Educating and Retraining Human Talent to Compete in the Economic Great Game of Space

Thursday, 28 January 2021, 1:30-3:00 pm EST

Program

US Space Policies for the New Space Age: Competing on the Final Economic Frontier

Bruce Cahan, J.D. and Dr. Mir Sadat

based on Proceedings from

State of the Space Industrial Base 2020
Sponsored by United States Space Force, Defense Innovation Unit, United States Air Force Research Laboratory

Illustrations by James Vaughan

NEW SPACE NEW MEXICO

In support of this report release, NewSpace New Mexico will host five webinars to delve into the substance of this study.

NewSpace New Mexico Webinar Hosts: Casey Anglada DeRaad and Scott Maethner

Authors:
Bruce Cahan and Dr. Mir Sadat

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Moderated by NewSpace New Mexico

Keynote: Greg Autry, Commercial Space Transportation Advisory Committee

Cross-Industry Roundtable:

James Brahm
U.S. Air Force

Rich Cooper
Space Foundation

Casey Anglada DeRaad
NewSpace New Mexico

Michelle Hanlon
The University of Mississippi

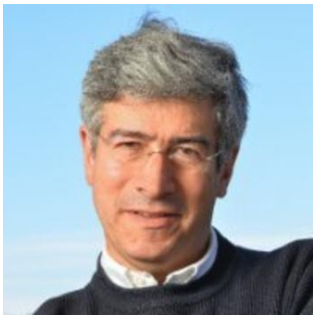
Michael Laine
LiftPort Group

Brent Ziarnick
Air Command and Staff College

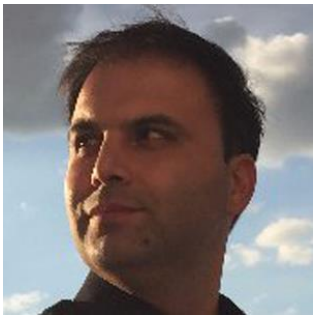
Educating and Retraining Human Talent to Compete in the Economic Great Game of Space

This panel will concentrate on educating and retraining human talent to compete in the economic great game of space. Just as the Digital Age is transforming the jobs required for the terrestrial industries and business processes of the 19th and 20th centuries, space and our reliance on space-based assets are changing daily life and the jobs tomorrow will require or inspire. STEM: Science Technology, Engineering and Math is foundational to filling the tens of thousands of jobs that the nation's corporate, government and research activities will rely on to design, operate and use space assets and services. Numerous terrestrial jobs, such as logistics, medicine, mining and telecommunications will need to retrain workers so that they can join in the growing space economy. Lags in U.S. STEM education, especially with Black, Hispanic, Indigenous, Disabled and other Under-represented persons (BHID&UR), need to be addressed so that the U.S. talent pool is competitive with the human capital being grown abroad.

Authors of **"Space Policies for the New Space Age: Competing on the Final Economic Frontier"**



Bruce Cahan is a Lecturer in Stanford University's Management Science and Engineering Department, a Distinguished Scholar at Stanford's Human-Sciences and Technologies Advanced Research Institute's mediaX Program, and an active member of CodeX Fellow at Stanford's Center for Legal Informatics. Bruce co-founded the Sustainable Banking Initiative at Stanford, and teaches Redesigning Finance, Ethics of Finance, Buy-Side Investing and Sustainable Banking at Stanford. As an Ashoka Fellow and as CEO of Urban Logic, Inc., a NY nonprofit, Bruce researched and leads the effort to create the Space Commodities Exchange as essential "financial engineering" for the New Space Economy. Bruce is licensed as a lawyer in CA, NY and PA, and practiced as a Wall Street lawyer in NYC with the international law firm of Weil Gotshal & Manges. Bruce graduated The Wharton School at the Univ of Pennsylvania (BS Econ & Int'l Business) and Temple Law School (J.D.)



Mir Sadat, Ph.D., recently departed the U.S. National Security Council at the White House, where he led the interagency on defense and space policy issues. In this role, Mir prepared the President, National Security Advisor, and White House Senior Officials on significant civil, commercial and national security space topics. Mir is also a naval officer with intelligence and space qualifications and in his preceding two naval assignments, he served as a Space Policy Strategist with Chief of Naval Operations and a Space Operations Officer with U.S. Tenth Fleet. Mir has a PhD from Claremont Graduate University and has taught at various universities in

California and in Washington, DC. Prior to joining the government, Mir spent 10 years in various capacities at Lockheed Martin, Northrop Grumman, and Raytheon.

Educating and Retraining Human Talent to Compete in the Economic Great Game of Space

Agenda

NewSpace New Mexico Welcome: Casey Anglada DeRaad

Introduction Moderator: Scott Maethner

Introduction of Webinar & Report: Bruce Cahan & Mir Sadat, Authors

Keynote: Greg Autry, Commercial Space Transportation Advisory Committee

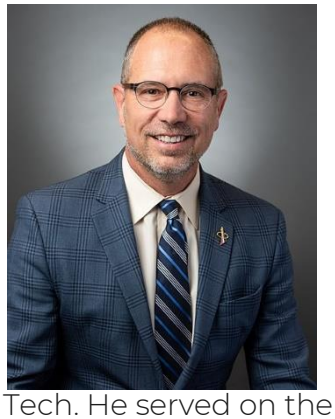
Cross-Industry Roundtable Panelists:

- Moderator: Scott Maethner, NewSpace New Mexico
- Rich Cooper, Vice President, Space Foundation
- Michelle L.D. Hanlon, The University of Mississippi School of Law
- Michael Laine, President, LiftPort Group
- Dr. Brent D. Ziarnick, Air Command and Staff College
- James Brahm, Cyberspace Operations Officer, U.S. Air Force
- Casey Anglada DeRaad, NewSpace New Mexico

Q&A – Led by Scott Maethner, NewSpace New Mexico

Wrap Up and Report Overview – Bruce Cahan & Mir Sadat

Speaker Information:



Dr. Greg Autry, Chair, Commercial Space Transportation Advisory Committee

Dr. Greg Autry is Chair of the Safety Working Group on the Commercial Space Transportation Advisory Committee (COMSTAC) at FAA and Vice President for Space Development at the National Space Society. Dr. Autry has researched and taught technology innovation and entrepreneurship at the University of Southern California, UC Irvine and ISU / Florida Tech. He served on the 2016 NASA Agency Review Team and as White House Liaison at NASA. Dr. Autry was nominated to be Chief Financial Officer at NASA in 2020 but the US Senate failed to schedule a confirmation vote. His writings have been published in major news outlets including Foreign Policy, the Wall Street Journal and

Space News. Dr. Autry holds a BA from California Polytechnic University at Pomona and an MBA and PhD from the Merage School of Business at the University of California, Irvine.

James Brahm, Cyberspace Operations Officer, U.S. Air Force

James Brahm is a cyberspace operations officer in the U.S. Air Force and recent graduate of the U.S. Air Force Academy, where he majored in Computer Science and minored in Nuclear Weapons and Mandarin Chinese. He has also worked as a defense contractor as a malware analyst and for QC Ware, a silicon valley startup writing algorithms for quantum processors. Currently, he is studying at Oxford University on the Rhodes Scholarship earning a master's in Computer Science and master's in Global Governance and Diplomacy. In his free time, James enjoys editing Wikipedia, picking things up and putting them down again, taking naps, and preparing and eating food.

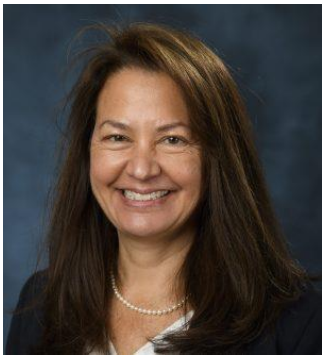
Rich Cooper, Vice President, Space Foundation

Rich Cooper serves as the Vice President – Strategic Communications & Outreach for the Space Foundation leading the team that is telling the story of the next human adventure in space. His prior roles include senior positions with the SAS Institute, Catalyst Partners, LLC; US Chamber of Commerce Foundation; US Department of Homeland Security; NASA Headquarters; and other senior positions in private and non-profit sectors. An accomplished writer and program strategist he has contributed commentaries, articles and speeches on space, homeland/national security and related issues to media outlets, including the Wall Street Journal, CNET, National Journal/CQ, TIME, Fox News, CNN, Government Executive, Politico, the New York Times, Government Matters, Federal News Radio, Homeland Security Today, and others. Cooper possesses a bachelor's degree in political science and religion from Mary Washington College, with graduate and executive education at Virginia Polytechnic Institute and State University, Harvard's Kennedy School and School of Public Health, and the University of Southern California.

Casey Anglada DeRaad, Chief Executive Officer and Founder, NewSpace New Mexico

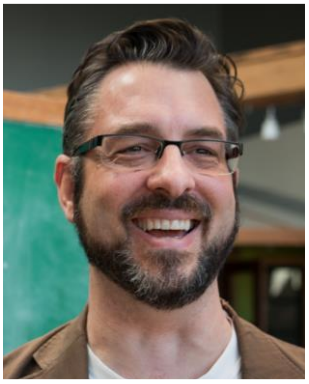
Casey Anglada DeRaad is CEO and Founder of NewSpace New Mexico, a non-profit established to grow the commercial space industry from New Mexico for the nation and to create a bigger voice to NM's space industry stakeholders from industry, Air Force, the national labs, and local, state, and federal organizations. Casey is an energetic builder of

partnerships and growth strategies to help all stakeholders succeed. She has over 30 years of leadership experience in space technology, business development, investment leveraging, technology engagement/transfer, strategic planning, workforce development, and portfolio investment for Air Force, NASA and private industry. Casey has promoted opportunities for New Mexico students and industries for her entire career. Casey has her Master's in EE from UNM.



Michelle L.D. Hanlon, Co-Director, Center for Air and Space Law, The University of Mississippi School of Law

Michelle is a Co-Director of the Center for Air and Space Law and an instructor of aviation and space law. Michelle received her B.A. in Political Science from Yale College and her J.D. magna cum laude from the Georgetown University Law Center. She earned her LL.M in Air and Space Law from McGill University where the focus of her research was commercial space and the intersection of commerce and public law. Prior to focusing on aviation — including uncrewed aircraft — and space law, Michelle was engaged in a private business law practice. Her legal career commenced with the restructuring of sovereign debt for a number of South and Latin American countries and evolved into the negotiation and implementation of cross-border technology mergers and acquisitions. Her subsequent solo practice advised entrepreneurs across four continents on all aspects of bringing their innovative ideas to market: from basic corporate formation to financings and buyouts. Michelle is a Co-Founder and the President of For All Moonkind, Inc., a nonprofit corporation that is the only organization in the world focused on protecting human cultural heritage in outer space. For All Moonkind has been recognized by the United Nations as a Permanent Observer to the United Nations Committee on the Peaceful Uses of Outer Space. Michelle also serves as Chair of the International Committee of the National Space Society and is on the Advisory Board of several start-ups involved in commercial space activities including orbital debris removal, remote sensing and the support of lunar resource extraction. Michelle is the Editor-in-Chief of the Journal of Space Law and the Faculty Advisor for the Journal of Drone Law and Policy. Education: LL.M., McGill University, J.D., Georgetown University, and B.A., Yale College



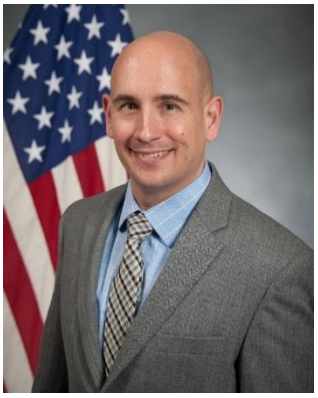
Michael Laine, President, LiftPort Group

Michael Laine is the President of LiftPort Group focused on research and commercializing technologies developed for the (buildable now, with current technology) Lunar Space Elevator Infrastructure. Laine has worked on Space Elevator research since 2001 – as part of the definitive NASA's Institute for Advanced Concepts (NIAC) study. Since then, LiftPort has discovered new alloys, climbing robotics, and invented weather monitoring tools. The U.S. Marines (enlisted) taught perseverance, chokepoint analysis, and leadership skills.

Managing other peoples' money taught him to evaluate and mitigate risk. Laine learned time management, delegation, and operating at 'Internet speed' running his first company. Finally, real estate forced Laine to focus on cashflow, politics, and the value of a stable financial foundation. Laine attended the 'school of hard knocks' courtesy of the USMC, then later, Boston University for business, and is (again, for the second time) the President of the International Space University's U.S. Alumni Association.

Scott Maethner, Strategy & Operations Lead, NewSpace New Mexico

Scott Maethner (Colonel, USAF Retired) is a results-oriented leader who helps people and organizations reach their full potential. He has over 29 years of experience in the areas of science & technology, space research & operations, program management, strategy & policy development, strategic planning, studies & analysis, corporate communications, sales, marketing, and talent acquisition.



Dr. Brent D. Ziarnick, Assistant Professor, Air Command and Staff College

Dr. Brent D. Ziarnick is an Assistant Professor in the Department of Spacepower at the Air University's Air Command and Staff College, Maxwell Air Force Base, Alabama. Dr. Ziarnick is a command space operations officer in the Air Force Reserve with extensive experience in Global Positioning System (GPS) engineering, offensive space control, and theater space command and control. In civilian life he was a launch operations engineer at Spaceport America, New Mexico where he developed the long-range plan for the world's first purpose-built inland commercial spaceport's vertical launch activity. He holds doctorates in economic development from New Mexico State University and military strategy from Air University, a master's degree in space systems engineering from the University of Colorado-Colorado Springs, a bachelor's degree in space operations from the United States Air Force Academy, and is a graduate of both the Air Command and Staff College and the School of Advanced Air and Space Studies. Dr. Ziarnick is the author of three books and multiple articles and editorials on space power theory and strategy. His latest book, "To Command the Skies" a biography of Strategic Air Command General Thomas Power and his vision for space, will be released by Naval Institute Press on February 15th.