilities and lack verification mechanisms, leaving the possibility for China and Russia to continue to develop counter-space weapons.<sup>10,11</sup>

The 1967 Outer Space Treaty prohibits the placement of weapons of mass destruction in body orbits and bans the use of celestial bodies for military bases, tests or manoeuvres. The treaty has been ratified by 107 states, including the United States, China, North Korea and Russia. Iran is one of 23 states that have signed the treaty but have not ratified it.<sup>12</sup>

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<sup>2</sup> "How Many Countries Have Rockets Capable of Reaching Space"; Space Answers; 21 March 2013; <https://www.spaceanswers.com/how-many-countries-have-rockets-capable-of-reaching-space/>.

<sup>3</sup> Sellers, Jerry Jon; *Understanding Space: An Introduction to Astronautics*, 4th Edition; IEC: United States; 2015.

4 "Statement for the Record: Worldwide Threat Assessment of the US Intelligence Community"; Office of the Director of National Intelligence; 13 February 2018.

5 "Space Congestion Threatens to 'Darken Skies'"; National Defense Magazine; 28 June 2018; <http://www.nationaldefensemagazine.org/articles/2018/6/28/viewpoint-space-congestion-threatens-to-darken-skies>.

6 Chin, Carrey; "A Study on the Commercialization of Space-based Remote Sensing in the Twenty-First Century and Its Implications to United States National Security"; Naval Postgraduate School; June 2011; <http://www.dtic.mil/dtic/tr/fulltext/u2/a547960.pdf>.

7 "Space - An Enabler"; Army Space and Missile Defense Command, Army Space Journal 2003; 2003; <http://www.dtic.mil/dtic/tr/fulltext/u2/a525767.pdf>.

8 Greenemeier, Larry; "GPS and the World's First 'Space War,'" Scientific American; 8 February 2016; [www.scientificamerican.com/article/gps-and-the-world-s-first-space-war](http://www.scientificamerican.com/article/gps-and-the-world-s-first-space-war).

9 "Statement for the Record: Worldwide Threat Assessment of the US Intelligence Community"; Office of the Director of National Intelligence; 13 February 2018.

10 "Statement for the Record: Worldwide Threat Assessment of the US Intelligence Community"; Office of the Director of National Intelligence; 13 February 2018.

11 Plath, Cynthia; "Explanation of Votes in the First Committee on Resolutions L.3: 'Prevention of an Arms Race in Outer Space' and L.68/Rev.1: 'Transparency and Confidence-Building Measures in Outer Space Activities'"; Department of State; 6 November 2018; <https://www.state.gov/t/avc/rls287165.html>.

12 "Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies"; United Nations; 10 October 1967.

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