



**UNIDIR 2018 Space Security Conference (OS18):
Space Security: The Next Chapter**

7–8 May 2018, Room XXIII of the Palais des Nations (Geneva)

A conference organized by the United Nations Institute for Disarmament Research (UNIDIR) in collaboration with the Secure World Foundation and The Simons Foundation Canada

Speaker Biographies
In order of appearance

Day 1

Welcoming remarks

- **Dr. Renata DWAN** is the Director of the UN Institute for Disarmament Research. She has a wealth of experience in peace and security issues within the United Nations, most recently as Chief of Policy and Best Practices in the United Nations Departments of Peacekeeping Operations and Field Support.

She was the Head of the Secretary-General's Initiative on Peace Operations at the Executive Office of the Secretary-General and held positions as Team Leader of the Integrated Operational Teams for Asia and Mali with the Department of Peacekeeping Operations, as well as Special Assistant and Chief of Staff at the United Nations Supervision Mission in Syria. In her 12 years in the Organization, she has led major United Nations-wide policy and reform initiatives on peace and security issues including security sector reform and peacekeeping partnerships.

Before joining the United Nations, Ms. Dwan was head of Stockholm International Peace Research Institute's Programme on Armed Conflict and Conflict Management (1999–2005) and Deputy Director of the EastWest Institute's European Security Programme in Budapest (1997–1999). She was Special Adviser to the European Union Council Secretariat for the first European Union crisis management operation and a member of European Union High Representative Javier Solana's 2004 Task Force on a Human Security Doctrine for Europe.

Born in 1969, she holds a Master and Doctor of Philosophy in International Relations from the University of Oxford in the United Kingdom, and was a Fulbright Scholar in Princeton University, in the United States. She has published widely on international security matters.

- **Ms. Victoria SAMSON** is the Washington Office Director for Secure World Foundation (SWF) and has 20 years of experience in military space and security issues.

Before joining SWF, Ms. Samson served as a Senior Analyst for the Center for Defense Information (CDI), where she leveraged her expertise in missile defense, nuclear reductions, and space security issues to conduct in-depth analysis and media commentary. Prior to her time at CDI, Ms. Samson was the Senior Policy Associate at the Coalition to Reduce Nuclear Dangers, a consortium of arms control groups in the Washington, D.C. area, where she worked with Congressional staffers, members of the media, embassy officials, citizens, and think-tanks on issues surrounding dealing with national missile defense and nuclear weapons reductions.

Before that, she was a researcher at Riverside Research Institute, where she worked on war-gaming scenarios for the Missile Defense Agency's Directorate of Intelligence.

Known throughout the space and security arena as a thought leader on policy and budgetary issues, Ms. Samson is often interviewed by multinational media outlets, including the *New York Times*, *Space News*, and *NPR*. She is also a prolific author of numerous op-eds, analytical pieces, journal articles, and updates on missile defense and space security matters. Read Ms. Samson's publications.

Opening remarks

- **Mr. Michael MØLLER** is the Director-General of the United Nations Office at Geneva.

Mr. Møller has over 35 years of experience as an international civil servant in the United Nations. He began his career in 1979 with the Office of the United Nations High Commissioner for Refugees and worked with UNHCR in different capacities in New York, Iran, Mexico, Haiti and Geneva. Between 1997 and 2001 he was the Head of the Office of the Under-Secretary-General for Political Affairs at United Nations headquarters; between 2001 and 2006 he was the Director for Political, Peacekeeping and Humanitarian Affairs in the Office of the Secretary-General, while serving concurrently as Deputy Chief of Staff for the last two years of that period.

Mr. Møller also served as the Secretary-General's Special Representative for Cyprus from 2006 to 2008 and was the Executive Director of the Kofi Annan Foundation from 2008 to 2011.

Born in 1952 in Copenhagen, Mr. Møller completed a Master's course in International Relations at Johns Hopkins University and a Bachelor's degree in International Relations from the University of Sussex, United Kingdom.

Panel 1: National and Regional Approaches to Space Security

- *Chair: Ms. Renata DWAN (see above)*
- **Mr. Andrey GREBENSCHIKOV** is First Secretary of the Department for Nonproliferation and Arms Control of the Ministry of Foreign Affairs of the Russian Federation. He joined the diplomatic service in 2004 after completing a Russian–French Masters programme in International Relations of the Moscow State Institute of International Relations of the MFA of Russia (MGIMO University) and Sciences Po (Paris). From 2004 to 2007 and 2011 to 2014, he worked in the Russian embassies in the Republic of Mali and in Canada, respectively. He specializes in the issues of security of outer space activities and the Convention on Certain Conventional Weapons (CCW). He has on numerous occasions participated as a member of Russian delegations in the work of the CCW, in sessions of the First Committee of the UN General Assembly, and the UN Disarmament Commission. He also took part in various events of the Conference on Disarmament, in bilateral and multilateral consultations and negotiations with partners on the mentioned issues.
- **Mr. Georges SCHMIT** is a retired civil servant of the Government of Luxembourg whom he served in various positions from 1981 to 2016. He most recently was Consul General of Luxembourg and Executive Director of the Luxembourg Trade and Investment Office in San Francisco (2009–2016).

During most of his career, his work focused on innovation and technology policy, economic development and trade and investment promotion.

Between 1994 and 2004, Georges Schmit was Secretary General of the Luxembourg Ministry of the Economy. In this capacity, he coordinated all policy areas within the Ministry's mandate. He also advised the Government on EU-policies and proposals and was a member of several European Union high-level advisory bodies including the European Commission's "Enterprise Policy Group" (1993–2009).

From 1992 to 2009, he served as Vice-Chairman and Executive Chairman of the National Credit and Investment Corporation (SNCI) of Luxembourg, a wholly State-owned Economic Development Bank which provides long term investment, R&D and innovation funding to SMEs and corporate customers.

In addition to his role at SNCI, Georges Schmit has served on the Board of Directors of both listed and private companies including the world's largest steelmaker ArcelorMittal, the Luxembourg-based global satellite operator SES, the Luxembourg Post and Telecommunications Company, and the Luxembourg State and Savings Bank, among others.

Most recently, he contributed to the design and launch of several major Luxembourg Government innovation policy initiatives including the Financial Technologies (FinTech) Promotion Initiative and the SpaceResources.lu Initiative aiming at the commercial exploration and utilization of space resources. In June 2016, Georges Schmit was appointed to the Luxembourg Government's Advisory Board on Space Resources. He also chairs the Asteroid Foundation, a Luxembourg-based non-profit organization promoting education and awareness about Asteroids.

In 2017 he joined the Board of Saphir Capital Investment Fund, a Luxembourg-based private equity fund with interests in a variety of both tech and non-tech start-ups. He joined the University of Luxembourg Center for Security, Reliability and Trust as a Research Fellow in March 2017.

Georges Schmit graduated with degrees in Economics from the University of Louvain, Belgium and the University of Michigan, Ann Arbor, MI.

- **Mr. Hatem ELATAWY** is an expert in security issues (particularly disarmament, conflict resolution over water resources, peacekeeping and peacebuilding), United States politics and Egyptian-European relations.

Mr. Elatawy has been with the Egyptian Ministry of Foreign Affairs (EMFA) for over 20 years, and since 2014 has been the Deputy Director and Director of Projects of the Cairo International Centre for Conflict Resolution, Peacekeeping and Peacebuilding. He has served in the Egyptian missions to the United States, the Kingdom of Saudi Arabia and most recently to the European Office of the United Nations Organization. Prior to joining EMFA, Hatem worked in television journalism and marketing.

Hatem holds a BSc. in Mechanical Engineering from the American University in Cairo (1991), as well as two Master of Arts degrees in Political Science and International Relations from the American University in Cairo (1995) and University of Durham in the UK (1996). Among Hatem's publications are "Nilopolitics: A Hydrological Regime 1870–1990": Cairo Papers in Social Science, Vol 19 No. 1, 1997; "ICoC: Recommendations for Further Elaboration" in Awaiting Launch: Perspectives on the Draft ICOC for Outer Space Activities. Rajagoplan, Rajeswari Pillai and Daniel Porras eds. Observer Research Foundation, New Delhi, 2014; and "The North African Regional Capability in a changing North Africa". In Mandup, T. & Vreÿ, F. (eds), The African Standby Force (ASF): Beyond 2015, SunMedia: Stellenbosch (2017).

- **Ambassador Mr. FU Cong** is the Ambassador for Disarmament Affairs and Deputy Permanent Representative at the Permanent Mission of the People's Republic of China to the United Nations Office at Geneva and Other International Organizations in Switzerland. Prior to this, he served as the Deputy Permanent Representative, and Ambassador Extraordinary and Plenipotentiary for Disarmament Affairs of the People's Republic of China to the UNOG.

From 2013 to 2015, Mr. Fu was the coordinator for cyber affairs for the Chinese Ministry of Foreign Affairs. From 2007 to 2013, he was Adviser to the Director-General of the World Health Organization, at the Assistant

Director-General level. He was also Counselor and Minister-Counselor at the Chinese Permanent Mission to UNOG from 2005 to 2007. Mr. Fu also has significant arms control experience, having served as the Second Secretary, Division Director, Counselor and Deputy Director-General of the Department of Arms Control at the Chinese Ministry of Foreign Affairs, from 1997 to 2004.

Panel 2: Coming into focus: a look at the maturing space economy

- *Chair: Mr. Naser AL RASHEDI* is Director of Space Policy and Regulations of the United Arab Emirates Space Agency.

Naser Al Rashedi started his professional career as a Telecom Planning Engineer at the Telecommunication Regulatory Authority (TRA). He soon became responsible for development and coordination of national, regional and international policies regulating information communication technology. Between 2007 and 2012, he was appointed as the UAE official representative in Geneva at the UN Organization, so called the International Telecommunication Union (ITU), during which he held several key leadership positions at a number of regional and international committees dealing with crucial matters relating to international ICT policies.

In 2012, he joined the National Electronic Security Authority as a senior manager where he addressed several strategy and regulatory cybersecurity issues at the National Policy & Planning Department. In May 2015, he was appointed as the Director of National Space Policy and Regulation at the UAE Space Agency. His current role includes developing and maintaining national policy, strategy and regulations for the UAE space sector. In February 2017, he graduated from the UAE-PMO Program for Chief of Happiness & Positivity focusing on UAE Federal Entities. During that program, Naser has gained enormous valuable knowledge and experience on the science and application of happiness and positivity at work environment and in life in general.

Naser holds a BS Degree in Electrical Engineering from University of Southern California, as well as postgraduate Executive Master Degree in International Negotiation and Policy-Making from the Geneva Institute for Graduate Studies.

- **Ms. Neha SATAK** is the Co-founder and CEO of Astrome Technologies Pvt. Ltd. She is a serial entrepreneur and a researcher. She holds a Phd from Texas A&M University and a Master's from the Indian Institute of Science in Aerospace Engineering. Her Phd dissertation on Behavior Learning in Game Theory received interest from the Air Force Research Lab (AFRL), USA following which she worked with AFRL as a Postdoctoral Research Associate through University of Florida.

She has worked extensively on various aspects relating to Unmanned/Micro Aerial Vehicle (UAV/MAV), asteroids and satellites. During her Master's, she designed an MAV platform named Saphami that has been very successful and has undergone further development through various grants received by her lab. She is an expert in estimation, dynamics & control techniques and differential game theory. She has published a number of journal and conference articles and a book chapter.

Prior to Astrome, she co-founded two space companies. Scientific Preparatory Academy of Cosmic Explorers (SPACE) is a non-profit company based in the Isle of Man that promotes hands-on space education by organizing conferences, virtual internships and joint research. SPACE has organized three international conferences to bring together space enthusiasts and space companies and discuss important issues to be solved in the space industry and the way forward. SPACE also organized a virtual internship in which students and young professional from seven countries participated and worked on a business and technical plan for asteroid mining business. Neha's role has been in idea generation and their execution for the organization to promote hands-on space education.

Experimental Center for Applied Physical Systems (ECAPS, LLC) is a for profit Texas based company that develops non-destructive Asteroid deflection technology and Asteroid detection technology. ECAPS received US\$ 1 million grant to develop asteroid deflection technology that it successfully completed in 2014. Since 2014, ECAPS have been developing STEM education products related to Space. Here she gained experience in various aspects of business, project management and technology development.

- **Mr. Andrew RUSH** is President & CEO of Silicon Valley-based Made In Space, Inc. He oversees the operations, business development, and strategy of Made In Space (MIS) as it continues to push boundaries of manufacturing technology in space, at sea, and in other extreme environments for government, commercial and defence customers.

Andrew served as general counsel during MIS's startup phase and became CEO in 2015. His vision of an interplanetary existence for humanity guides MIS to drive forward offerings that enable life and work in space. As the first manufacturing company to operate in space, MIS is uniquely positioned to unlock the tremendous potential of the space economy by creating the tools, infrastructure and equipment necessary for humankind to build among the stars.

Previously, Andrew worked in the intellectual property, business and ground crew/launch prep organizations at Masten Space Systems. Before becoming an attorney, he was a research assistant in a Solid State Physics Laboratory at the University of North Florida (UNF). He currently serves on the Physics Advisory Group at UNF. Andrew holds a BS in physics from UNF and a JD from Stetson University. He is also a recipient of the Young Alumni Achievement Award from UNF.

- **Mr. Peter BECK** is the founder and CEO of Rocket Lab, an orbital launch company revolutionizing access to space for small satellites. Peter is responsible for the birth of the space industry in New Zealand and has grown Rocket Lab to become a globally recognised industry leader in space.

After founding Rocket Lab in 2006, Peter led a team of engineers to develop the ATEA-1 rocket in 2009, a launch that saw Rocket Lab become the first private company in the Southern Hemisphere to reach space. In 2013 Peter established the Electron orbital launch program to develop the world's first fully carbon-composite launch vehicle, powered by world's first 3D printed, electric turbopump-fed rocket engine.

Peter has played an instrumental role in establishing international treaties and legislation, which enabled orbital launch capability from New Zealand. He also oversaw the development the first and only private orbital launch range on the globe, located on New Zealand's Mahia Peninsula.

Today, Peter has built a billion-dollar company and leads a 200-strong team comprised of world class engineers and technicians across New Zealand and the United States. With its first successful orbital launch completed in January 2018 and many more to follow, Rocket Lab is driving the small satellite launch revolution.

- **Ms. Victoria SAMSON (see above)**

Panel 3: Established regimens, new realities: are existing rules enough?

- *Chair: Kerstin VIGNARD* is responsible for UNIDIR's strategic planning, institutional management, advising the Director and leading the Institute's work on emerging security issues.

Ms. Vignard served as Consultant to four of the five UN Groups of Governmental Experts on Developments in the field of Information and Telecommunications in the Context of International Security (the UN GGEs on Cybersecurity). Since 2013, she has led UNIDIR's work on the weaponization of increasingly autonomous

technologies, which has provided insights and conceptual frameworks to enable international policy-makers to better think, discuss and make informed decisions about autonomy in weapon systems.

Ms. Vignard's research interests include autonomous technologies, AI, cyber, international security implications of innovations in science and technology, and disarmament education and training.

- **Dr. Guoyu WANG** is the Deputy Director of the Institute of Space Law at the Beijing Institute of Technology.

Dr. Wang graduated from Jilin University, (China) in 2005 and gained his PhD in Law and Economics in 2008. Since 2008 has worked at Institute of Space Law, Beijing Institute of Technology, currently as Deputy Director. Since 2014 has been an Academy Senior Fellow of Chatham House. He was also Consultant on Space Security of UNIDIR (2015).

Dr. Wang has served as a Chinese delegate of the United Nation Committee on the Peaceful use of Outer Space (UNCOPUOS), Inter-governmental Space Debris Coordination Committee (IADC), as well as a Chinese expert in the Long-term Sustainability for Outer Space Activities Working Group of UNCOPUOS. Dr. Wang's expertise includes legal and political analysis on space security issues, inter alia, arms control in outer space, space debris mitigation and remediation, cyber security in outer space, space resources exploitation and space crisis management, space traffic management and space global governance.

- **Ms. Karoline MARBURGER** is a scientific officer at the German Aerospace Center (DLR) in Bonn in the finance and planning department. She joined DLR in 2015 and since then has been responsible for the planning and controlling of the German budget for the European Space Agency (ESA). Prior to this, she spent time at the ESA Headquarters in Paris in the Department for Relations with Member States. She mainly worked in the field of sustainable development at ESA, but also did a research on the decision-making mechanisms and the structure of committees and boards of ESA.

Karoline Marburger holds a BSc degree in European Studies from Twente University, the Netherlands, and an MA degree in International Studies from Aarhus University, Denmark. Besides her general interest in space and astronomy, she deepened her connection to the field during an internship at the United Nations (UN) Office for Outer Space Affairs as part of her Masters Studies. She wrote her thesis on the negotiations within the UN Committee on the Peaceful Uses of Outer Space (COPUOS). In particular, she conducted extensive research on the principle of "consensus" in decision making as used within UN COPUOS.

- **Ambassador (Ret.) Mr. Paul MEYER** is Senior Fellow in Space Security at The Simons Foundation Canada, as well as Adjunct Professor, School for International Studies, and Fellow in International Security, Centre for Dialogue at Simon Fraser University in Vancouver, Canada, and Chair of the Canadian Pugwash Group.

He joined the then Department of External Affairs in 1975 as a Foreign Service Officer and served abroad in Oslo (1976–1978), Moscow (1982–1984) and Brussels (1988–1992) where he was Political Counsellor in Canada's delegation to NATO. From 1992 to 1997, he served at the Embassy in Washington D.C. as Minister-Counsellor (Political) and from 2001 to 2003 as Minister and Deputy Head of Mission at the Embassy in Tokyo.

In Ottawa, Mr. Meyer has held a variety of positions at the Department of Foreign Affairs and International Trade, primarily in the field of international security policy. He was Director-General of the International Security Bureau from 1998 to 2001. From 2003 to 2007, Mr. Meyer served as Ambassador and Permanent Representative to the Office of the United Nations and the Conference on Disarmament in Geneva. His responsibilities spanned a variety of issues and organisations including human rights, humanitarian affairs, global health and disarmament. From 2007 to his retirement from the Foreign Service in September 2010, Mr. Meyer served as Director General of the Security and Intelligence Bureau at DFAIT.

- **Dr. Asha BALAKRISHNAN** is a Research Staff Member at the Science and Technology Policy Institute (STPI), a Federally-Funded Research and Development Center that provides rigorous and objective analysis on a range of science and technology policy-related topics for the White House Office of Science and Technology

Policy. Trained as a mechanical engineer, Asha brings significant analytical expertise to STPI in the areas of space technologies, program evaluation, and STEM education and workforce training. Recently, she collaborated with colleagues on a number reports related to small satellite technologies. Asha has extensive experience conducting program evaluations for Federal R&D and STEM education programs for the National Science Foundation and the Department of Defense. Her previous research focused on developing experimentation techniques and biomechanical models of the brain to understand traumatic brain injury. Dr. Balakrishnan has experience working as a design engineer in the semiconductor and auto industries and previously held an adjunct faculty position in mechanical engineering at George Washington University. Dr. Balakrishnan holds a BS in mechanical engineering from the University of Illinois, Urbana Champaign. Both her MS and PhD are in mechanical engineering from the Massachusetts Institute of Technology.

Panel 4: Making Security Decisions: using space to shape security policies, using policies to change space

- *Chair: Ambassador Ms. Yvette STEVENS* has been Ambassador for Sierra Leone in Geneva since 2012. In this capacity, she has covered all areas of work, notably human rights, health, trade migration and disarmament.

Before being appointed Ambassador Extraordinary and Plenipotentiary in Geneva, she served as Energy Policy Adviser at the Sierra Leone Ministry of Energy and Water Resources between 2009 and 2012.

She has had a broad and long experience in the United Nations. An Engineer by training, she studied at the Moscow Power Engineering Institute and at the Imperial College of Science and Technology, University of London. She taught Engineering at the University of Sierra Leone before joining the United Nations in 1980, as Village Technology Expert in the International Labour Organization.

Ms. Stevens has occupied various other positions in the UN, including Evaluation Officer as well as Chief of the Technical Support Section of the United Nations High Commission for Refugees (UNHCR) in Geneva, both of which involved thorough analyses of refugee situations in about 30 countries, all over the world. She also served UNHCR in Africa, first as Deputy Liaison Representative in Ethiopia (1995–1997) and as the UNHCR Representative to Kenya and Somalia (1997–1999). In the latter capacity, she acted as the United Nations Humanitarian Coordinator for Somalia on a number of occasions.

Ms. Stevens was the Director at the United Nations Office of the Special Adviser on Africa in New York, having served as the Special Coordinator for Africa and the Least Developed Countries in the United Nations Department of Economic and Social Affairs from 1999 to 2003. In these two positions, her role involved general advocacy for African development. From 2004 to 2006, she served as United Nations Assistant Emergency Relief Coordinator and Director of the Office for the Coordination of Humanitarian Affairs in Geneva.

Between 2006 and 2009, Ms. Stevens worked as a freelance consultant on humanitarian issues as well as on disaster risk reduction in Africa for the secretariat of the International Strategy for Disaster Reduction (ISDR).

Ms. Stevens was a Goodwill Ambassador for the United Nations Institute for Training and Research (UNITAR) Operational Satellite Applications Programme (UNOSAT). She was also a member of the Advisory Group for Security Council Report. She is a Member of the British Institution of Engineering and Technology (IET) and Fellow of the Sierra Leone Institution of Engineers.

- **Mr. Keith GARRETT** is a Private Sector Development Specialist with the Africa, Finance and Private Sector Development unit. He previously served as a United States Marine and a policy advisor to the US Ambassador to the OECD (Organization for Economic Cooperation and Development). He has over 13 years of experience with spatial analysis, remote sensing and geographic information systems (GIS) and their use to support decision making. Keith has a graduate degree in Public Affairs and an undergraduate in Geography. He is interested in: the spatial aspects of the economy, public health and safety, how ICT innovation can improve

the evidence base for policy, and how ICT can improve multi-stakeholder engagement between business, government and civil society.

- **Mr. Antonio CICCOLELLA** is the Head of the System Architect Office in the Directorate of Earth Observation at the European Space Agency. He received a Masters and Doctorate of Philosophy in Electrical Engineering at the Politecnico di Torino (Italy), with a major in Electromagnetics.

He was employed at Alenia Spazio as an electrical systems engineer from 1987 to 1992, and then joined Electromagnetics Division of ESA, Technical Directorate, where he has been supporting and testing several space projects in electric system disciplines, including Cluster, Rosetta, Mars and Venus Express, Artemis, the Columbus module of the International Space Station and the Automated Space Vehicle. From 2000 to 2006 he has lead the Electromagnetic Compatibility and Antenna Measurement Section of ESTEC. In 2006, he moved to the Directorate of Earth Observation to be the coordinator for the Space Segment of Copernicus, formerly known as GMES, where he has contributed to defining the architecture of the programme and the relevant cost estimates.

His present tasks entail establishing and maintaining a reference architecture for European EO systems, encompassing research missions (e.g. Earth Explorers), Copernicus missions, meteorological missions, (multi-lateral) national and commercial systems, non-orbiting platforms (e.g. High Altitude Pseudo-Satellites, HAPS) and in-situ assets.

His interests are mainly system engineering, strategic analysis and civil security.

- **Dr. Sara LANGSTON** Esq., JD, LL.M., PhD, is an aerospace lawyer, ethicist, educator and Army veteran with a technical military aviation background. As a legal consultant she provides strategic advice to government agencies and private industry in the US and Europe on new and forward-looking science/technologies, applications for space exploration and commercial human spaceflight. Dr. Langston holds a Phd in the History and Philosophy of Science; JD with specialization in Public International Law; LL.M. (Adv.) in Air and Space Law; BS in Politics and History; and a Space Studies Certificate in Physical Sciences from the International Space University. She is a member of the International Institute of Space Law, Royal Aeronautical Society, and is an active member of the New York and District of Columbia Bars.

Day 2

Keynote address

- **Ambassador Mr. Guilherme de Aguiar PATRIOTA** is the Special Representative of Brazil to the Conference on Disarmament.

A career diplomat since 1983, he has been a delegate of Brazil accredited to the Organization of American States in Washington, the Latin American Integration Association, in Montevideo, the Embassy of Brazil in New Zealand, the World Trade Organization and the World Intellectual Property Organization, in Geneva (2005–08), and twice to the United Nations in New York. He was International Advisor to the Brazilian Minister of Science and Technology and Deputy Foreign Policy Advisor to the President of the Republic.

Ambassador Patriota was a graduate student in biological sciences at the Federal Universities of Rio de Janeiro and Brasilia. He has worked for many years in multilateral diplomacy, in particular in the fields of development, trade, regional integration, science and technology, information society, cybersecurity, health, social issues and disarmament.

Panel 5: Emerging challenges

- *Chair: Mr. Christopher JOHNSON* is the Space Law Advisor for Secure World Foundation and has eight years of professional experience in international space law and policy.

Prior to joining SWF, Mr. Johnson worked as an attorney in New York City and entered the space field in 2010 as an intern at the United Nations Office for Outer Space Affairs (OOSA) in Vienna, Austria during the 53rd Committee on the Peaceful Uses of Outer Space. He has also served as an intern in the Office of International and Interagency Relations (OIIR) at NASA Headquarters in Washington, DC, and as a legal stagiaire in the International Law and EU Legal Affairs division at the European Space Agency's Legal Department at ESA Headquarters in Paris, France. As a member of the Space Generation Advisory Council (SGAC), Mr. Johnson co-founded the Space Law and Policy Project Group in 2012.

He has authored and co-authored publications on international space law, national space legislation, international cooperation in space, human-robotic cooperative space exploration, and on the societal benefits of space technology for Africa.

Mr. Johnson holds a Bachelor's of Art (BA) degree in English from Michigan State University; a Juris Doctor from New York Law School; and an Advanced Masters in Law (LLM) in Air and Space Law from Leiden University's International Institute of Air and Space Law. He also has professional certificates from New York University's School of Continuing and Professional Studies, and the Oxford Institute of Legal Practice, and European Centre for Space Law (ECSL) 2010 Summer Program in Space Law and Policy at the Universidad de Jaén, Spain. He also attended the International Space University (ISU) 2011 Space Studies Program in Graz, Austria with scholarships from the European Space Agency and the UK Space Agency, and the 2012 ISU Masters in Science program in Strasbourg, France with a scholarship from the European Space Agency. Since 2013, he has returned to ISU to serve as a Teaching Associate and Guest Lecturer, and in 2016 will serve as Departmental Chair in the Space Policy, Economics, and Law (PEL) department at the ISU SSP to be held in Haifa, Israel.

Mr. Johnson was admitted to practice law in New York State in 2005, in England and Wales in 2008, and in the District of Columbia in 2016.

- **Mr. Alexandre VALLET** is the Chief of the Space Services Department for the International Telecommunications Union (ITU) in Geneva. He has held this post since 2017, where he manages the overall

international process of satellite frequency coordination and registration for the 193 Member States of the ITU.

Mr. Vallet began to work in 2000 in the R&D center of Orange dealing with telecommunication satellites. In 2006, he joined the satellite operator Eutelsat where he was in charge of regulatory matters. From 2007 to 2017, he was the Head of the Regulatory affairs and Spectrum/Orbit Resources Department at the French Agency in charge of radio spectrum management (Agence Nationale des Fréquences–ANFR) where he was in charge of the satellite frequency registration of all French satellites, both governmental and commercial, as well as of the coordination of the French preparatory work for international frequency negotiations held during ITU World Radiocommunication Conferences.

- **Dr. Laura GREGO** is a Senior Scientist for the Global Security Program of the Union of Concerned Scientists.

Dr. Grego focuses on the technology and security implications of national missile defence and of space security. She is the author or co-author of roughly 30 peer-reviewed, published papers on a range of topics, including cosmology, space security, and missile defence.

Since joining UCS in September 2002, she has been cited by the *Boston Globe*, *Chicago Tribune*, *Los Angeles Times*, *New Scientist*, *New York Times*, *Washington Post* and *USA Today*, and has appeared on *CNN*, *Fox News*, *the Discovery Channel*, and *NPR*. She also has testified before Congress and addressed the United Nations Conference on Disarmament on space security issues.

Before joining UCS, Grego was a postdoctoral researcher at the Harvard-Smithsonian Center for Astrophysics. She earned a doctorate degree in experimental physics at the California Institute of Technology and a bachelor of science degree in physics and astronomy at the University of Michigan.

- **Professor Thomas JENNEWEIN** is an Associate Professor at the Institute for Quantum Computing at University of Waterloo.

Prof. Jennewein completed his PhD thesis in 2002 at the University of Vienna, focusing on Quantum Communication and Teleportation Experiments with Entangled Photon Pairs. In 2003 he changed to industry, and worked as an engineering consultant in the automotive industry (Munich), pioneering next-generation multimedia systems at Audi.

In 2004, he was made senior researcher at the Vienna branch of the Institute for Quantum Optics and Quantum Information (IQOQI) working on quantum photonic experiments, such as the generation of entangled photons with parametric down conversion and the long-distance transmission of photons over optical fiber and free space. He is also a highly qualified electronics and software specialist, and has designed and built many novel research instruments, including single photon detectors as well as coincidence electronics.

In 2002, he was awarded the Loschmidt-Prize of the Austrian Physical-Chemical society for his PhD thesis. In 2006, he was able to attract a Linkage International Fellowship from the Australian Research Council, which enabled him to spend a six-month period in 2007 and 2008 with the University of Queensland.

In March 2009 Prof. Jennewein joined the University of Waterloo as an Associate Professor with the Physics Department and became a member of the Institute for Quantum Computing (IQC).

- **Professor Kazuto SUZUKI** is Vice Dean and Professor of International Politics at Public Policy School of Hokkaido University, Japan. He graduated from the Department of International Relations, Ritsumeikan University, and received his Phd from Sussex European Institute, University of Sussex, England. He has worked in the Fondation pour la Recherche Stratégique in Paris, France as assistant researcher and Associate Professor at the University of Tsukuba from 2000 to 2008, after which he moved to Hokkaido University. He

also spent one year at Woodrow Wilson School of Public and International Affairs at Princeton University from 2012 to 2013 as visiting researcher.

He served as an expert in the Panel of Experts for Iranian Sanction Committee under the United Nations Security Council from 2013 to 2015. He has conducted research from the International Political Economy perspective in Space Policy, together with nuclear energy policy, export control, counter-terrorism, non-proliferation and policies on market regulation. He has contributed to drafting the Basic Space Law of Japan and serves as a member of sub-committees of industrial policy and space security policy of National Space Policy Commission. His recent work includes *Space and International Politics* (2011, in Japanese, awarded Suntory Prize for Social Sciences and Humanities), *Regulatory Power of EU* (editor 2012, in Japanese), *Policy Logics and Institutions of European Space Collaboration* (2003) and many others.

Panel 6: Searching for Viable Steps: gauging options big and small

- *Chair: Ambassador (Ret.) Mr. Paul MEYER (see above)*
- **Ms. ZUO Rui** is the Deputy Division Director of the Department of Arms Control in the Ministry of Foreign Affairs of the People's Republic of China. She has held this position since 2015. Prior to this, Ms. Zuo was posted at the Chinese Embassy to India. She also worked in the Office of the Commissioner of the Ministry of Foreign Affairs of the People's Republic of China in the Hong Kong Special Administrative Region. Prior to this, Ms. Zuo worked within the Department of Arms Control in the Ministry of Foreign Affairs of the People's Republic of China.
- **Mr. Andrey GREBENSCHIKOV (see above)**
- **Mr. Daniel PORRAS** is the Space Security Fellow for the UN Institute for Disarmament Research in Geneva. His work focuses on political/legal issues surrounding space security and, in particular, the progressive development of sustainable norms of behaviour. Mr. Porras has been an Associate for LMI Advisors (Washington, DC), advising clients on a wide range of international legal issues related to space activities, telecommunications and experimental equipment. He was also an Associate Officer for UNIDROIT (Rome) where he worked on the Space Protocol to the Cape Town Convention, an international instrument for financing space assets. Mr. Porras has held a visiting fellowship at the Observer Research Foundation (New Delhi) and holds an LLM in International Business and Economics Law from the Georgetown University Law Center (Washington, DC).
- **Dr. Rajeswari Pillai RAJAGOPALAN** is a Senior Fellow and Head of the Nuclear and Space Policy Initiative at the Observer Research Foundation (ORF) in New Delhi.

She is also the senior Asia defence writer for *The Diplomat*. Dr. Rajagopalan joined ORF after a five-year stint at the National Security Council Secretariat (2003–2007), where she was an Assistant Director. Prior to joining the NSCS, she was Research Officer at the Institute of Defence Studies and Analyses, New Delhi. She was also a Visiting Professor at the Graduate Institute of International Politics, National Chung Hsing University, Taichung, Taiwan in 2012.

She is the author of four books: *Nuclear Security in India* (2015), *Clashing Titans: Military Strategy and Insecurity among Asian Great Powers* (2012), *The Dragon's Fire: Chinese Military Strategy and Its Implications for Asia* (2009), and *Uncertain Eagle: US Military Strategy in Asia* (2009). She has also co-authored and edited five other books, including *Space Policy 2.0: Commerce, Policy, Security and Governance Perspectives* (2017); *Nuclear Security in India* (Second Edition) (2016); *Iran Nuclear Deal: Implications of the Framework Agreement* (2015).

Her research articles have appeared in edited volumes, and in peer reviewed journals such as *India Review*, *Strategic Studies Quarterly*, *Air and Space Power Journal*, *International Journal of Nuclear Law*, *Strategic Analysis* and *CLAWS Journal*. Other writings have appeared in the *Journal of Strategic Studies*, *Journal of Peace Research* and *Contemporary South Asia* and she has contributed essays to newspapers such as *The Wall Street Journal*, *Times of India*, *Hindustan Times*, *Economic Times* and *The Pioneer*.

Dr. Rajagopalan has lectured at Indian military and policy institutions such as the Defence Service and Staff College (Wellington), National Defence College (New Delhi), Army War College (Mhow), and the Foreign Service Institute (New Delhi). She has also been invited to speak at international fora including the UN COPUOS (Vienna), Conference on Disarmament (Geneva), UNIDIR (Geneva), ASEAN Regional Forum (ARF) and the European Union.