

January 2024

Published by the Future Issues and Technology (FIT) Research Cluster, RSIS. This Bulletin comes as a series of articles on science and technology from the angle of national security.

Future Issues and Space | Benjamin Ang and Karryl Sagun-Trajano

For our second issue of Science, Technology and Security (STS) Bulletin, we focus on space technologies from three perspectives: (1) the growing space economy, (2) recent developments in Earth observation, and (3) satellites in near-equatorial orbit for environmental purposes. These expert contributions were written by Lynette Tan, CEO of Space Faculty, a leading a global platform that works with government, corporations, and education institutions to expand the space economy and leverage space technologies; Shankar Sivaprakasam, a technology professional and the founder of Eartheye Space, which empowers users with accessible, affordable, and usable space-based data, information, and insights; and Erick Lansard, Professor at the School of Electrical and Electronic Engineering, Nanyang Technological University Singapore.

STS is edited by the Future Issues and Technology (FIT) cluster and features thought pieces on key emerging technologies, such as artificial intelligence (AI), space, quantum technologies, technology geopolitics, and smart cities. We aim to explicate novel technologies in relation to policy to facilitate discussion, information sharing, and collaboration. In the coming months, we will also be publishing a commentary on space and its relation and contribution to better public health.

We also conduct webinars to further explain key emerging technologies not just for experts but also the public. Last year, FIT facilitated three webinars 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 panelists 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 the US National Aeronautics and Space Administration (NASA) to go back to the moon in a more

sustained, long-term way. Panelists noted that competition between various countries and supposed collaboration between them were the driving forces behind the renaissance of cislunar missions. They discussed opportunities through current and future cislunar activities, including plans by NASA to go back to the moon in a more sustained, long-term way. Competition and supposed collaboration were highlighted by panelists as driving forces of 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 panelists. They tackled congestion in earth's orbit, with the growing number of new space objects launched, and considered why managing this issue is crucial to 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, panelists 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; 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 energy), facilitating webinars, running an in-person executive course, publishing, and conducting research in critical emerging technologies. If you wish to collaborate or network with us, please do not hesitate to reach out.

About the Authors

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