



SpaceTech
Analytics

Space Mining The High Frontier

Conference

28 July 2021 | 5 PM BST

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Rand Simberg

Business Development Consultant,
SpaceTech Analytics



Daniel Sax

Co-Founder and CEO,
Canadian Space
Mining Corporation



Joel Sercel

Space Technologist,
Entrepreneur, and Innovator



Oleksii Rud

Head of Department
SpaceTech Analytics



Gary Calnan

Co-Founder and CEO,
CisLunar Industries



Chris Lewicki

Founder,
Interplanetary Enterprises



Christopher Johnson

Space Law Advisor,
Secure World Foundation



John Mankins

Vice President,
Moon Village Association



Martin Elvis

Senior Astrophysicist,
SAO



George Sowers

Professor,
Space Resources,
Colorado School of Mines



Jim Keravala

CEO & Chief Architect,
OffWorld



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Opening Remarks

Oleksii Rud (Head of SpaceTech Analytics),
Rand Simberg (Business Development Consultant,
SpaceTech Analytics)

Lunar South Pole Mining

John Mankins (Vice President, Moon Village Association)

Space Resources: The Case For Canada

Daniel Sax (Co-Founder and CEO,
Canadian Space Mining Corporation)

In-Space Metal Processing

Gary Calnan (Co-Founder and CEO, CisLunar Industries)

Lunar Ice Mining for Propellant

George Sowers (Professor, Space Resources,
Colorado School of Mines)

Legal Aspects of Asteroid Mining

Christopher Johnson (Space Law Advisor,
Secure World Foundation)

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OffWorld Space Mining – From Earth to the Solar System

Jim Keravala (CEO & Chief Architect, OffWorld)

Relationship Between Space Logistics and Space Mining

Joel Sercel (Space Technologist, Entrepreneur, and Innovator)

Creating Space Infrastructure for the Space Resources Supply Chain

Chris Lewicki (Founder, Interplanetary Enterprises)

Asteroid Prospecting - How to Find the Relatively Rare Valuable Asteroids

Martin Elvis (Senior Astrophysicist, SAO)

Panel Discussion

Closing Remarks

Rand Simberg (Business Development Consultant,
SpaceTech Analytics)



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Rand Simberg (Business Development Consultant, SpaceTech Analytics)



Rand Simberg is a recovering aerospace engineer with over four decades of experience in the space industry, with multiple engineering degrees from the University of Michigan, Ann Arbor and West Coast University in Los Angeles. Since 1993, after over a decade in engineering and management at the Aerospace Corporation in El Segundo, California and with Rockwell International in Downey, California, he has been an entrepreneur and consultant in space technology, business development, regulatory, and market issues relating to commercial and personal spaceflight.

A member of the International Institute of Space Law, he is the author of the highly acclaimed book *Safe Is Not An Option: Overcoming The Futile Obsession With Getting Everyone Back Alive That is Killing Our Expansion Into Space*.

Christopher Johnson (Space Law Advisor, Secure World Foundation)



Christopher Johnson is the Space Law Advisor at the Secure World Foundation, and a Professor of Law (Adjunct) at the Georgetown University Law Center where he co-teaches the Space Law Seminar. He is also a Faculty Member at the International Space University and a Member of the International Institute of Space Law. Mr. Johnson has written widely on space law and policy issues, and represents the Secure World Foundation at the Legal Subcommittee of the United Nations Committee on the Peaceful Uses of Outer Space.

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 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 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.



George Sowers has 30 years of experience in the space transportation field. During a continuous span working for Martin Marietta, Lockheed Martin and the United Launch Alliance, including a stint as the chief systems engineer for Atlas V development, Sowers helped develop more than a dozen launch systems. He recently retired from his position as vice president and chief scientist of ULA, where his team developed an architecture for fully reusable in-space stages fueled by propellant mined, refined and distributed in space. He holds a bachelor's degree in physics from Georgia Tech and a PhD in physics from the University of Colorado. Sowers is a fellow of the American Institute of Aeronautics and Astronautics.

Daniel Sax (Co-Founder and CEO, Canadian Space Mining Corporation)



Daniel Sax is the Co-Founder and CEO of the Canadian Space Mining Corporation. He is an entrepreneur and angel investor, with a deep background in real estate investment, finance, and development, and a strong acumen in both private and public capital markets. He has actively participated in over \$4B of real estate deals across Canada, the USA, and Germany. Previous to CSMC, Daniel founded Sensi Properties, the first cannabis real estate investment company in Canada. Daniel has a passion for bleeding edge industries with high degrees of uncertainty.

He is a Director of Bordeaux Properties, and an Advisor to BIGG Digital Assets (BIGG.CSE), Hive, and Field House. He has a Masters Degree in Real Estate from Cornell University, and a BA in Economics from Dalhousie.

Gary Calnan (Co-Founder and CEO, CisLunar Industries)



Gary Calnan is the Co-Founder and CEO of CisLunar Industries, a space technology startup focused on developing, building, and operating metal foundries in space. In this role, Gary is applying his diverse background in entrepreneurship, capital markets, and corporate finance to building a key component of the emerging cislunar industrial economy. With a BA in Economics from the University of Colorado and a Charter from the CFA Institute, Gary took action with his life-long passion for space by completing the ISU Space Studies Program in 2017 and now strives to help lay the foundation for a sustainable human presence beyond Earth.

John Mankins (Vice President, Moon Village Association)



John C. Mankins is President of Artemis Innovation Management Solutions LLC and of Mankins Space Technology, Inc. He is also Vice President of the Moon Village Association, and serves on the Boards of both the National Space Society and of SPACE Canada. And, most recently has joined the faculty of the on-line Kepler Space Institute.

During his 25-year career at NASA and JPL he held numerous positions, including serving as Chief Technologist for Human Exploration and Development of Space at NASA HQ, where he received the NASA Exceptional Technology Achievement Medal, and managed the \$1B per year Exploration Systems Research and Technology program.

Jim Keravala (CEO & Chief Architect, OffWorld)



Jim is co-founder and Chief Executive Officer of OffWorld, building an industrial robotic workforce to undertake mining, manufacturing and construction on planetary surfaces and in space. The robotic workforce forms a solar system platform that will enable the construction of space based solar power stations, propellant depots and entire settlements.

He brings 30 years of experience and visionary leadership in innovation in multidisciplinary areas such as aerospace engineering, space systems, robotics and machine intelligence, manufacturing and construction, computer science, synthetic biology and molecularly precise control systems. Jim is a prolific technologist and an accomplished entrepreneur able to constantly identify new acceleration ramps in the technological landscape.

Joel Sercel (Space Technologist, Entrepreneur, and Innovator)



Joel Sercel is a proven space technology pioneer and team leader with technical expertise spans space mission design, space propulsion, satellite design, architectural design, and systems engineering. He runs an agile company where young engineers are inspired and empowered to build, test, break, and bust through technical limits and mature innovations at breakneck speed. He has been awarded more of NASA's prestigious Innovative Advanced Concepts (NIAC) funding than anyone else. Joel's PhD is from Caltech in plasma physics and space propulsion. He spent 14 years at NASA JPL where he served in nearly all of the technical roles and conceived the first ion propulsion system used in deep space missions to a comet and asteroids Ceres and Vesta. Sercel served as the founding CTO of Momentus, a space company currently going public through a SPAC, before returning to Trans Astra to fulfill his lifelong dream of working to establish a thriving in-space economy that will offer unbound potential for future generations.



Dr. Martin Elvis is a highly cited astrophysicist (with over 30,000 peer citations) who has used most large space based observatories to publish some 450 papers on supermassive black holes, seen as quasars, out to the edge of the universe. Lately, concerned about the growing cost of space telescopes, he has turned to researching the astronomy needed to enable asteroid mining, with a view to cutting those costs radically. He has published widely on issues related to asteroid mining and the space economy. He is unduly proud that he is (probably) the first professional astronomer to visit the Harvard Business School on business. He obtained his PhD in X-ray astronomy in 1978 in the UK, and has worked at the Center for Astrophysics | Harvard & Smithsonian ever since on a series of space X-ray telescopes, culminating with the Chandra X-ray Observatory. He is a fellow of the American Association for the Advancement of Science, a Member of the Aspen Center for Physics, and is past-Chair of the Hubble Space Telescope Users' Committee and of the High Energy Division of the American Astronomical Society. Asteroid 9283 Martinelvis is named after him.

Chris Lewicki (Founder, Interplanetary Enterprises)



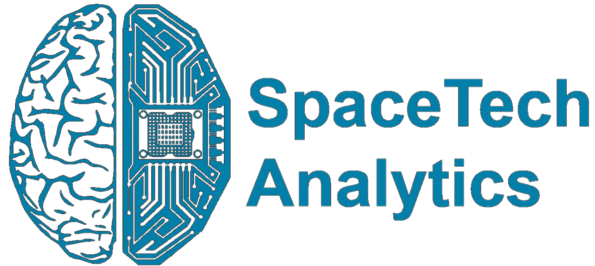
Chris Lewicki is an entrepreneur, engineer and “near-futurist” focused on the economic development of outer space. He is fascinated by exponential technologies, integrating ideas from disparate industries, and creating Space Infrastructure upon which generations of progress can be made. Chris predicts that Space Infrastructure will extend beyond traditional concepts of technology, and will also include new Economic Systems, and new mechanisms for governance of activities beyond Earth. Chris believes that the significant presence of humans in space will only be possible by sourcing raw materials from interplanetary space including asteroids, the Lunar surface and Mars for construction, spacecraft fuel, and life support consumables.

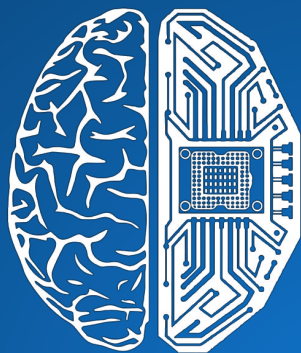
About SpaceTech Analytics

[SpaceTech Analytics](#) (STA) is a strategic analytics agency focused on markets in the Space Exploration, Spaceflight, Space Medicine, and Satellite Tech industries.

The range of activities includes research and analysis on major areas of high potential in the SpaceTech industry, maintaining profiling of companies and governmental agencies based on their innovation potential and business activity, and providing consulting and analytical services to advance the SpaceTech sector.

Our IT-Platform is designed to make key strategic recommendations and guidance regarding space-related technologies and techniques, within the reach of companies, other entities, and nations, in order to assist them in optimizing their action plans and strategies, providing specialized guidelines for business, and investment core decisions.





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