

## About this Bulletin

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The *Science, Technology and Security Bulletin* by the Future Issues and Technology (FIT) cluster at RSIS features thought pieces on key emerging technologies, such as artificial intelligence (AI), space and quantum technologies, as well as technology geopolitics and smart cities. We aim to explicate novel technologies in relation to policy to facilitate discussion, information sharing and collaboration.

We also conduct webinars to further explain key emerging technologies not just for experts but also the public. This year, FIT facilitated three webinars on 25 May, 22 June and 27 July 2023 titled “Fly Me to the Moon: Opportunities and Challenges in Cislunar Space and the Moon”, “Ensuring Safe and Sustainable Access to Space: Managing an Increasingly Congested Orbital Environment”, and “Whither Space Security? Reducing Space Threats and Preventing an Arms Race in Outer Space”, respectively. The events, which were supported by the Centre of Excellence for National Security (CENS) at RSIS, were facilitated by RSIS Adjunct Fellow Chris Leck.

The panellists for the first webinar were Tala Atie, Manager, Space Practice, PricewaterhouseCoopers Advisory; Michelle L. D. Hanlon, Co-Director, Centre for Air and Space Law, University of Mississippi School of Law; Garvey McIntosh, Asia Representative, US National Aeronautics and Space Administration (NASA); and Matija Rencelj, Research Manager, European Space Policy Institute. Issues covered were current and future cislunar activities, including plans by NASA to go back to the moon in a more sustained, long-term way. Panellists noted that competition between various countries and supposed collaboration between them were the driving forces behind the renaissance of cislunar missions.

For the second webinar, Krystal Azelton, Director, Space Applications Program, Secure World Foundation; Nikolai Khlystov, Lead for Space, Centre for the Fourth Industrial Revolution, World Economic Forum; Quentin Verspieren, PROTECT Accelerator Coordinator, Strategy and Transformation Office, European Space Agency; and Charity Weeden, Vice President, Global Space Policy and Government Relations, Astroscale US, served as panellists. They tackled congestion in earth’s orbit, with the growing number of new space objects launched, and considered why managing this issue is crucial for future access to space. Also discussed were ongoing efforts by technical and regulatory bodies to mitigate and remediate space debris, manage space weather risks, enhance space situational awareness, and put in place space traffic management and coordination mechanisms to preserve dark and quiet skies.

For the last in this webinar series, the panellists were Almudena Azcárate Ortega, Space Security Researcher at the United Nations Institute for Disarmament Research (UNIDIR); Kuan-Wei (David) Chen, Managing Editor of the McGill Manual on International Law Applicable to Military Uses of Outer Space; and Victoria Samson, Washington Office Director for Secure World Foundation. The discussant for the session was Tiana Desker, Director (Strategic Futures & Emerging Tech), Defence Policy Office, Ministry of Defence, Singapore. They examined the prospect of an arms race and the possibility of future conflict in space. Also discussed were the counterspace capabilities that are being developed, their implications and the constraints on their deployment.

Moving forward, FIT will be producing this Bulletin as a series (the next issue will be on space technologies), facilitating webinars, running in-person seminars and workshops, publishing and conducting research in critical emerging technologies. If you wish to collaborate or network with us, please do not hesitate to write to us at [isbang@ntu.edu.sg](mailto:isbang@ntu.edu.sg) and [kk.trajano@ntu.edu.sg](mailto:kk.trajano@ntu.edu.sg).