



# Space Generation Fusion Forum 2024

Colorado Springs, Colorado, U.S.A  
April 5-8, 2024



SPACE GENERATION  
ADVISORY COUNCIL

In support of the United Nations Programme  
on Space Applications

c/o European Space Policy Institute (ESPI)  
Schwarzenbergplatz 16,  
TOP 1 1010 Vienna,  
Austria

Space Generation Advisory Council  
5335 Wisconsin Avenue N.W.  
Suite 520  
Washington, D.C. 20015  
USA

[info@spacegeneration.org](mailto:info@spacegeneration.org)  
[www.spacegeneration.org](http://www.spacegeneration.org)

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Compiled by the Reports Team

Dhanisha Sateesh  
Silvia Toro Sima  
Aoibhín Crowley  
Ayushee Chaudhary  
Tatiana Komorná

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## Space Generation Fusion Forum Overview

Held annually at the scenic Broadmoor Resort in Colorado Springs, Colorado, U.S.A., in conjunction with the Space Symposium, the Space Generation Fusion Forum (SGFF) is a multi-day, high-intensity, fast-paced professional development and networking event focused on the global space industry. Students and young professionals from around the world, who are working and participating in all facets of the space community, apply to attend SGFF each year.

Through breakout sessions, expert panels, keynote presentations, and speed networking, SGFF delegates will “fuse” their unique perspectives and backgrounds to formulate solutions to global problems of interest and importance to the space community. By attending SGFF, delegates will learn from each other and from experts, share their knowledge, network with fellow students and young professionals in the space industry, and meet international leaders in the space field.

All output and content produced by the discussions held during the Space Generation Fusion Forum are compiled into a report for the United Nations Committee on the Peaceful Uses of Outer Space. This report is presented at the Committee’s annual General Assembly and at other conferences around the world.





## Organising Team



**Madison Telles**  
SGFF Manager



**Danielle Bierman**  
SGFF Deputy Manager



**Chiedza Banda**  
Delegates Coordinator



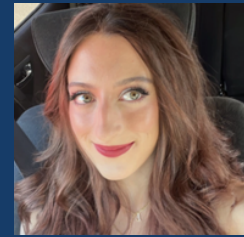
**Fatima Duran**  
Delegates Coordinator



**Rebecca Sutton**  
Delegates Coordinator



**Willca Villafana**  
Delegates Coordinator



**Lily Allen**  
Communications Coord.



**Saheed Oyekunle  
Oyetunji**  
Communications Coord.



**Paulina Valle**  
Communications Coord.



**Andrew Basham**  
Logistics Coordinator



**Alex Drozda**  
Logistics Coordinator



**Alden Findley**  
Logistics Coordinator



**China Hagström**  
Logistics Coordinator



**Michael Barton**  
Programs Coordinator



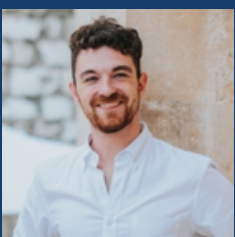
**Esther Deena**  
Programs Coordinator



**Newsha Haghgoo**  
Programs Coordinator



**Abhinav  
Muralidharan**  
Programs Coordinator



**Cody Knipfer**  
Programs Coordinator





## Programme

Friday, April 5th (Mountain Daylight Time GMT -6)

Time	Programme
5:00 PM - 6:45 PM	Garden of the Gods Walk
7:00 PM - 9:00 PM	Welcome Reception at Mash Mechanix Brewer



## Programme

Saturday, April 6th (Mountain Daylight Time GMT -6)

Time	Programme	Speaker / Sponsor
8:30 AM - 9:50 AM	Opening Remarks & Scholarship Presentation	<p>Madison Telles - SGFF Manager</p> <p>Nikol Koleva - SGAC Executive Director</p> <p>Antonio Salmeri - SGAC Chair</p> <p>Heather Pringle - Space Foundation</p> <p>Steve Einsenhart - Space Foundation</p>
9:50 AM - 11:00 AM	Panel: Workforce Development	<p>Ken Davidian - ISU</p> <p>De'Schzunell "DJ" Catlin - Equity Space Alliance</p> <p>Debra Facktor - Airbus U.S.</p> <p>Lee Steinke - CisLunar Industries</p> <p>Will Pomerantz - Brooke Owens Fellowship &amp; Patti Grace Smith Fellows</p>
11:00 AM - 1:40 PM	Lunch Keynote	Holly Highfill - Slingshot Aerospace
	Lightning Talk	Kevin Coggins - NASA Space Communications and Navigation (SCaN)
	Fireside Chat: AI in Space	<p>Dr. Joe Morgan - Aerospace Corporation</p> <p>Matthew Popplewell - Advanced Space</p>
1:40 PM - 3:50 PM	Breakout Session SMEs	



## Programme

Saturday, April 6th (Mountain Daylight Time GMT -6)

Time	Programme	Speaker / Sponsor
3:50 PM - 6:00 PM	Panel: Space Partnerships	Alvin Leung - USSF Jennifer Ross - InterVallo, LLC Matt Shieh - Canopy Aerospace
6:00 PM - 6:05 PM	Closing Remarks	Madison Telles - SGFF Manager
6:30 PM - 10:30 PM	Reception at the Phantom Canyon Brewery	Sarah Schellpfeffer - Northrop Grumman
	Keynote/Fireside Chat	



## Programme

Sunday, April 7th (Mountain Daylight Time GMT -6)

Time	Programme	Speaker / Sponsor
8:45 AM - 9:10 AM	Opening Remarks	Danielle Bierman - SGFF Deputy Manager
9:10 AM - 10:15 AM	Panel: News & Media	Sabrina Steele - Aerospace Corporation Sandra Erwin - SpaceNews Joey Roulette - Reuters Paula Trimble - Space Development Agency
10:15 AM - 11:45 AM	Breakout Session SMEs	
11:45 AM - 1:20 PM	Lunch Keynote	Dr. Kris Lehnhardt - NASA Human Research Program
1:20 PM - 1:50 PM	Breakout Session Outbriefs	
1:50 PM - 4:20 PM	Lightning Talk	Vanessa Clark & William Kowalski - Atomos
	Panel: Regulatory & Policy	Clay Mowry - IAF Julie Kearney - FCC Antonino Salmeri - Lunar Policy Platform John Sloan - FAA-AST Janice Starzyk - NOAA Office of Space Commerce



## Programme

Sunday, April 7th (Mountain Daylight Time GMT -6)

Time	Programme	Speaker / Sponsor
1:50 PM - 4:20 PM	Panel: Lunar Activities	<p>Jackie Schmoll - Northrop Grumman</p> <p>Alison Dufresne - ispace</p> <p>Lakiesha Hawkins - NASA Moon to Mars Program</p> <p>Trent Martin - Intuitive Machines</p>
4:20 PM - 6:00 PM	Speed Networking Session	<p>Aerospace Corporation</p> <p>Airbus U.S.</p> <p>Astroscale</p> <p>Lockheed Martin</p> <p>Northrop Grumman</p> <p>SGAC</p> <p>Stoke Space</p> <p>Vast</p>
6:00 PM - 6:40 PM	Closing Remarks & Speed Networking Reception	Danielle Bierman - SGFF Deputy Manager
7:00 PM - 8:45 PM	Yuri's Night at Cheyenne Mountain Resort	



## Programme

Monday, April 8th (Mountain Daylight Time GMT -6)

Time	Programme	Speaker / Sponsor
7:55 AM - 8:20 AM	Opening Remarks	Madison Telles - SGFF Manager
8:20 AM - 10:55 AM	Fireside Chat: Spaceflight Operations	USSF Col (Ret) Chad Davis - Stellar Solutions Scott Stover - NASA
	Lightning Talk	Ariane Cornell - Blue Origin
	Panel: Heads of Agency	Aarti Holla-Maini - UNOOSA Dr. Josef Aschbacher - ESA Dr. Paul Bate - UKSA Lisa Campbell - CSA Jonathan Hung - OSTIn Enrico Palermo, ASA
10:55 AM - 11:15 AM	SGFF Closing Remarks	Madison Telles - SGFF Manager Danielle Bierman - SGFF Deputy Manager

## Side Event Activities

5th April 2024

### **Garden of the Gods Walk** 5:00 PM - 6:45 PM

An optional casual hike led by the SGFF team for delegates who arrived early into Colorado Springs. The hike took place in the stunning scenery at the Garden of the Gods Natural National Landmark in Colorado Springs, Colorado.

### **Welcome Reception** 7:00 PM - 9:30 PM

Upon arrival in Colorado Springs, delegates were welcomed by a welcome reception at Mash Mechanix Brewery. There, they had the opportunity to network, get acquainted with the Colorado Springs area, and connect with one another in an informal setting before the first day of the conference.



Sponsored by:



**Reception at the Phantom Canyon Brewery** 6:30 PM - 10:30 PM

Sarah Schellpfeffer, Sector Vice President and Chief Technology Officer at Northrop Grumman, opened Saturday's reception with a welcoming address. The evening continued with dinner, drinks, and networking at Phantom Canyon Brewery, highlighted by a fireside chat featuring the three SGFF 2025 Northrop Grumman scholarship winners. Each scholar developed and posed thoughtful questions to Sarah about her role and leadership approach as a Sector CTO, as well as her career journey.



## Side Event Activities

7th April 2024

Sponsored by:



### Yuri's Night at Cheyenne Mountain Resort 7:00 PM - 8:45 PM

Yuri's Night at the Cheyenne Mountain Resort was a fun-filled evening celebrating space exploration on the eve of the Total Solar Eclipse. Featuring astronaut meet-and-greets, interactive activities, food, and a silent auction, the event supported Space Foundation's STEAM education programs.



## Breakout Session 1: NASA



### NASA Exploration: Moon to Mars Objectives

#### Supported by:



Participants in this breakout session used NASA's Moon to Mars Objectives in an engaging mission planning simulation that mirrored NASA's Architecture Concept Review process. Delegates experienced firsthand the challenges of developing a mission architecture in a dynamic environment involving diverse scientific, engineering, and political stakeholders. By considering the balance between technical requirements, hardware elements, and mission goals, the group gained a deeper understanding of the benefits of architecting based on clear objectives and evaluating various perspectives prior to executing capabilities development.

The findings from this breakout session will help inform NASA's architecture development process by providing insights and perspectives from the next generation of space leaders.

#### Main Objectives

1. Based on your experience with these simulations, what recommendations would you make to NASA?
2. What are different strategies to incorporate technical discussions into policy-making decisions?

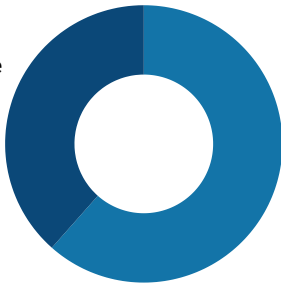


## Statistics

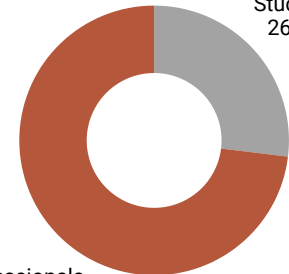


**26** Delegates  
**9** Nationalities

Female  
38.5%



Male  
61.5%



Students  
26.9%

Young Professionals  
73.1%

## Subject Matter Experts



**Amelia Batcha**  
Deputy Project Manager to  
the NASA Docking System  
Block 2 (NDSB2), ESDMD |  
NASA



**Ashley Peter**  
Technical Integration  
Manager, Moon to Mars  
Program Office, ESDMD |  
NASA



**Ruth Siboni**  
Chief of Staff, Moon to  
Mars Program Office,  
ESDMD | NASA



**Deboshri Sadhukhan**  
Former Executive Officer to  
the Deputy Administrator |  
NASA

## Rapporteurs



**Andrew Basham**  
Commercial Programs  
Manager | Intelsat; GWU  
Space Policy Institute;  
SGAC



**Willca Villafana**  
Computational Research  
Associate | Princeton  
Plasma Physics Laborator;  
SGAC



## Questions

1. What were the biggest challenges your community group and the larger working group dealt with in defining your mission profile?
2. What tools and skills were required to achieve most or all of your mission objectives?
3. What did you learn by taking part in the simulated mission definition process that you wish the wider human spaceflight community and new entrants to aerospace knew?

## Answers

1. During the simulation, an early challenge was deciding whether the architecture should prioritize speed or sustainability. The consensus leaned toward sustainability, which was seen as more favorable than speed, as it fostered greater partnership opportunities with other countries and private entities, contributing to long-term success. Participants noted that it was also challenging to balance competing priorities within and between the scientific, engineering, and national leaders, especially with limited insights into others' objectives. Finding ways to improve information sharing and collaboration between communities in an iterative process helped better understand trade-offs and make compromises between different objectives, technologies, and scientific experiments. Diverse perspectives are essential for optimizing financial expenditure.
2. Simulation participants noted the importance of administrative, accounting, and communications skills, especially the ability to optimize a budget and model costs. Iteration and flexibility were also noted as important tools as they allowed for the mission architecture to evolve as more information was shared between the communities. Participants noted that communication skills and a willingness to compromise are key, but also pointed out that they must be built upon a foundation of empathy for others involved in the architecture process who may have different perspectives.
3. Participants agreed that the simulation helped them to understand why it is so important to begin with a common mission and vision statement which underpins the remaining work to develop a mission architecture. This big picture view must be widely communicated and have team buy-in. Participants also realized that while compromise is required, there does not have to be "winners" and "losers" if the larger team shares and is working towards a common vision. Participants stated that there is more than one right answer, and if a program is built with sustainability in mind, there will be additional opportunities to achieve more diverse science and technology goals.



## Recommendations

### Question 1

**Conclusions/Recommendation #1:** The UN should develop a standardized public domain digital template for open sharing of lessons learned, devices, techniques, and state-of-the-art development and operations practices for mitigating future orbital debris. This internationally aggregated data repository should continuously inform standards and techniques focused on mitigating as well as removing space debris.

### Question 2

**Conclusions/Recommendation #1:** Building a successful mission architecture requires hard conversations about vision, priorities, costs, and trade-offs. When decisions are made, we should communicate the reasons behind these decisions as clearly as possible, both internally and externally. This helps the different communities within NASA as well as outside partners better understand how even a decision which they may not agree ultimately supports a shared overarching vision.

**Conclusions/Recommendation #2:** NASA should iterate the mission architecture regularly to respond to political, economic, and technological shifts. Some examples of this would be new commercial capabilities, new science priorities, new lunar data collected by international partners, and revised national posturing requirements based on international actions.

### Question 3

**Conclusions/Recommendation #1:** NASA should be willing to strategically de-scope certain technologies, experiments, or goals when timelines are a priority – it may be preferable to plan for smaller missions over a longer period of time than a few missions which may face delays due to readiness challenges with a few components.

**Conclusions/Recommendation #2:** NASA should establish clear demand signals to indicate to US private industry and our international partners where gaps in the mission elements exist so that they can develop those capabilities to support the mission goals.



## Breakout Session 2: Redwire



### Enhancing the Resiliency of our Space Assets

#### Supported by:



We have entered an era where space is increasingly contested yet integral to our daily lives and warfighter operations. This breakout session focused on brainstorming strategies for safeguarding and fortifying our invaluable space assets. Topics discussed included cybersecurity, AI/ML, power systems, redundancy and proliferation, remote sensing, and space situational awareness.

#### Main Objectives

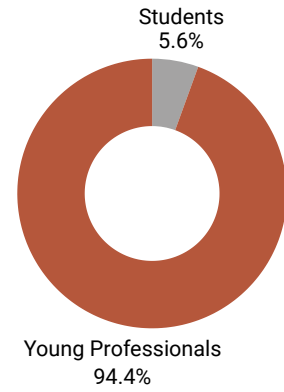
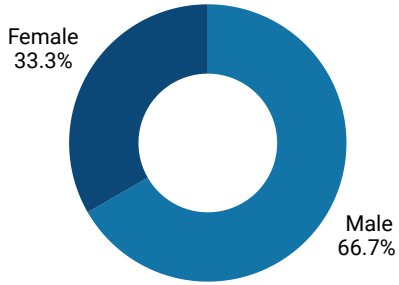
- 1.Space infrastructure is critical to humanity and daily life, supporting essential functions such as communication, navigation, and safety. To ensure the sustained and continued use of outer space as a resource and to protect existing investments building resilience also promotes responsible stewardship.
- 2.Protect continued, sustainable open access to all current & future space faring nations and ensure continued freedom of action.
- 3.The presence of threats highlights the need to improve the adaptability of space infrastructure to stress and its ability to recover from changes.



## Statistics



**18** Delegates  
**5** Nationalities



## Subject Matter Experts



**Dean Bellamy**  
Executive Vice President,  
National Security Space |  
Redwire



**Mitch Ledbetter**  
Associate Director,  
National Security Space |  
Redwire

## Moderator



**China Hagström**  
Phd Candidate at the  
Laboratory for Aviation and  
the Environment | MIT



## Questions

1. How to improve launch and ground operations while maintaining assured access to space for all?
2. How can we address common policy challenges, atmospheric impacts, equity, and global collaboration while continuing launch and space missions?

## Answers

1. Launch and ground operations should implement common standards for cyber exchanges, along with enforced orbit diversity, in-plane phasing, and terrestrial ground diversity. Communication systems require effective spectrum management to ensure equitable access, as well as standardized encryption protocols and support for cloud-based data processing. Assuring access to space also means workforce equity and a need for a global summit.
2. Space missions require improved space traffic management, a central traffic management system, shared ephemeris, and coordinated responses between operators. The space environment must also adapt with radiation hardened hardware and policy surrounding propulsion and maneuverability requirements.

## Recommendations

### Question 1

**Conclusions/Recommendation #1:** Common spectrum standards and a global summit will allow for technical excellence and continued equitable access to resources.

### Question 2

**Conclusions/Recommendation #1:** Space traffic management and maneuvering regulations will address space launch impacts and allow for equitable use of space real estate.



## Breakout Session 3: Lockheed Martin



### Lunar Infrastructure Roadmap

#### Supported by:



Lockheed Martin's SGFF Working Group this year focused on designing a Lunar Infrastructure Roadmap. This roadmap should explore different aspects of a lunar infrastructure and how they are going to need to develop. The working group began by defining the 'infrastructure' in question – the facilities, frameworks, and resources needed to build and maintain a lunar-based economy. The main high-level stakeholders in this economy were identified as state/government actors, the commercial sectors (space and non-space), and international cooperation entities (UN, NGOs, etc). Main necessities were pinpointed for each stakeholder, and the overlap was assessed to determine the first steps in the infrastructure roadmap. From a facilities standpoint, the first steps will be to build up the municipal and transportation framework, including power, roads, waste, and communications. From a policy standpoint, we agreed in the fundamental necessity of an overarching governing body, (eg. United Moon), and discussed in detail the roles of this governance. Our recommendations fall into near-term and long-term actions; establishing the governing body, creating a white paper assessing current international treaties, and providing a detailed capability map for industry and state technical provisions.

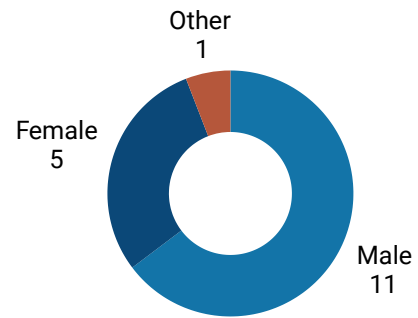
### Main Objectives

1. Define the 'infrastructure' pertaining to the lunar economy
2. Define the stakeholders involved in building and maintaining the lunar infrastructure
3. Define first steps in the roadmap and current actions to take

## Statistics



**16** Delegates



## Subject Matter Experts



**Luis Carrilo** | Chief Architect of the Lunar Exploration Campaign | Lockheed Martin Space



**Sean O'Dell** | Orion Spacecraft Architect | Lockheed Martin

## Moderator



**Rebecca Sutton** | Mission Manager | Rocket Lab



## Questions

1. What is the role of the international community? How can international cooperation be increased through the roadmap?
2. How do commercial and government entities fit into the roadmap, and how can aspects of the infrastructure transition between the two?

## Recommendations

### Question 1

**Conclusions/Recommendation #1:** Create an international governance body, similar to the United Nations (United Moon). It is possible this could start as a subcommittee of the UN and be transitioned to an external entity.

**Conclusions/Recommendation #2:** Publish a white paper assessing current international treaties (Law of the Seas, Antarctic Treaty) to pinpoint gaps and failures in the current frameworks. This should be used to inform the development of policy and regulatory aspects of a lunar infrastructure.

**Conclusions/Recommendation #3:** Utilize this governance body to facilitate the transition of power between government/state actors and the commercial sector. Create the framework such that the transition to the commercial sector can be a mechanism for creating co-dependence between state actors

### Question 2

**Conclusions/Recommendation #1:** Each country involved should make a detailed capability map showing the specific technological assets they can bring to the lunar economy. Each capability map should not be exclusive to space, and include all industries.



## Breakout Session 4: SGAPP



### Space Sustainability - Space Generation Advocacy & Policy Platform

#### Supported by:



We are excited to organize a breakout session that focuses on the implementation of specific policy positions on Space Sustainability in accordance with the Intergenerational Pact for Space Sustainability (IPASS). The IPASS report focuses on the following key areas of prioritization for Space Sustainability: Space Debris, Mega-constellations, Dark and quiet skies, Challenges beyond Earth's Orbit, and Law and Policy Frameworks. For the purpose of this breakout session, we encourage the adoption of an international lens, asking: who are the community contributors when considering Space Sustainability? Are our current approaches for industry and government collaboration supporting or undermining national, regional, and global space stewardship? What are achievable and measurable accountability mechanisms that can help us design appropriate policy for the growing space industry?

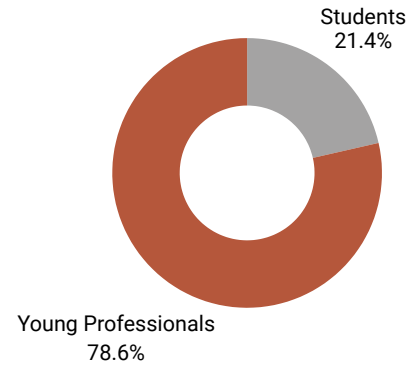
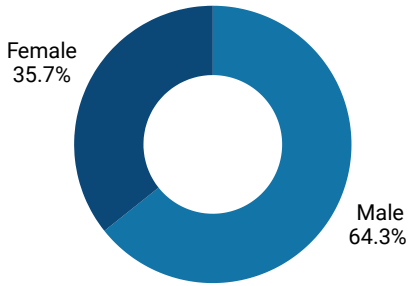
### Main Objectives

1. Provide the delegates with an opportunity to assess and provide recommendations on the implementation of specific policy positions for Space Sustainability in accordance with the Intergenerational Pact for Space Sustainability (IPASS).

## Statistics



**14** Delegates  
**5** Nationalities



## Subject Matter Experts



**Cari Reinert**  
Programs and Webinars  
Lead | NCAC Task Force



**Kyrn Ambs**  
Communications Lead |  
NCAC Task Force

## Moderator



**Rachel Venn**  
Junior Space Policy Officer  
| Astroscale



## Questions

1. Who are the community contributors when considering Space Sustainability?
2. Are our current approaches for industry and government collaboration supporting or undermining national, regional, and global space stewardship?
3. What are achievable and measurable accountability mechanisms that can help us design appropriate policy for the growing space industry?

## Answers

1. The current and future stakeholders that the delegates identified as most critical include:
  - National **state actors** that have an interest in preserving national security and international relations through space
  - **Incumbent commercial space operators** that design, test, own, operate, and rely on space assets
  - Countries with **nascent and emerging capabilities** in space and their potential for participating in the space landscape
  - Youth and **future generations** who will inherit the space landscape
  - **Local and regional communities** with professional, cultural, historical, and social relevance in the night sky
  - **Local and regional communities** affected by launch activities
2. Our current approaches do not take into account space stewardship as we currently do not have any united space sustainability definition that space stakeholders agree on. For example, currently, the FAA only requires that LEO satellite operators burn up in the atmosphere after 25 years. Starlink only voluntarily has made their satellites darker. Both of these examples are not enough to ensure dark skies and making sure space debris in LEO is not a problem in the future. There are many other examples in other areas of space sustainability.
3. First, we must define what space sustainability means in order to measure it. We propose the following definition: Space sustainability is the ability for all actors, present and future, to access and use space. Once this definition is adopted and refined, policies could be proposed that are achievable and measurable. Some of these mechanisms include:
  - Ensuring satellite operators dispose of satellites in a reasonable amount of time after they are no longer used. Metrics collected could include how long the satellite was in operation and how long it took the satellite to be deorbited.
  - Ensuring satellite operators prevent their satellites from being excessively bright to ensure some semblance of dark skies. Metrics collected could include how reflective each individual satellite is.
  - Launch operators pay taxes to local regulatory agencies to ensure safe skies, oceans, and atmospheres while operating
  - Have standardized communication mechanisms for operators to share ephemeris to prevent in space-collisions



- Financial commitments to:
  - Invest in sustainability launch, build, and deployment technologies
  - Debris capture technologies
  - Enabling developing countries to leapfrog to more sustainable practices in space
- Another metric is year over year, how many orbital areas and spaces are occupied.

## Recommendations

**Conclusions/Recommendation #1:** The Space Generation Advisory Council recommends that SGAC be invited to participate in the development of the “Space 2030” agenda and implementation plan as defined in document A/AC.105/L.31 and represent the voice of the next generation.

**Conclusions/Recommendation #2:** SGAC encourages Member States to include young professionals in their delegations at the Committee and its Subcommittees and highlight the importance of engaging the next generation to reach the Sustainable Development Goals.

**Conclusions/Recommendation #3:** SGAC should be invited to actively participate in action teams, working groups, and other forums in leading roles that will deliver on the “Space 2030” Agenda.

**Conclusions/Recommendation #4:** SGAC supports the Office’s Space for Women initiative, and encourages the Office and the Member States of the Committee to further support the appointment of “Space for Women Ambassadors” as recommended in the Report on the United Nations Expert Meeting on Space for Women (A/AC.105/1163), and to include in this initiative private sector and international representatives.

### Recommendations to the Space Generation Advisory Council and the United Nations Committee on the Peaceful Uses of Outer Space

- The Space Generation Advisory Council recommends that a definition of space sustainability is created that is executable, achievable, and measurable.
- The Space Generation Advisory Council recommends that a metric to monitor the progress of sustainability among actors is created to serve as a baseline for future decision making.
- The Space Generation Advisory Council recommends the creation of a roadmap for the implementation of enforcement mechanisms to promote space sustainability as a consensus of stakeholders.

### Recommendations to the Sponsor(s)/Partner(s) and/or the Industry at large

The Space Generation Advisory Council suggests the industry at large should embrace good behavior that promotes global space sustainability including: respecting dedicated orbital spaces, designing and implementing proactive deorbit plans, embracing ephemeris transparency, and adopting future space sustainability policies and guidelines.



## Breakout Session 5: SGAPP (virtual)



### Responsible Space Behavior

#### Supported by:

The goal of this breakout session was to explore the definition and application of the concept of “responsible behaviour” as applied to space activities. The definition of what constitutes “responsible behaviour” is a complex one, and the official definition remains in debate. As an aid to this discussion, and subsequent implementation, this breakout group proposes that effects on the space operational environment due to human activities be divided into various domains. These domains encompass component areas of the operational environment which have similar requirements for operation; atmospheric, exo-atmospheric, and planetary. Negative effects of human activity on these domains may then be analyzed for root cause factors, such as the ability or inability for a spacecraft to maneuver, to find what primary elements impact the potential for a space mission to have a negative affect on the operational environment. These “Elements of Responsibility” may then be assembled into a “Space Traffic Footprint”, to give space actors a method for evaluating their proposed space missions in light of goals for responsible behaviour in space; a single document encompassing all known negative effects of human activity in space, and what primary factors cause those negative effects.

#### Main Objectives

1. Define ‘responsible behaviour’ in space operations.
2. Define a framework that this definition could be converted into to be useful for answering whether specific activity is responsible or not.
3. Propose a method of populating that framework so that it may be used as a tool for evaluating space operations.

#### Questions

1. Does an understanding of responsible behaviour in space require a consideration of the complete footprint of the activity?
2. What domains are included in a complete space traffic footprint and what elements might be included in those domains?
3. What interconnectivity can we highlight in order to make sure that we are properly bounding such a footprint?



## Subject Matter Experts



**Clemence Poirier** | SGAPP



**Alex Drozda** | Cislune |  
Mechanical Engineering  
Consultant

Moderator



**Fatima Duran** | Gilmore Space  
Technologies | Systems  
Engineer II

Moderator



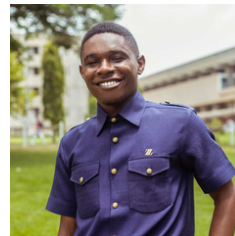
**Newsha Haghoo** | SGAC |  
Project Team Lead

Moderator

## Rapporteurs



**Liza Fust** | Kall Morris Inc |  
Director of Operations



**Jake K. Yawson** | Pisces  
Aviation Limited | Senior  
Safety Officer



**Patrick Capaldo** | Airbus |  
Machine Learning Software  
Engineer



**Trevor Owen** | Lockheed  
Martin | Guidance, Navigation,  
and Control Engineer



**Paige Owen** | St. Thomas  
University | J.D. Candidate



## Answers

1. Yes, understanding responsible behavior requires consideration of the complete space traffic footprint because it encompasses both the indirect and direct impacts of the entire lifecycle of space missions and operations. This approach ensures that all relevant environmental, social, political, economic, security, and ethical dimensions are taken into consideration. While there is no universally accepted definition, responsible behavior in outer space can be defined as those space activities aimed at “maintaining a peaceful, safe, stable, secure and sustainable outer space environment”. Responsible behavior in outer space is a challenging and subjective concept as States can decide, define, and re-define what behaviors can be considered as responsible or not.
2. The domains that comprise the space traffic footprint can be categorized as atmospheric - land, sea, and air - and exo-atmospheric - orbital, cislunar - and planetary - lunar, martian, etc. These domains are engaged from prelaunch through to mission end, with possible elements including debris, infrastructure, chemical leakage/spillage, spectrum allocation, lifetime extension, data sharing, space manufacturing, reuse & recycling, launch vehicle efficiency, economic impact, orbital carrying capacity, and light pollution. The footprint of responsible space behaviour begins with ideation in the atmospheric master domain, continues into operation in the exo-atmospheric master domain, and is detailed through elements across all domains.
3. Interconnectivity in these domains includes many elements, which can be simplified and summarized through root cause analysis to determine primary considerations/risks that must be explored for any space mission to be considered responsible or irresponsible. Such root cause considerations might include controllability (debris mitigation, light pollution), simplicity (fewer components or pieces of debris), or adaptability (lifetime extension, reuse). Determining the root causes for risks in each domain allows a much more straightforward approach to analyzing whether an actor is behaving responsibly.



## Recommendations

### Question 1

**Conclusions/Recommendation:** Determine a definition for responsible activity in outer space which is general enough to be considered a useful working definition by member states, in order to perform the following analyses. It is assumed that desirable decisions by space actors are more likely with the easy availability of relevant information, so the purpose of this definition is not for regulation, but rather for reference.

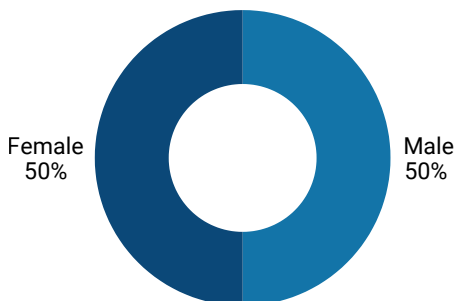
### Question 2

**Conclusions/Recommendation:** This recommendation is to list negative affects of human activity in space into domains, defined within atmospheric (air, land, sea), exo-atmospheric (orbital, cislunar), and planetary (lunar, martian, etc), to best map out elements wherein responsible behavior might be considered in order to be best defined from one domain to another with distinction. These elements could be called Items of Responsibility.

### Question 3

**Conclusions/Recommendation:** Perform root cause analyses on each Item of Responsibility determined from the Recommendation for Question 2, both individually and in the aggregate, to find the factors/risks that principally affect the responsibility or lack thereof for each item. Then develop a reference guide, using those root causes, linked to their respective Items of Responsibility, to provide a planning aid to space actors, so that all relevant considerations are brought together in one document.

## Statistics



22 Delegates

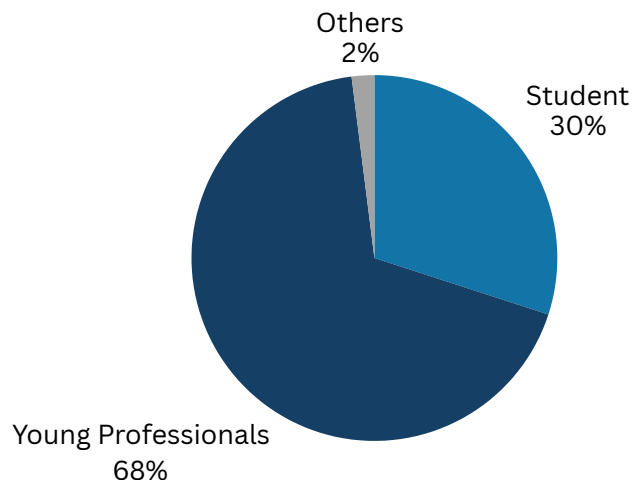
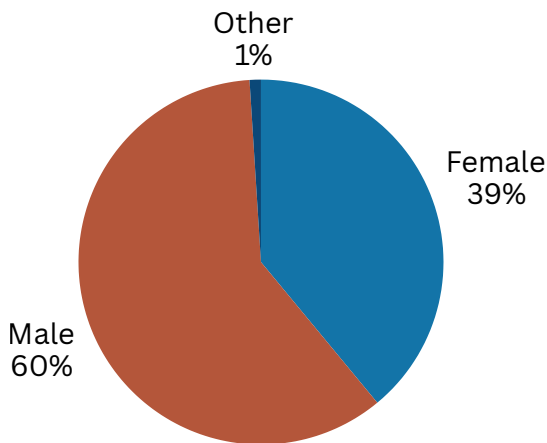
## Event Statistics

**23** Nationalities

**5** Breakout Sessions



### GENDER DISTRIBUTION



### ACADEMIC BACKGROUND OF PARTICIPANTS



## Speakers and Panelists



**Heather Pringle**  
Space Foundation

As CEO of Space Foundation, Heather Pringle leads the world's premier nonprofit organization for the global space community. Founded in 1983, Space Foundation is the preeminent gateway for trusted information, lifelong education, and seamless collaboration for all people and organizations inspired by space, engaging in space exploration and advancing space capabilities. Heather's global leadership, technical expertise and above all, passion for service, advance Space Foundation's mission to strengthen partnerships across government, industry, academia and international allies while developing the space workforce pipeline with future space leaders.

Prior to joining Space Foundation in July 2023, Heather served as the Commander and Technology Executive Officer of the Air Force Research Laboratory, headquartered at Wright-Patterson Air Force Base in Ohio. Her responsibilities included formulating a comprehensive technology portfolio worth \$3 billion that anticipated future warfighter needs for the U.S. Air Force and U.S. Space Force, while promoting risk-taking and problem-solving across a unique and talented team.

As head of international affairs, Steve Eisenhart is principally responsible for the Space Foundation's global strategy and relationships with international space agencies and organizations, foreign embassies and U.S. organizations involved with global space programs. He is directly responsible for the program development and integration of key Space Foundation activities including the annual Space Symposium. He also supervises the Space Foundation's government affairs activities in the Washington, D.C., office including relationships with government agencies, other space advocacy organizations and associations and corporate interests. Since joining the Space Foundation in 1996, Eisenhart has had a broad range of responsibilities, serving as senior vice president of strategic communications, director of communications and public affairs and communications manager. Eisenhart was a military public affairs officer and is a graduate of the United States Military Academy at West Point.



**Steve Eisenhart**  
Space Foundation



**Dr. Ken Davidian**  
ISU

Dr. Ken Davidian was appointed as VP of North American Operations at ISU in 2022. Prior to that he spent 14 years working for the FAA's Office of Commercial Space Transportation, 20 years at NASA (Lewis/Glenn Headquarters) and 5 years in private industry/academia. Currently, Davidian is the Editor-in-Chief of the New Space journal, serves as an Adjunct Professor for Virginia Tech's Pamplin College of Business, and is owner of Impossible Research LLC. Davidian is an Associate Fellow of the AIAA, a Full Member of the International Academy of Astronautics, and is internationally active as an officer or advisor on multiple committees and groups. Davidian received a BS degree in Aeronautical and Astronautical Engineering (Ohio State University, 1983) and an MS degree in Mechanical Engineering (Case Western Reserve University, 1987). In 2018, Davidian received a doctorate in Business Administration (University of Cape Town – Graduate School of Business) with a focus on market-level organizational change, innovation, and space market emergence.



De'Schzunell studied Applied Physics at Morehouse College, received his B.S. degree in Electrical Engineering from the University of Antelope Valley, a Master of Global Management with a concentration in Space Leadership, Business, and Policy at Thunderbird School of Global Management, and a Certification in Venture Finance from UC Berkeley School of Law. He is COO and Co-Founder of Equity Space Alliance. At NASA he worked to create a Black Employee Resource Group and has led teams in Aerospace Research and Development, Earth Science, and Space Science. He has flown on over 50 SOFIA Space Science flights and took part in the mission that discovered water on the sunlit surface of the moon. Outside of NASA he works as an advocate for education in STEM at local schools and socio-economic empowerment through his work in the community.



**De'Schzunell "DJ" Catlin**  
Equity Space Alliance



**Debra Facktor**  
Airbus U.S.

Debra Facktor is the Head of U.S. Space Systems for Airbus U.S. Space & Defense, Inc. As such, she is responsible for managing the two businesses within U.S. Space Systems: National Security Space and Space Exploration. Debra is also on the board of Airbus OneWeb Satellites, a joint venture operating a state-of-the-art satellite manufacturing facility. Prior to joining Airbus U.S., Debra was Vice President and General Manager of Strategic Operations for Ball Aerospace, leading the company's Washington DC operations, strategic development, and marketing and communications. Her extensive business experience includes serving as President and Owner of AirLaunch LLC, and as Vice President of Business Development and Strategic Planning for Kistler Aerospace Corporation. Debra is actively engaged as an advisor and mentor in the aerospace community and is a fellow of the American Institute of Aeronautics and Astronautics (AIAA) and the American Astronautical Society (AAS). Debra received her bachelor's and master's degrees in aerospace engineering from the University of Michigan and is an alumna of the International Space University summer session program in Strasbourg, France.

Lee Steinke is the Chief Operating Officer at CisLunar Industries, a venture-backed company developing hardware for in-space metal processing and power conversion to enable key emerging space capabilities. She also served as Interim COO of Orbit Fab during a leadership transition for the satellite refueling company and in various strategic and front-facing roles with Space Foundation and Foundation for the Future. As a partner to the United States Space Force and NewSpace Nexus, Lee led the Space Futures Workshop with Industry to explore commercial views on the future of space and document the implications of those views for national security. She has performed as an executive on contracts for NASA, Space Force, AFRL, DIU, DARPA, CASIS/ISS-National Lab, and commercial customers. Lee is well published on a variety of topics and is a sought-after speaker who has been featured on the TEDx stage. She has served on various Advisory and Review Boards, including for Canopy Aerospace, the State of Colorado, and the Rocky Mountain Association of Geologists.



**Lee Steinke**  
CisLunar industries



**Will Pomerantz**  
Brooke Owens and  
Patti Grace Smith  
Fellowships

Will Pomerantz is an aerospace executive with two decades of experience in the entrepreneurial and non-profit sectors. He currently serves as the Head of Space Ventures at AeroVironment, where he leads the team that build the Collier-Trophy winning Mars Ingenuity helicopter in partnership with NASA JPL. In that role, Will leads the new space business unit within the company’s MacCready Works Advanced Solutions division as they develop the Mars Sample Recovery Helicopters and other future missions. Prior to joining AeroVironment, Will served as Vice President for Special Projects and Employee #001 at Virgin Orbit, Vice President for Special Projects at Virgin Galactic, and Senior Director of Space Prizes at the XPRIZE Foundation, among other roles. He is passionate about ensuring that talented people from all walks of life have the ability to participate in and contribute to the exploration of space. Will is a Co-Founder of both the Brooke Owens Fellowship and the Patti Grace Smith Fellowship, two award-winning mentorship and work experience programs focused on enabling more female, non-binary, and Black undergraduates to pursue successful aerospace careers.

Holly Highfill has a diverse work experience spanning various industries. Holly currently holds the position of Senior Director, Commercial Sales at Slingshot Aerospace, where they have been since April 2023. Prior to this role, they served as the Director of Customer Engagement & Strategy at Slingshot Aerospace from July 2021 to April 2023. Before joining Slingshot Aerospace, Holly was the Chief Executive Officer of Stellatus Solutions LLC, a startup acquired by Slingshot Aerospace in June 2021. Holly also worked as an Innovation Fund Associate at the Polsky Center for Entrepreneurship and Innovation at The University of Chicago in 2020. Additionally, Holly gained valuable experience as a Legal Clerk at Cappello & Noël LLP, a Conflicts Researcher at Paul Hastings, and a Research Assistant at Resolution Economics. Holly's early career includes roles as a Judicial Intern at the U.S. District Court, Southern District of New York, the Superior Court of California, County of Santa Barbara, and as a Tutor/Teaching Assistant and Program Assistant at Santa Barbara City College.



**Holly Highfill**  
Slingshot Aerospace



**Kevin Coggins**  
NASA Space  
Communications and  
Navigation (SCaN)

Kevin Coggins is the Deputy Associate Administrator for NASA’s SCaN (Space Communications and Navigation) Program. He is responsible for the development, acquisition, and management of reliable and cost-effective communications and navigation services to meet NASA and other Government Agency requirements for human and robotic space exploration programs in Earth, Lunar, Mars, and Deep Space. Kevin has served in senior executive roles in industry and the government, including as the Army’s first director of the Assured PNT Cross-Function Team and Direct Reporting Program Manager for PNT. Kevin’s industry experience ranges from senior executive roles at Booz Allen Hamilton, engineering roles across the aerospace and defense industry, and founder of a technology startup.



Dr. Joe Morgan is the Principal Director, Space Enterprise Directorate within the Space Enterprise and Warfighting Division. He leads the Aerospace support to USSPACECOM's operational elements (S4S, NSDC, and CSpOC), USSF/Space Operations Command (SpOC), and USSF/Space Training and Readiness Command (STARCOM). Previously at Aerospace, he helped lead support to the USSPACECOM headquarters, including direct partnership with the command's Chief Data Officer. Dr Morgan has Operations Research/Industrial Engineering degrees from the US Air Force Academy, Arizona State University (MSE), and University of Texas (PhD).



**Dr. Joe Morgan,**  
Aerospace Corporation



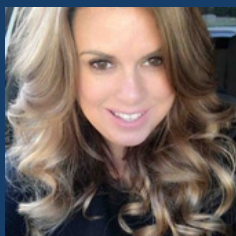
**Matthew Popplewell**  
Advanced Space

Matthew Popplewell is a Staff Astrodynamics and Satellite Navigation Engineer at Advanced Space. He holds a B.S. and M.S. degree in Aeronautical and Astronautical Engineering from Purdue University. His background is in astrodynamics, particularly space traffic management and cislunar dynamics. In his current role, Mr. Popplewell serves as the principal investigator for a NASA SBIR studying the application of machine learning to the space debris and collision avoidance problem. He also is a primary technical contributor for IARPA's SINTRA program, leveraging novel sensor methodologies and machine learning techniques to detect and track small space debris objects. Furthermore, he leads the development of internal Advanced Space reinforcement learning tools.

Alvin Leung is the meshONE-T Technical Lead with the United States Space Force's Civilian Service, Space Systems Command, Enterprise Corps, Los Angeles Garrison, Los Angeles AFB CA. Alvin developed architectures for the space launch ranges at the 30th and 45th Space Deltas and for the Satellite Control Network (formerly AFSCN). Previously, Alvin spent over 10 years at Boeing in various engineering and business development roles, designing satellite communications systems and integrating avionics on the International Space Station. Alvin completed his MBA and MS in Systems Engineering from the University of Southern California (USC), and his BS in Electrical Engineering from the University of Texas at Austin. A lifelong aviation and space enthusiast, Alvin is an Eagle Scout and licensed private pilot.



**Alvin Leung**  
United States Space  
Force



**Jennifer Ross**  
InterVallo

Jennifer Ross acts as CEO and Executive Acquisition Support to the Space Systems Command Commercial Space Office at InterVallo.



**Matt Shieh**  
Canopy Aerospace

Matt Shieh is CSO and Founder of Canopy Aerospace and Defense. Before that, he spent 8 years in the U.S. Air Force as a B-52H Weapon Systems Officer with over 1000 flight hours, including 250 in combat. He also spent time in Europe as a military liaison, developing operational and strategic plans with NATO partners and leading tactical ground teams.

Dr. Lindsay Millard joined the Office of the Under Secretary of Defense for Research and Engineering (OUSD(R&E)) as the Principal Director for Space in September 2020. In this role, Dr. Millard is responsible for leading the Department of Defense's (DoD's) research and engineering efforts needed to assure our space capabilities and maintain our competitive advantage in the space domain. Prior to joining OUSD(R&E), Dr. Millard served as a program manager at the Defense Advanced Research Projects Agency (DARPA) in the Tactical Technical Office where her focus was to enable big capabilities on small satellites. Drawing from her strong technical expertise in satellite systems engineering, remote sensing, sparse-aperture telescopes, astrodynamics, and guidance, navigation, and control (GNC), Dr. Millard successfully turned developmental programs into real capabilities for the United States and demonstrated the potential of rapid space system acquisition by leading a program that took 18 months from contract award to satellite launch.



**Dr. Lindsay Millard**  
OSTP The White House



**Scott Zweibel**  
Stoke Space

Scott Zweibel is Vice President of Government Affairs at Stoke Space, where he applies his 20+ years of experience in government major systems acquisition and his outspoken passion for space industry innovation to drive the company's strategic partnerships forward. Before joining Stoke Space, Scott held the position of Director of Strategic Space Systems Strategy & Business Development at Northrop Grumman Space Systems. Prior to Northrop Grumman, Scott served as a Major Systems Acquisitions Officer and Systems Engineering Technical Advisor helping the nation to deliver critical procurements for space capability across the Department of Defense and Intelligence Communities.

David Buckley Biggs has a wealth of work experience in the field of space technology. From 2009 to 2022, they have held various roles in different organizations. In 2009, they were a Co-Op at NASA - National Aeronautics and Space Administration. In 2010, they were an Undergraduate Research Assistant at Soft Materials Research Laboratory. In 2011, they were an Undergraduate Research Assistant at the University of Michigan. In 2013, they were a Graduate Research Assistant at Stanford Plasma Physics Laboratory, as well as an Internship at NASA Ames Research Center. In 2018, they were a Product Engineer at Lam Research. From 2019 to 2022, they were a Director of Advanced Architectures and Space Systems Architect at Momentus, and is currently the Head of Future Programs at Stoke Space.



**David Buckley Biggs**  
Stoke Space



Sarah Schellpfeffer is Sector Vice President and Chief Technology Officer (CTO) for Northrop Grumman Space Systems sector. In this role, Sarah is responsible for working with Northrop Grumman’s customers to understand their critical mission needs. She also drives the maturation and development of discriminating technologies and architectures across the Space sector and ensures cross domain integration amongst Northrop Grumman’s business areas. Prior to this role, Schellpfeffer was a senior Northrop Grumman Fellow in Northrop Grumman’s Strategic Space Systems division supporting mission architecture and multi-domain operations as a mission/system architect for restricted programs.



**Sarah Schellpfeffer**  
Northrop Grumman



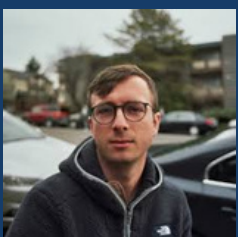
**Sabrina Steele**  
Aerospace Corporation

Sabrina K. Steele is executive director of the Corporate Affairs and Communications Division at The Aerospace Corporation, where she's responsible for leading an integrated, national team of professionals to promote the company as a thought leader across the space enterprise. Steele directs her team’s efforts to address myriad strategic and tactical corporate communications needs, including public and media relations, internal and external communications, and thought leadership and innovation campaigns that support and drive corporate strategy. Through the leadership of the corporation’s brand and reputation programs, Steele oversees the essential task of communicating Aerospace’s role as the nation’s trusted partner, solving the hardest problems for the preeminent space enterprise. She was promoted to her current position in 2014. Before joining Aerospace, Steele was director of communications at Raytheon Space and Airborne Systems in California. She also led marketing communications and served as the deputy corporate spokesperson for Raytheon Company in Massachusetts. Prior to that, she was an award-winning reporter/editor for the Press-Telegram, a Knight-Ridder newspaper in Long Beach, California.

Sandra Erwin covers the military and national security beat at SpaceNews. SpaceNews, established in 1989, is a trusted and independent source of news and analysis of the companies, agencies, technologies and trends shaping the global space industry. Erwin, based in Arlington, Virginia, specializes in Defense Department and Intelligence Community space programs, policy, budgets, technology and the industry that supports this sector. In addition to reporting breaking news, Erwin writes a monthly column “On National Security” that appears monthly in the SpaceNews magazine and edits SpaceNews Military.Space, a weekly news-and-insights newsletter.



**Sandra Erwin**  
SpaceNews



**Joey Roulette**  
Reuters

Joey Roulette is a space reporter for Reuters covering the business and politics of the global space industry, often focusing on space power competition and how commercial interests intersect with international relations. He was part of a team that won the 2024 Pulitzer Prize in national reporting for Reuters' coverage of Elon Musk's business empire. On the space beat for roughly a decade, Joey previously worked for the New York Times, the Verge, and various publications in Florida.



**Paula Trimble**  
Space Development  
Agency

Paula Trimble is Director of Legislative and Interagency Engagement at the Space Development Agency in the U.S. Department of Defense. Now six years old, the Space Development Agency (SDA) is building a space-based architecture to provide next-generation space capabilities to meet the needs of the joint warfighter, leveraging spiral development of a proliferated satellite constellation in low-Earth orbit. At SDA, Ms. Trimble is driving policy solutions to reduce barriers in the acquisition process and enable small businesses and start-ups to work more easily with the federal government. She formulates and leads SDA's congressional engagement strategies in support of the annual defense appropriations and authorization processes, garnering significant increases to the agency's budget to accelerate delivery of missile tracking capabilities for the nation.

Dr. Kris Lehnhardt is a Professor of Emergency Medicine and the Director of Space Medicine at the University of Texas Health Science Center at Houston (UTHealth Houston). Previously, he was an Associate Professor with the Baylor College of Medicine in the Center for Space Medicine and Department of Emergency Medicine, as well as the Element Scientist for Exploration Medical Capability at the NASA Johnson Space Center. He is board-certified in Emergency Medicine in both Canada and the U.S. He works clinically and teaches in the Emergency Department at the busiest Level 1 trauma center in the United States. Prior to these positions, Kris was an Attending Physician and Assistant Professor at The George Washington University (GWU) School of Medicine and Health Sciences.



**Dr. Kris Lehnhardt**  
NASA Human Research  
Program



**William Kowalski**  
Atomos

William is Co-Founder and Chief Operating Officer of Atomos Space, an aerospace company driving innovation in in-space transportation. For eight years, along with his Co-Founder and wife, Vanessa, they have built Atomos from a pitch deck and an idea to a staff of forty that built and launched two satellites in 2024.

Clay Mowry has worked for over 25 years in the commercial launch and satellite sectors serving in government, as the leader of an industry trade association and as a senior executive for leading space companies. Mr. Mowry led the business development team at Voyager Space as Chief Revenue Officer where he was responsible for driving organic growth in the commercial, civil and national security markets. He previously served for five years as Vice President for Global Sales at Blue Origin. His mission was to provide commercial and government customers with safe and affordable commercial space transportation services with the reusable New Glenn orbital and New Shepard suborbital launch vehicles. Mr. Mowry worked for 15 years as the President and Chairman of Arianespace, Inc. As the head of the Arianespace's U.S. subsidiary, he was responsible for managing the company's sales, marketing, strategy, government relations and communications activities.



**Clay Mowry**  
IAF



Julie Kearney is a globally recognized and dynamic lawyer in the technology, satellite, space, and telecommunications field. For more than 25 years, Julie has worked with governments, industries, and the public sector around the world to promote legal and regulatory frameworks and policies that enable life-changing technologies. As the first Chief of the Space Bureau at the Federal Communications Commission (FCC), she represented and spoke for the Chairwoman and Commissioners on satellite and space-based communication matters and represented the Commission at the domestic and international level. Under Kearney's leadership, the FCC unanimously adopted several regulatory frameworks and launched initiatives to successfully advance industry leadership in the New Space Age. Additionally, during her tenure as Chief, the FCC adopted a regulatory structure for Supplemental Coverage from Space, which made the FCC the first regulator in the world to issue a framework for connecting satellites directly to consumer handsets using spectrum previously allocated only to terrestrial service.



**Julie Kearney**  
FCC



**Antonino Salmeri**  
Lunar Policy Platform

Antonino is a globally known space lawyer specialised in the regulation of space resource activities and the governance of the Moon. Antonino has 4 advanced degrees in law, including a PhD, and is the author of leading publications in the field of space law.

John Sloan is a Senior Space Policy Analyst and Program Lead for International Outreach at the U.S. Federal Aviation Administration's Office of Commercial Space Transportation (FAA/AST). Since joining the FAA in 2001, he has provided industry and policy analysis including representing the Department of Transportation in White House-interagency deliberations on the National Space Policy (2006 and 2010) and the National Space Transportation Policy (2004 and 2013). From 2001-2008, he led the preparation of FAA's annual commercial launch demand forecasts and was a contracting officer technical representative. In 2008, Mr. Sloan established an FAA strategy for international commercial space transportation outreach including the international promotion and adoption of FAA regulations.



**John Sloan**  
FAA-AST



**Janice Starzyk**  
NOAA Office of Space  
Commerce

Janice Starzyk is the Deputy Director of the Office of Space Commerce, a Senior Executive Service position. Previously, she led Virgin Orbit's Washington, DC, office and government operations. Her extensive experience and contributions in the space industry include leading the consulting practice at Bryce Space and Technology and more than a decade leading the commercial strategy and market intelligence for launch service providers International Launch Services (ILS) and United Launch Alliance (ULA). At Futron Corporation, Ms. Starzyk worked with a range of civil, military and commercial space industry customers.



Jackie Schmoll is sector vice president, Business Development, for Northrop Grumman Space Systems, a space and launch systems provider serving national security, civil and commercial customers. In this role, Schmoll is responsible for the development and capture of new business, execution of the sector growth strategy and thought leadership to shape market trends. Prior to joining Northrop Grumman, Schmoll was vice president for Requirements and Capabilities for the Space & C2 Systems strategic business unit at Raytheon. She was responsible for developing and executing growth strategies across the U.S. Department of Defense and Intelligence Communities, international and civilian space, and command and control markets.



**Jackie Schmoll**  
Northrop Grumman



**Alison Dufresne**  
ispace

Alison Dufresne is a leader in Spacecraft Systems Engineering, with extensive experience in advancing space technologies. Alison leads the engineering team of APEX 1.0, ispace-US's lunar lander, that is being designed, and will be manufactured and launched from the U.S. Prior to ispace-U.S., Alison led teams through all phases of space technology development programs. Her experience includes design work on intricate missions aimed at soft lunar landings and asteroid mining, as well as hands on experience in labs incorporating and testing propulsion systems and ECLSS for in-space applications. Alison is driven by a passion for cultivating high-performing engineering teams and dedicated to advancing space technology to enable off world habitation, as well as supporting breakthroughs in how we live on Earth.

Lakiesha Hawkins is the Assistant Deputy Associate Administrator for the Moon to Mars (M2M) Program within the Exploration Systems Development Mission Directorate (ESDMD), located at NASA's Headquarters in Washington, D.C. Prior to this role, Hawkins served as the Deputy Manager for the Human Landing System (HLS) Program Office at Marshall Space Flight Center (MSFC) in Huntsville, AL. Hawkins began her NASA career at MSFC in 2010 as a lead systems engineer for the J-2X engine fuel turbopump development and a technical expert in liquid engine component and systems development. As team lead for propulsion dynamic loads and data analysis from 2012 to 2016, she provided leadership and technical direction to the Structural and Dynamic Analysis Branch, giving day-to-day guidance in structural dynamics, system loads, rotordynamics, data acquisition and analysis, vibroacoustics, and shock.



**Lakiesha Hawkins**  
NASA Moon to Mars  
Program



**Trent Martin**  
Intuitive Machines

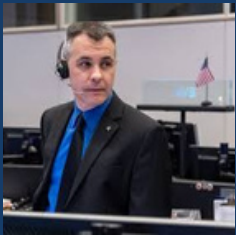
Trent Martin is the Senior Vice President of Space Systems for Intuitive Machines. He has led the development and missions for IM's lunar lander missions, lunar communications relay satellites, lunar surface operations including the Lunar Terrain Vehicle and Hopper, and cis-lunar transfer vehicles for the last 8 years. Mr. Martin has 30 years of aerospace experience working for Lockheed Martin, NASA and IM. At NASA Mr. Martin led the Alpha Magnetic Spectrometer project as well as the Advanced Exploration Systems for NASA Johnson Space Center. In addition, Mr. Martin has worked on both the Space Shuttle and Space Station programs.



Former director of the National Reconnaissance Office’s Office of Space Launch, retired U.S. Space Force Col. Chad Davis, joined defense and intelligence contractor Stellar Solutions in 2022. Mr. Davis has extensive experience in all aspects of spacecraft development and operation from concept definition, contract negotiation, System design, integration and test, launch, and on-orbit operation through satellite end of life. Mr. Davis’ background combines strong hands-on technical expertise with broad experience in program management and team leadership as well as in-depth knowledge of customer and contractor relations, particularly in the Intelligence Community (IC).



**USSF Col (Ret) Chad  
Davis**  
Stellar Solutions



**Scott Stover**  
NASA Office of Flight  
Directors

Scott Stover, based in Alvin, TX, US, is a Flight Director at NASA. Scott Stover brings experience from previous roles at NASA and United Space Alliance. Scott Stover holds a 2001 to 2004 Master’s Degree in Space Architecture from the University of Houston. With a robust skill set that includes Requirements Management, Systems Engineering, Engineering Management, Aerospace, Space Systems and more.

Ariane Cornell is the Vice President of Commercial and International Sales at Blue Origin, where she oversees the business development and strategy leadership for new offerings targeting government, enterprise, and private spaceflight customers worldwide. Prior to joining Blue Origin in 2014, Ariane was based in Vienna, Austria, as the Executive Director of the Space Generation Advisory Council (SGAC) in Support of the United Nations Programme on Space Applications. She headed SGAC’s delegations to international conferences and the United Nations, as well as ran the organization’s operations, business development, strategy, and policy output. Ariane supports the international aerospace community in other capacities and organizations. She has served on the boards of the Society of Satellite Professionals International (SSPI) and Women in Aerospace –Europe. Previously, Ariane worked in international management consulting, first with Accenture based in San Francisco as an analyst and then with Booz Allen Hamilton in Washington, DC as a senior consultant.



**Ariane Cornell**  
Blue Origin



**Aarti Holla-Maini**  
UNOOSA

UNOOSA Director, Ms. Aarti Holla-Maini, maintains responsibility for the Office’s management and administration, provides strategic guidance to its work and ensures that it is implemented in accordance with the mandates of the General Assembly, the Committee on the Peaceful Uses of Outer Space (COPUOS), and the established policies of the United Nations. She develops the work programme of the Office and ensures the Office’s efficiency, transparency and accountability. Ms. Holla-Maini serves as the senior advisor to the Secretary-General and represents the SG at meetings and conferences on matters relating to the peaceful exploration and use of outer space. She also discharges the Secretary-General’s obligations under the UN treaties and principles on outer space.



Born in Austria, Josef Aschbacher studied at the University of Innsbruck, graduating with a Master's and a Doctoral degree in natural sciences. He became a research scientist at the university's Institute of Meteorology and Geophysics from 1985 to 1989.

He began his career in ESA in 1990 as a Young Graduate at ESRIN. From 1991 to 1993 he was seconded as ESA Representative to Southeast Asia to the Asian Institute of Technology in Bangkok, Thailand, where he initiated major cooperation programmes between the EC, ESA and Southeast Asia.

In 2006 he became Head of the Copernicus Space Office, located at ESRIN where he led all activities for Copernicus within the agency and with external partners, in particular the European Commission, before being promoted to Head of Programme Planning and Coordination, where he was responsible for planning ESA's Earth Observation programmes and for formulating and implementing programmatic and strategic decisions across the Directorate.

In 2016, Josef Aschbacher was appointed as Director of Earth Observation Programmes, ESA's largest Directorate, and as Head of ESRIN, ESA's Centre for Earth Observation. Under his leadership, Europe developed the world's leading Earth observation programme, which includes all Sentinel missions as part of the EU-led Copernicus programme, all meteorological missions for Eumetsat and the Earth Explorer, Scout and phi-sat missions developed for ESA Member States. In 2020, a total of 40 satellites were under development and ESA disseminated the world's largest Earth observation data volumes.



**Dr. Joseph Aschbacher**  
European Space Agency



**Dr. Paul Bate**  
UKSA

Dr Paul Bate has been CEO of the UK Space Agency since September 2021. He leads a team of over 300 to boost UK prosperity, understand the Universe, and protect our planet and outer space.

Prior to space, Paul ran global sales at Babylon Health, which floated on the New York Stock Exchange in 2021, and built a consultancy business.

Paul was David Cameron's senior health adviser in Downing Street and led on health targets and finances in Tony Blair's Delivery Unit. Paul holds a PhD in Particle Physics.



Before being appointed as President of the Canadian Space Agency, Lisa Campbell was Associate Deputy Minister, Veterans Affairs Canada, supporting the well-being of veterans and their families and promoting recognition of those who served Canada. Previously, Ms. Campbell was Assistant Deputy Minister, Defence and Marine Procurement, leading the organization procuring Canada’s military and marine equipment. She worked at Canada’s competition authority as Senior Deputy Commissioner reviewing mergers and business conduct. Ms. Campbell also enforced civil and criminal laws for truth in advertising. She has done extensive regulatory work on the collection and trade in data, particularly in emerging business models. Ms. Campbell worked as a litigator in the areas of criminal, employment and constitutional law. She holds a B.A. in political science from McGill University (1988) and an LL.B. from Dalhousie Law School (1991).



**Lisa Campbell**  
Canadian Space Agency



**Jonathan Hung**  
OSTIn

Mr Hung is the Executive Director at the Office for Space Technology & Industry (OSTIn), Singapore’s national space office. OSTIn’s mission is to lead and inspire Singapore in space, to safeguard and progress Singapore’s interests. OSTIn shapes space policies and international partnerships, grows a globally competitive space ecosystem and talent pool, and supports research and development of space capabilities that serve national imperatives. Mr Hung was formerly the Executive Chairman of Singapore Space and Technology Limited (SSTL), Asia Pacific’s leading organisation focused on developing the space technology industry. His international work experience includes senior management roles with CAE Inc., Rheinmetall, ST Engineering and Flex, where he was credited for establishing and leading their successful Advanced Innovation Centre.

Enrico has led the Australian Space Agency since January 2021 from its headquarters in Adelaide. Since his commencement, Enrico has overseen a number of major milestones. Under his leadership, the Agency has reached an agreement with NASA for an Australian-designed, built and operated rover to be included in a future mission to the Moon. The first launch permit and launch facility license under the new Australian Space (Launches and Returns) Act have been issued, and there has been the first commercial launch attempt. Before joining the Agency, Enrico spent 14 years in various roles at Virgin Galactic, including establishing and leading a vertically integrated aerospace manufacturing and testing operation of over 700 engineers, technicians and professionals responsible for the build and testing of a fleet of Mach 3, crewed commercial spaceships. From there Enrico was part of the team that launched the New York Stock Exchange-listed public company and was appointed Chief Operating Officer.



**Enrico Palermo**  
Australian Space  
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