SFA MAGAZINE
SPACE FORCE ASSOCIATION
Issue 12, December 2024
A PUBLICATION OF THE SPACE FORCE ASSOCIATION

SPACE FORCE ASSOCIATION
SPACEPOWER CONFERENCE

Countdown to the Spacepower Conference...

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SPACE FORCE ASSOCIATION

A MESSAGE FROM OUR CEO

WILLIAM WOOLF

Honoring the Space Force Association Members and Guardians,

As we reflect on another remarkable year, I want to extend my deepest appreciation to the members of the Space Force Association and the Guardians of the U.S. Space Force. Your dedication, vision, and innovation have been instrumental in securing America's presence and leadership in space.

This year has brought extraordinary advancements and challenges, and the Space Force has demonstrated unparalleled resolve in overcoming obstacles and pioneering new frontiers. Whether through advancing satellite technology, protecting vital space assets, or developing the next generation of space capabilities, the Guardians' contributions remain indispensable to our national security and the global space community.

The Space Force Association has been pivotal in fostering dialogue, collaboration, and innovation among industry, government, and military leaders. Your unwavering support for the Space Force's mission ensures that Guardians are equipped with the resources, training, and opportunities needed to thrive in this dynamic and essential domain.

As we look ahead, the importance of our shared mission grows ever more critical. Together, we will continue to chart a course toward a secure, sustainable, and thriving future in space

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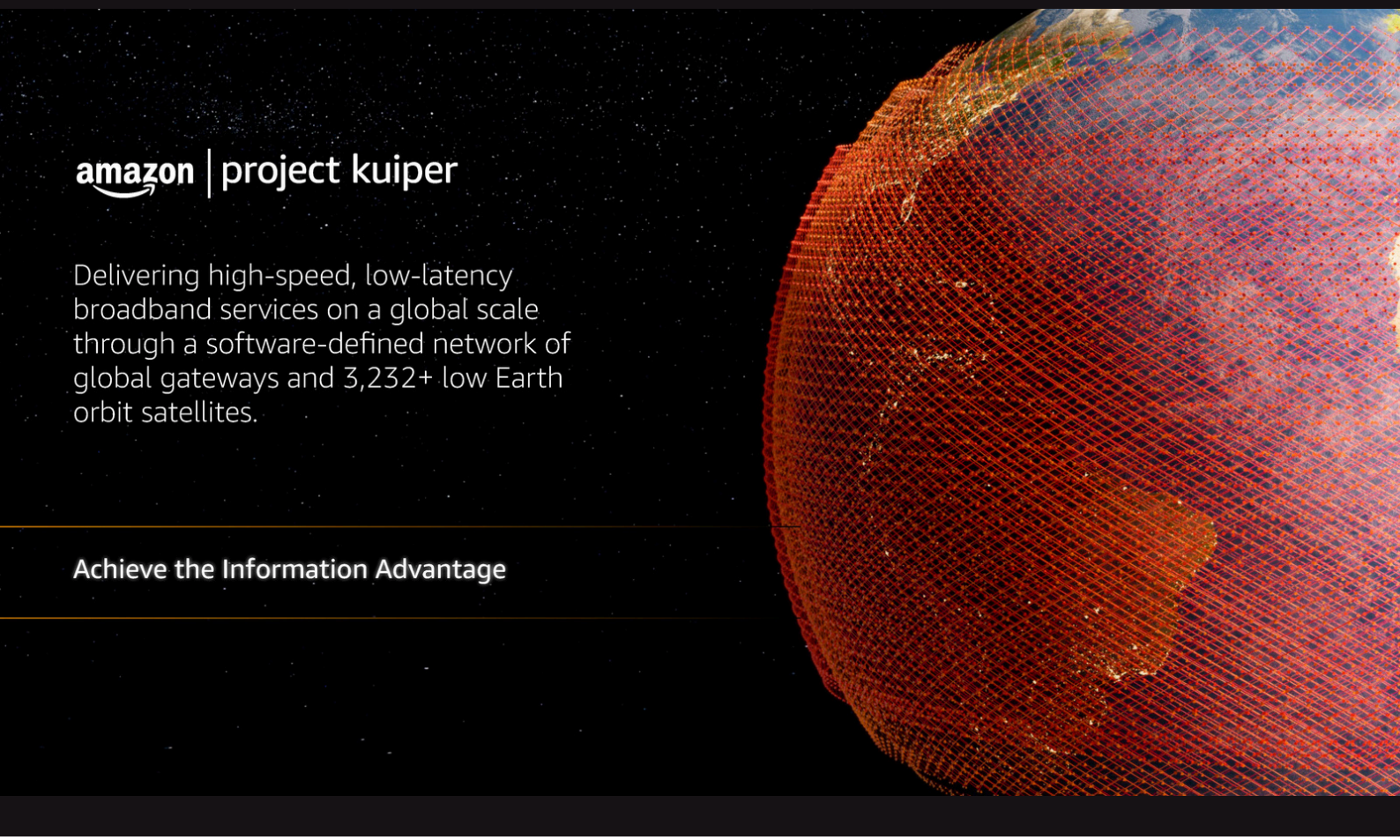
Thank you for your service, your leadership, and your commitment to excellence.

Sincerely,

Bill

William Woolf
CEO & Executive President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LETTER FROM THE SFA MAGAZINE EDITOR

KAREN LAWRIE

SPACE FORCE ASSOCIATION

Dear SFA Members,

As the year wraps up, thank YOU for being a part of the Space Force Association. This past year has been nothing short of remarkable, and that's all because of your passion, commitment, and belief in what we're building together. Whether through your ideas, participation, or support, you've helped us grow into a stronger and more dynamic community, all while advancing the mission of the U.S. Space Force.

From big milestones to small wins, we've accomplished so much together this year. Your dedication has fueled important conversations, supported guardians, and raised awareness about the critical role space plays in our national security. None of this happens without you, and we're incredibly grateful to have you on this journey with us.

Looking ahead, I'm excited about the opportunities coming our way. The SFA Magazine will continue to be your go-to for stories, insights, and updates that matter. Next year, we're focused on growing even more—reaching new audiences, celebrating your contributions, and helping the Space Force succeed in every way possible.

We also want to hear more from you. Your ideas and feedback are what make this magazine better with every issue, and we can't wait to share more of your voices and experiences in the pages ahead.

Thank you for being part of something so special. Together, we're making a real difference, and I can't wait to see what we'll achieve in the year to come.

Here's to another incredible year ahead!

All the best,

Karen Lawrie
Editor, SFA Magazine and SFA Communications Manager
Space Force Association

SFA Feature Interview:
Gen Sejba, STARCOM, USSF

BY MARTIN AMEN,
SFA FLORIDA PRESIDENT

Beyond the Horizon: Maj. Gen. Timothy Sejba's Vision for STARCOM, move to Florida and the Future of Space Force Training.

Major General Timothy A. Sejba, the commander of Space Training and Readiness Command (STARCOM), is leading not only the Space Force's newest developments in education, training, doctrine, and test, but the physical transition of STARCOM Headquarters to Central Florida. In addition to the Headquarters move, STARCOM's five Space Deltas—charged with various aspects of the command's mission are transitioning to their final basing locations. General Sejba has a distinguished career spanning roles in space operations, acquisition, and engineering. His leadership is instrumental in advancing the Space Force's training and readiness capabilities, ensuring that U.S. space interests remain defended in an increasingly competitive domain.

STARCOM's mission is to prepare Guardians—combat-ready USSF forces—to prevail in competition and conflict through innovative education, training, doctrine, and test. This command is responsible for educating, training, and developing space professionals and equipping them to handle current and future space threats. STARCOM also oversees critical service and joint exercises, and testing new space systems, ensuring the Space Force remains agile and ready for the threats of today and tomorrow.

In an exclusive interview with the Space Force Association (SFA) Florida Chapter President Martin Amen, General Sejba shares insights on his career, the evolution of space operations, and the pivotal move of STARCOM's Headquarters to the Space Coast of Central Florida. General Sejba reflects on his early passion for space, career-defining moments, and his vision for preparing the next generation of Guardians to tackle complex challenges, emphasizing the necessity to reoptimize for both the near-and long-term challenges posed by Great Power Competition.

Delta 10 Change of Command

Martin Amen (MA)—Space has become a critical military domain. Can you share your journey and your background to where you are today on an ever-expanding mission?

General Sejba - I was born in Florida and raised in Minnesota and my passion for space began in February 1981 when my dad took me to the Kennedy Space Center during a family trip to Florida. I was captivated by Space Shuttle Columbia which was sitting on the launchpad for its first launch. I followed the Shuttle program for several years. My dream at the time was to become an astronaut, however; after having back surgery during my senior year of high school, my dream to pursue being an astronaut ended. Despite this setback, I remained passionate about space and joined the Reserve Officer Training Corps (ROTC) in college. I fought my freshman year to become commissioning qualified and have spent over 29 years in the space domain since.

MA—Can you expand on your time in the military?

General Sejba—I entered the military as an engineer and was assigned to the 2nd Space Operations Squadron at Falcon Air Force Base, where I worked on GPS operations. I was next assigned to the National Reconnaissance Office (NRO) at Onizuka Air Station, where I spent four and a half years learning and working across multiple missions. Looking back, this was probably one of my most influential assignments because I had the opportunity to work intense space operations missions, and interface with the intel community. It was a career-shaping assignment and set the stage for many things that followed, personally and professionally.

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MA—What would you advise young Guardians starting in the Space Force?

General Sejba—I would advise young Guardians to lean in to training opportunities. For our Enlisted Guardians, lean in to your Initial Skills Training to build a strong foundation in your technical expertise. For our Officer Guardians take advantage of the new Officer Training Course, which provides a solid foundation in space operations, intelligence, and cyber operations. This course will drive young Guardians to work as a team and allow them to build enduring relationships with peers. I would also emphasize the necessity of reoptimizing for the challenges posed by Great Power Competition, which dictates the need to evolve and do things differently than we have in the past. I spent almost 21-years before gaining experience in these three disciplines.

MA—Can you elaborate on the importance of the STARCOM mission and the Space Force?

General Sejba—The establishment of the Space Force was a response to the demands of Great Power Competition in the space domain, and the roles STARCOM fulfills in force design, development, and force generation for the service are absolutely critical. STARCOM was created to prepare combat-ready forces to fight and win in a contested, degraded, and operationally limited environment. We accomplish this through the deliberate development, education, and training of Space Force Guardians, sister service, and Total Force members. STARCOM also generates, operates, and executes realistic, threat-informed test and training environments to ensure U.S. Space Forces are prepared for the challenges they will face in a high-intensity combat scenario, and to underscore the combat readiness required for deterrence.

MA—How does STARCOM ensure readiness to ensure training programs remain relevant as space technology evolves?

General Sejba—Great Power Competition is forcing us to think differently than many of us who grew up within the Air Force or even in the early days of the Space Force have thought in the past. When you're a very small service, you can't afford to have Guardians with overlapping roles and responsibilities. The CSO approved Guardian roles and responsibilities earlier this year for officers, enlisted, and civilians to ensure there are no inefficiencies. From this perspective, we look at how best to prepare each of those differently than in the past. I have already mentioned our Officer Training Course, that was step one. We are also working with our Air Force counterparts to determine how we modify our enlisted initial skills training to ensure Guardians are effective in the face of growing threats and an increasingly contested domain. And we are doing early pilots for our civilians. Additionally, we have initiated several efforts to ensure readiness within the Space Force is looked at differently. We recognize many existing trainers were designed to be more like positional trainers, giving proficiency to crew members in their day-to-day jobs. However, these standards do not necessarily include some of the advanced training requirements which come with a contested environment. We are working with the Space Operations Command (SpOC) to identify and document those advanced training requirements and deliver suitable environments to improve mission readiness. It'll be up to us to make sure we deliver suitable environments, whether that be modifications to existing trainers or linking trainers into an ecosystem that allows them to operate together; we know there's additional training we need to provide and a venue or an arena we must deliver for SpOC to enable them to improve mission readiness.

Gen Sejba, STARCOM Commander, speaking at the KickOff for the Azimuth Program

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MA—The Air Force has been evolving the Operational Test and Training Infrastructure (OTTI) for the Air domain for years, and as mentioned earlier, the training ranges have evolved. Do you see many synergies between the Air Force OTTI and that of the Space Force OTTI?

General Sejba – The Air Force and Space Force OTTIs have synergies and differences. The Air Force's OTTI evolved over years, with foundational ranges like Nellis taking decades to establish. The Space Force, on the other hand, faces the challenge of building out the necessary ranges much sooner. We have senior leaders, who were involved in building the Air Force's OTTI, advising the Space Force and reminding us of the long-term investment required to build out these ranges. The Space Force is currently making progress in establishing an operational test and training infrastructure. We already have an on-orbit range and are working on a digital range that can link crews together. This digital range will enable training in a live-virtual, constructive environment, which is critical for Space Force training. Additionally, the Space Force is looking at the cyber side and exploring how to train in a representative environment of what the cyber terrain could look like in a high-end conflict. We are leveraging existing partnerships, such as with the Air Force in San Antonio, and building our cyber range off the backbone of what the Air Force has already created. This allows the Space Force to benefit from the Air Force's hard work and scale for their use. Currently, we are also training multiple cyber events in that environment and plan to transport the cyber terrain into the cyber range to operate similarly to the operational mission. We recognize that building out these ranges and cyber training capabilities will not happen overnight and are looking at different high-end testing and training approaches to prioritize near-term training requirements that don't necessarily require a high-fidelity environment or model. We are also looking at linking trainers in a more distributed environment to introduce red threats and practice in more realistic contested war-fighting scenarios.

MA—How do you think the move to Central Florida from the STARCOM headquarters will be positive and expand?

General Sejba – STARCOM was activated with the understanding that a basing decision would take time, allowing us to carefully finalize where our headquarters In the period between our initial stand-up and the final decision, we've developed strong, mutually beneficial relationships within the Colorado Springs community, and many of our units will remain here. We value these partnerships and the support we've received from our sister field commands and community allies in Colorado, and we're eager to embrace the new opportunities that Central Florida has to offer.

The Space Coast is poised to welcome STARCOM with great enthusiasm and we're looking forward to establishing strong partnerships with local universities like the Florida Institute of Technology, the University of Central Florida, and Embry-Riddle. These institutions were established around the time of NASA's formation and have a long history of providing high-end technical engineering skills for manned spaceflight. We're confident that we can leverage their expertise to further our mission.

Additionally, we're excited about the potential of establishing a Space Force presence in Orlando, which is home to the DOD's modeling and simulation hub. This will allow us to leverage the modeling and simulation work that has been done for years and apply it to our own exercises and war games. Of course, there is still much work to be done over the next year or two as we move our mission down to Patrick, but we're committed to building the final headquarters and making STARCOM what it was intended to be - a foundational piece of the entire service. We're excited about the opportunities that Central Florida has to offer and look forward to making the most of them.

Gen Sejba, STARCOM Commander

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MA—Being a General is a high-stress job. What are your hobbies or practices to reduce stress?

General Sejba—We spend as much time as possible as a family doing activities. So, we like to vacation. Being here in Colorado, we try to get out and hike more than before. I also love fantasy football. I'm in a league of ten, and four of us have been together since 1998, back at Onizuka AFS. So, back when you had to wait for the newspaper box scores to come out to complete your fantasy football scoring. I like most sports. I don't play too many anymore, but I enjoy watching them and trying to get to a few stadiums throughout the year. I love NASCAR. I am a big racing fan. The Daytona 500 is undoubtedly one of my favorites. But a range of sports. And indeed, given that we're all busy, trying to spend as much time with the family as possible so anything that involves doing things with them is also a top hobby.

MA—How about the test and validation mission areas of STARCOM?

General Sejba—Our test and evaluation role is one of our most critical missions and it has become even more important as we develop weapon systems designed to operate in a contested environment. To ensure the effectiveness and reliability of our systems, we need to conduct realistic tests and validate that they will work as intended. In the past, it was easier to downplay the importance of operational tests, but now it is essential that we conduct integrated tests that bring together developmental and operational perspectives early in the development life cycle.

This allows us to satisfy both developmental and operational test requirements and make any necessary corrections. Additionally, my experience with the Defense Threat Reduction Agency has shown me the importance of testing our systems for a threat-informed environment. Without adequate testing, senior decision-makers may not have confidence in the systems and their ability to work as intended. Therefore, we need to make sure that we give them the confidence that the systems will work as intended, especially in critical situations. STARCOM must ensure the effectiveness and reliability of its systems in a contested environment through realistic integrated tests, validation, and a threat-informed approach to testing.

MA—Interesting. You once ran the Advanced Systems Development Group out of Kirtland. Does a lot of that experience come into play in STARCOM's mission set?

General Sejba - The Advanced Systems Development Group at Kirtland definitely played a significant role in shaping my experience and leadership concepts, which are now being executed at the Research, Development, Test & Evaluation Support Complex (RSC). We have formed a partnership between the RSC and the Space Rapid Capability Office, which brings together significant capabilities at Kirtland. The ecosystem of space at Kirtland is vast and complex, with many on-orbit ranges partnering with the RSC. Until a person is assigned to the location, they may not fully realize the significance of what that area brings. I had the privilege of seeing this firsthand for several years with AFRL RV, my former prototyping unit, and the Space RCO. Looking to the future, we have several units planned to move to the area based on the SECAF's basing decision.

MA—Parting thoughts?

General Sejba—I appreciate the opportunity to discuss STARCOM and our mission. I'm looking forward to the SFA Space Power conference in December this year. I know it's going to be a big event. I will be there for several weeks. Between the Interservice/Industry Training, Simulation and Education Conference (I/ITSEC), and Space Power on its heels, between that and commencement speaking, and at least cheering on at the 10-miler, it will be a great couple of weeks. So, I'm looking forward to it. Thank you, Space Force Association, for all that you do for the service.

MA—Thank you.

SFA Feature Interview:
Rob Mitrevski, L3Harris VP & General Manager, Spectral Solutions

BY RHONDA SHEYA,
SFA GENERAL MANAGER

L3Harris: Advancing Global Security Through Space and Airborne Innovation

In an age where technology intertwines with daily life, space and airborne systems are becoming indispensable in safeguarding our environment, improving public safety, and ensuring national security. At the forefront of this effort is L3Harris Technologies, an agile global aerospace and defense technology innovator. The company's Spectral Solutions division, led by Rob Mitrevski, Vice President and General Manager, exemplifies L3Harris's commitment to developing sophisticated, mission-critical capabilities in areas like environmental intelligence, weather monitoring, and missile defense. In an exclusive interview, Rhonda Sheya, SFA General Manager, engaged with Mitrevski to uncover how Spectral Solutions' technologies shape defense and security, particularly in the face of hypersonic missile threats and rapidly advancing commercial space initiatives.

Legacy of Innovation: Serving the Planet and Protecting People

Mitrevski shared that L3Harris's legacy mission in weather monitoring underscores the company's impact on global safety and security. “On the civil side, we provide space and ground layer solutions to civil weather customers, both domestic and international,” Mitrevski explained. L3Harris's long-standing partnerships with NASA and NOAA have equipped weather forecasters with critical data to predict and track severe weather events, from hurricanes to flash floods. For over six decades, the company has pioneered infrared technology and real-time processing to provide high-resolution imaging allowing meteorologists to "see" data beyond human vision, instrumental in saving countless lives by assessing the severity and projected path of severe storms.

The company’s expertise in weather monitoring technologies extends to the challenging domain of missile defense. Over recent years, L3Harris has leveraged the advanced infrared and on-board processing technologies developed for weather applications to address missile threats, specifically the emerging threat of hypersonic missiles. “The hypersonic threat is not only fast but maneuverable and low flying, making detection incredibly challenging,” said Mitrevski. “Using our existing technology building blocks, we've expanded our focus to missile defense, which has driven substantial growth for us over the last four years.” The company’s missile defense solutions now serve key agencies, including the Missile Defense Agency, Space Development Agency, and Space Systems Command, providing essential early warning and tracking systems to mitigate these new-age threats.

Hypersonic Threat: A Global Security Challenge

Traditional ballistic missiles have long posed a security risk, but they operate in a predictable flight pattern, allowing time for defense response. In contrast, hypersonic glide vehicles—traveling at five times the speed of sound and capable of sharp maneuvers—present unprecedented challenges. Hypersonic missiles can evade traditional radar detection due to their ability to fly below radar paths, requiring highly specialized sensing and tracking systems to provide timely warnings.

This heightened challenge has galvanized L3Harris to innovate in hypersonic missile defense. "With hypersonic missiles, you must sense friction between the atmosphere and the glide vehicle in real-time," explained Mitrevski. "Our space-based sensing systems and algorithms are specially designed to detect these fast, dim, and maneuverable threats, providing a critical solution that previously did not exist.” Recognizing the hypersonic threat’s global nature, Mitrevski emphasized the necessity of international collaboration, with L3Harris partnering with allies like the UK, Japan, and other Five Eyes nations to develop a unified defense against hypersonic missiles. These alliances enable L3Harris and its partners to pool technological and strategic resources, creating a cohesive front against a threat that no single nation can combat alone.

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Innovation Through Integration: A Two-Way Street with Government and Commercial Space Sectors

The expanding role of private companies in space has blurred the lines between government and commercial space technologies. L3Harris's Spectral Solutions division has been uniquely positioned to bridge this divide. "We serve both missile defense on the government side and weather capabilities on the commercial side," said Mitrevski. The company's vast experience in high-speed data processinghas allowed it to expedite and streamline the development of space assets for both DoD and civilian applications, ultimately driving down costs and improving performance for both sectors.

The crossover between defense and commercial technologies benefits both fields. Mitrevski noted that "lessons learned in missile defense help our weather applications and vice versa," creating a feedback loop that fosters innovation. This approach has allowed L3Harris to develop responsive, scalable solutions that meet the speed and affordability demands of the Space Development Agency (SDA) and other DoD customers. This collaborative dynamic underscores the symbiotic relationship between commercial and government sectors, as private sector agility complements government-driven rigor in safety and operational standards.

"Think about the ecosystem we've built around space systems for hypersonic and weather monitoring. It's a three-tier supply chain with distributed capabilities across multiple providers," said Mitrevski. This diversified supply chain enhances the resilience of both commercial and defense industries, fostering a robust infrastructure that can support everything from military defense to emergency weather response.

Future of Space Systems: Advanced Technology and Global Solutions

As Spectral Solutions continues to innovate, Mitrevski is optimistic about the future of space-based technology. For instance, he sees significant potential in expanding L3Harris's capabilities for more accurate severe weather predictions. "Our imaging and sounding capabilities are already world-class," Mitrevski remarked. "The next step is increasing our perceptiveness and prediction accuracy, providing timely insights that can save lives and protect property during catastrophic weather events."

In missile defense, L3Harris is pioneering systems to offer global persistence against hypersonic threats. By combining real-time sensing with advanced algorithms, these systems enable rapid response to fast-moving threats. "The need for answers and action is nearly instantaneous with hypersonic missiles. Our systems provide this immediacy," he said, emphasizing the breakthrough nature of L3Harris's approach in missile defense. These advancements position L3Harris as a leader in meeting the real-time demands of hypersonic detection and missile tracking, which are essential for national and global security.

A Guiding Principle: Customer-Centric Leadership

Mitrevski credits L3Harris's innovative approach to its commitment to understanding customer needs. "Before proposing solutions, it's essential to first listen to the problem," he shared. This customer-first philosophy drives the company's success in both missile defense and weather monitoring. Reflecting on his career, Mitrevski recalled how expanding the company's expertise from weather-focused technology to missile defense solutions required "leadership courage and trust," both within his team and across the industry.

According to Mitrevski, disruptive innovation requires leaders to challenge the status quo and consider alternative perspectives. "We were a weather-focused business that ventured into missile defense," he said. "This pivot wouldn't have been possible without a knowledgeable, trusting team and a willingness to embrace new challenges." His advice to emerging leaders in the defense sector is to be willing to disrupt and innovate without abandoning customer needs.

Moving Forward: Inspiring Progress Through Dialogue and Collaboration

With technological sophistication in space and airborne systems and a clear commitment to national security, L3Harris is not just a supplier but a strategic partner. Their leadership in missile defense and civil weather monitoring exemplifies how the company's technology serves a dual purpose: safeguarding our planet and protecting the people who inhabit it.

SFA Feature Interview:
Elaine Bryant, Managing Director, JobsOhio Military & Federal Sector

BY KAREN LAWRIE,
SFA MAGAZINE EDITOR &
COMMUNICATIONS MANAGER

Ohio: A Launchpad for Aerospace and Defense Innovation

As the birthplace of aviation and home to trailblazers like the Wright Brothers, Neil Armstrong, and John Glenn, Ohio is steeped in a legacy of aerospace achievement. Today, JobsOhio—the state's private nonprofit economic development organization—leverages that legacy to propel Ohio into a leadership role in the aerospace and defense sectors.

The Mission of JobsOhio

Established in 2011, the mission of JobsOhio, as Ohio's economic development corporation, is to drive sustainable economic growth and for businesses to thrive in Ohio. JobsOhio enhances company growth and personnel development through strategic initiatives in business attraction, retention, and expansion across ten competitive industry sectors, including the aerospace, military and federal sectors.

JobsOhio exists to empower world-class corporations, entrepreneurs, and talented individuals to build their businesses and careers in Ohio. Its advocacy and investments in partnership with the State enable sustainable economic growth and a better quality of life for all Ohioans through the power and dignity of work.

Twenty years ago, Ohio faced significant economic challenges, losing 18% of jobs in its critical sectors. As a result of JobsOhio's efforts, the state has become a top-five destination for economic development projects, with standout rankings in infrastructure, capital investment, and job creation.

Aerospace and Defense Programs

JobsOhio provides comprehensive support tailored to the aerospace and defense sectors. The organization's offerings include assistance and incentives programs, innovation grants, site selection assistance, and talent recruitment initiatives such as the Find Your Ohio program, which connects transitioning military members and veterans with local employers. Ohio's Hometown Heroes initiative further demonstrates the state's commitment by providing military families with complimentary tickets to cultural and sporting events.

Ohio's unique assets include world-class research institutions like NASA Glenn Research Center, Battelle, and the Air Force Research Laboratory (AFRL) at Wright-Patterson Air Force Base. Combined with the state's leading advanced manufacturing capabilities and third-largest manufacturing workforce in the U.S., these resources create an ideal ecosystem for innovation and growth.

Ohio's Space Mission Ecosystem

The space industry thrives in Ohio, with critical assets such as:

- **National Space Intelligence Center (NSIC)**
- **Air Force Research Labs - One Lab, Two Services**
- **National Air and Space Intelligence Center**
- **76th Intelligence Surveillance and Reconnaissance Squadron**
- **NASA Glenn Research Center and the Neil Armstrong Test Facility (ATF)**
- **Armstrong Institute for Space, Technology, and Research at the University of Cincinnati**
- **George Washington Carver Science Park at The Ohio State University**
- **A robust network of suppliers, including L3Harris, Parker Hannifin, Voyager, and BWXT**

The Neil Armstrong Test Facility, in Sandusky Ohio is pivotal for space testing for both federal and commercial testing facilities. Spanning 10 secure square miles, it supports extreme testing environments, cryogenic simulations, and large-scale energy infrastructure. With proximity to major transportation hubs and deepwater ports, the ATF offers unparalleled advantages for space missions.

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In addition, the critical work being done at NASA Glenn aims to enable life and operations in space. Here, some of the brightest minds in the world are working on advanced materials for new spacecraft and equipment, testing and advancing the Artemis moon missions, and developing new propulsion technologies for deep space travel, specializing in power, propulsion, and communications. In 2023, they opened a brand-new state-of-the-art communications facility.

Positioning Ohio as an Industry Leader

JobsOhio is actively fostering partnerships with local universities, military installations, and private companies to position Ohio as a leader in the aerospace and defense sectors. Collaboration initiatives like OrbitOhio bring together industry, government, and academia to advance the state's space capabilities.

The collaborative also plays a key role in hosting the Ohio Space Forum, an annual event that connects stakeholders and highlights Ohio's contributions to the space industry. Universities like The Ohio State University and the University of Cincinnati are deeply engaged with the U.S. Space Force, further reinforcing Ohio's position as a hub for aerospace research and development.

Workforce Development

With over 700,000 veterans—the sixth-largest veteran population in the country—Ohio understands the value of military experience. JobsOhio's Talent Acquisition Services team works with employers to ensure a robust pipeline of skilled workers. Programs like Find Your Ohio help match transitioning military personnel with opportunities in aerospace and defense.

In addition, Ohio is investing in future talent through educational partnerships and initiatives aimed at preparing students for careers in emerging space technologies. With most Ohio universities offering aerospace-related degrees, the state is creating a steady flow of highly trained professionals to meet industry demands.

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Future Goals and Challenges

Looking ahead, JobsOhio aims to attract and retain mission-critical space initiatives and aerospace Original Equipment Manufacturers (OEMs) and suppliers. The organization is leveraging Ohio's strengths—such as being the number one supplier to Airbus and Boeing—to solidify the state's leadership role in the industry.

Key goals include expanding NASA Glenn's power and propulsion missions, bolstering space intelligence through NSIC, and strengthening manufacturing capabilities at AFRL. Ohio also seeks to increase awareness of its space ecosystem by promoting the vast number of government, private industry and academic partners that call Ohio home.

A Vision for Aerospace Innovation

JobsOhio is not only supporting the current aerospace industry but also shaping the future of next-generation aviation. The state is a leader in Advanced Air Mobility (AAM), hosting the **National Advanced Air Mobility Center of Excellence (NAAMCE)** and serving as the future site of Joby Aviation's eVTOL air taxi manufacturing facility.

Ohio's infrastructure supports cutting-edge technologies, from Unmanned Aircraft Systems Traffic Management (UTM) to urban air mobility testing across 226 square miles of dedicated airspace. Partnerships with NASA and the U.S. Air Force are advancing electric vehicle integration and charging station networks, further cementing Ohio's role as an innovation hub.

Shaping the Future

Ohio's contributions to the aerospace and defense sectors are unparalleled. With a strategic focus on innovation, collaboration, and workforce development, JobsOhio is ensuring the state remains at the forefront of space exploration and defense technologies.

From the legacy of the Wright Brothers to the cutting-edge research today, Ohio continues to drive the future of aerospace. The state's commitment to fostering public-private partnerships, supporting military families, and investing in talent development makes it a premier destination for aerospace and defense companies. For the aerospace sector, there truly is no better launchpad than Ohio!

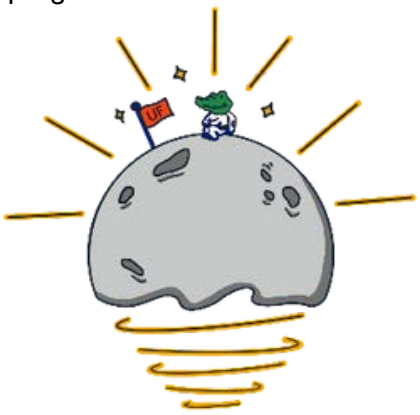
SFA Women in Space Highlight:
University of Florida Launchpad for Tomorrow's Innovators

BY SIERRA POLLARD, SFA WOMEN IN SPACE MARKETING CHAIR

The University of Florida took a giant leap into the future of innovation and exploration with its first-ever Space Initiative: A Pathway to Innovation and Industry Experience. This groundbreaking program welcomed 141 brilliant and creative participants, all driven by a shared passion for aerospace innovation. As someone who lives and breathes the intersection of space and entrepreneurship, I (Sierra Pollard) was honored to design and implement this initiative to empower students with the tools, experiences, and connections they need to launch impactful careers in the space sector.

As the Marketing Chair for Women in Space and Director of the Blackstone LaunchPad, I'm deeply committed to creating opportunities that go beyond the classroom. The UF Space Initiative 2024 reflects that commitment. It's more than a program; it's an immersive journey. My goal was to provide students with hands-on access to cutting-edge technologies, direct engagement with industry leaders, and the chance to explore what's possible in aerospace. Watching these students embrace innovation with enthusiasm and purpose was a truly inspiring experience.

The Space Initiative 2024 kicked off with an explosion of creativity with a Design Jam competition! JoyinAng's design won first place featuring the logo on t-shirts, posters, and marketing materials setting the stage for an unforgettable program!



JoyinAng's winning design

From there, the program soared into a curated series of fireside chats with some of the brightest minds in aerospace. Leveraging my network in the space sector, I brought in cross-disciplinary speakers who showcased diverse and inspiring career paths. These Fireside Chats were opportunities for students to connect with professionals who embody the limitless potential of aerospace innovation.

Speakers included:
Bill Benson, NASA Flight Design Discipline Expert, provided a deep dive into the complexities of guidance, navigation, and control systems, offering students valuable insights into the technical challenges of aerospace engineering.

Rhonda Sheya, General Manager of the Space Force Association, motivated students to leverage creativity across disciplines, demonstrating how innovation thrives at the intersection of diverse fields.

Matthew Jardin, Director of Autonomy Applications & Architecture at Blue Origin, highlighted the transformative power of cutting-edge technologies like Model-Based Design, sharing insights from his vast experience in advancing aerospace autonomy.

Claire Nelson, Technology Readiness Manager at Collins Aerospace, embodied her motto, "Innovate or die," as she showcased her career journey spanning NASA rockets, theme park attractions, and advanced aviation technologies, inspiring students to think boldly and innovate fearlessly.

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After weeks of fireside chats and immersive workshops, the UF Space Initiative 2024 reached its thrilling finale with a three-week Innovation Challenge, a collaboration between Blackstone LaunchPad and NASA's Spinoff and Technology Transfer (T2U) programs. This dynamic competition offered students the chance to apply their skills to real-world problems, working in cross-disciplinary teams to turn NASA patents into tangible, innovative solutions.

The challenge culminated in final presentations, where students showcased not only their technical expertise but also their ability to think creatively, collaborate effectively, and lead with confidence in a rapidly evolving industry. For participants, this experience wasn't just about competing—it was about innovating, networking, and growing.

From 141 passionate participants, the challenge narrowed to 21 outstanding finalists who presented their visionary ideas to an esteemed panel of judges, including Jordan Callaham, UF Astraeus Space Institute, Melissa White, PHD, Engineering Innovation Institute, Pablo Casilimas and Jusis Mendez, Managing Partners at OneSixOne Ventures. These industry experts evaluated pitches on creativity, feasibility, and real-world impact, highlighting the extraordinary talent and innovation cultivated through the Space Initiative.

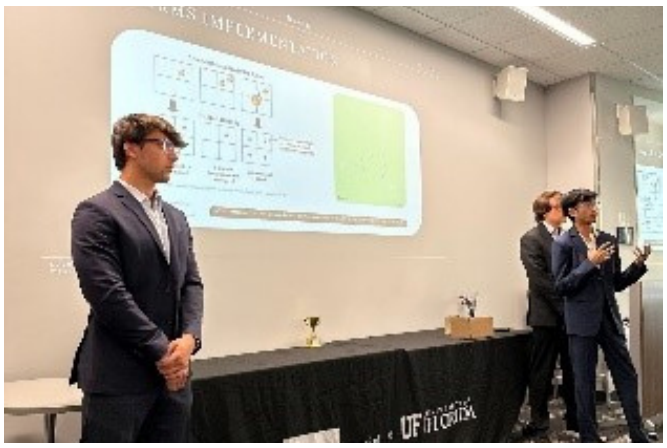
In addition to valuable mentorship and connections, participants earned the prestigious UF Space Initiative Certificate of Completion, recognizing their dedication and hands-on experience. This certificate symbolizes more than an achievement—it's a testament to the transformative power of collaboration, ingenuity, and perseverance fostered throughout the program.

The winning team of the UF Space Initiative 2024 Innovation Challenge was a dynamic group of five talented students who embodied the power of cross-disciplinary collaboration. Kush Mirchandani, a student pursuing a double major in Computer and Science and Business Administration with a minor in Entrepreneurship, led the team alongside Gabriel Bendix, a junior in Computer Engineering with a minor in Religion. They were joined by Raúl Rojas, a dual major in Anthropology and Computer Science, Gerardo Duran, a Mechanical Engineering student, and Waseem Ahmed, a master's student in Computer and Information Science Engineering.

Together, this dynamic team leveraged their diverse academic backgrounds to develop a cutting-edge solution using NASA T2U patents. Their project demonstrated exceptional technical ingenuity, creative problem-solving, and an impressive ability to transform theoretical concepts into practical, real-world applications. As a reward for their outstanding achievement, each team member earned a coveted ticket to the 2024 Space Power Conference in Orlando, Florida, this December—a fitting opportunity to further explore the future of innovation and space exploration!

This initiative reflects the USSFA's commitment to fostering the next generation of leaders in aerospace by building connections, inspiring innovation, and empowering individuals to contribute meaningfully to the space industry. It's a testament to the power of education, collaboration, and mentorship in driving progress and expanding humanity's reach into the stars!

This isn't the end - it's just the beginning! To all the students, judges, and speakers who made this event an unforgettable success: here's to a future where innovation truly knows no bounds!



SFA PARTNER ARTICLE:
Thought Leadership: MOOG.com/Space

Delivering Reliable Space Superiority Capabilities for the Ultimate High Ground

Timely, accurate information is essential for warfighters to quickly close the kill chain in today's high-tech conflicts. Three primary objectives of the U.S. Space Force are to establish integrated space fires, enable flexible satellite communications, and enhance battlespace awareness for space operations. These mission-critical requirements will be achieved by fielding resilient and secure communication networks that can withstand the challenges posed by potential adversaries. In this quest for the ultimate high ground, the Space Force's demand for ESPA Grande class satellites and small geosynchronous satellites (sometimes referred to as microGEOs) is growing. The focus on this capability recently emerged as a paradigm-shifting solution that offers persistent coverage and superior capabilities.

"With the ever-increasing pace of technological development, it is essential for companies to innovate and adapt to meet the evolving demands of the space domain," said Rob Atkins, Moog National Security Space Manager. "Moog has met that demand with our internal investment in a family of capable and quality spacecraft buses."

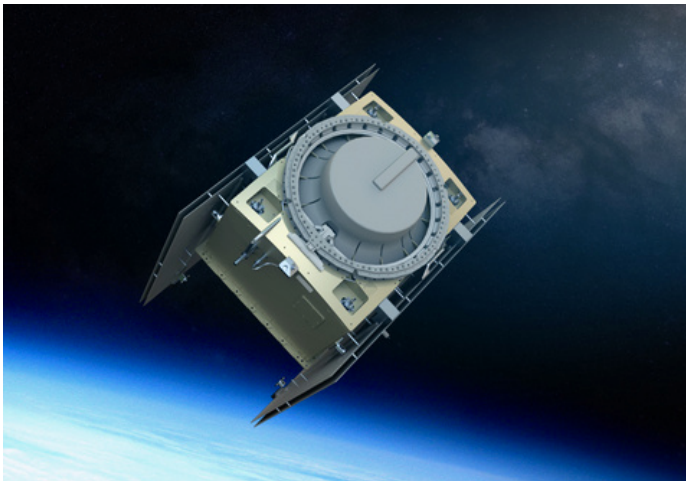
Moog has supported government, commercial, and civil space customers since the inception of spaceflight. The company boasts decades of proven performance in all Earth orbits and deep space, with hardware that has survived decades of travel throughout the solar system and beyond. On average, Moog hardware launches into space every week. Moog continues to innovate and build on its GEO-proven experience with its avionics, propulsion, fluid controls, mechanisms, and vibration mitigation technologies.

The company recently applied its 70 years of system, subsystem, and component expertise to develop a family of modular, payload agnostic spacecraft buses and tugs. While Moog's product line is considered a commercial solution, the buses are far more capable than a typical commercial oriented, minimum-viable product. Many of the key components and subsystems are made up of the same Moog components that boast elevated technical performance and high quality, and when combined, deliver maneuverable small satellites capable of meeting national security mission needs.

Flexible, Mission Configurable Spacecraft Buses

The Moog Meteorite and Meteor spacecraft buses feature proven radiation hardened avionics, flexible software that is payload and mission configurable, and modular and expandable payload power. The robust, all aluminum structure provides radiation shielding and can support a wide range of payload configurations necessary to tackle many types of flight profiles and challenging mission needs. These buses serve as the essential, configurable platforms for various payloads, such as communication transponders, Space Situational Awareness sensors, and defensive systems can be integrated. Engineered with versatility and robustness, the Meteor and Meteorite buses boast a suite of features that make them perfect for national security missions in all orbital configurations and applications.

"Our decades of spacecraft system and component heritage make us uniquely positioned in the spacecraft bus market. We are a vertically integrated spacecraft provider, able to efficiently design and manufacture our highly differentiated small and medium class buses," said Atkins. "We currently have multiple buses on orbit and look forward to our planned future launches that continue to support the warfighter, Space Force, and intelligence community customers."



METEORITE BUS panels stowed

Continued on Page 19

METEORITE BUS deployed

Radiation-Hardened Avionics

The Meteorite and Meteor buses are built around the flight-proven Moog Integrated Avionics Unit (IAU), which offers solutions for Command and Data Handling/Electrical Power Subsystem (C&DH/EPS) for a full range of spacecraft and payload applications. The IAU is radiation hardened and has demonstrated success on dozens of missions from LEO to GEO to beyond the Moon. Its mission life is 10-15 years depending on whether it is single string or redundant and has a modular and scalable architecture built around a single board computer (SBC) with mission specific input/output (I/O) boards. The IAU is designed to support high data throughput, enabling the Space Force to transmit large volumes of data quickly and securely. This capability is essential for real-time communication and data sharing among national security assets.

Scalability and Flexibility

The Meteor and Meteorite buses are designed to accommodate a diverse array of payloads and orbits, making them highly adaptable to different mission requirements. This scalability ensures that the Space Force can deploy these buses for a variety of communication needs, from secure data transmission to real-time situational awareness.

Enhanced Durability

Built to endure the harsh conditions of space, the Meteor and Meteorite buses are equipped with advanced thermal management systems, radiation shielding, and robust structural components. This durability ensures that the satellites can operate reliably over extended periods, even in the challenging environment of geosynchronous orbit.

Advanced Propulsion Systems

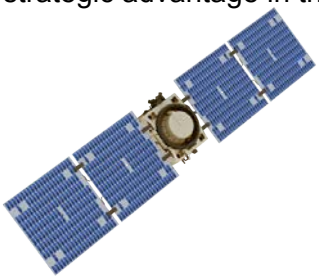
Both the Meteor and Meteorite buses are outfitted with cutting-edge propulsion systems that enable precise maneuvering and station-keeping. This capability is crucial for maintaining the satellites' positions in geosynchronous orbit, ensuring continuous and reliable communication coverage. Moog is designing an innovative multi-mode propulsion system and looks forward to the right opportunity to incorporate this novel approach on one or both of our buses.

Vibration Damping and Control

The Meteor and Meteorite buses can accommodate all the flight-proven vibration control products and technologies Moog offers. Moog is an industry leader in vibration damping and control, and is uniquely equipped to perform rapid trades to modify its bus designs to enable precision pointing. Typical tools at our disposal include reducing the offending disturbance energy at the source, modifying the structural response of the bus to enhance rigidity and damping to control resonances that degrade performance, and reducing the response of the disturbance-sensitive component at the component. We have more than forty years of experience solving the most demanding guidance, navigation, and control performance challenges associated with attitude knowledge, pointing accuracy, pointing stability, and image jitter.

Maintaining the Ultimate High Ground

As government, commercial, and civil space customers continue to explore the use of small geosynchronous satellites to enhance its communication networks, robust and versatile spacecraft solutions will become increasingly important. Guardians will need technology with advanced features, scalability, and durability, as well as industry partners with unwavering commitment to innovation and excellence to ensure that the Space Force will have the tools it needs to maintain its strategic advantage in the space domain.



METEORITE deployed

METEORITE OMV deployed

SFA PARTNER ARTICLE:
Thought Leadership: SciTec

BY DAVID SIMENC, VICE PRESIDENT SCITEC, INC.

Transforming Missile Warning

As you read this – and 24/7/365 – there are about a dozen Guardians actively prosecuting the Missile Warning mission. Their primary goal is simple: provide clear, unambiguous, and immediate warning on all missile launches anywhere in the world at any time. They sit squarely in the critical path for missile defense, force protection, and nuclear deterrence. They do their job incredibly well. And they are doing it with sensors and systems that have not fundamentally evolved for decades, while facing threats exponentially increasing in magnitude and complexity.

Starting in 2025, we regain the initiative over those systems and threats.

The transformation begins on the ground. In 2024, the Future Operationally Resilient Evolution (FORGE) delivered a new secure platform for missile warning. Beginning in 2025, it will fully takes over as the operational mission baseline for theater missile warning and battlespace awareness (with strategic missile warning shortly following). FORGE replaces warfighting tools based on assumptions and technologies dating back to the 1970s with a modern, cyber-secure software stack built with direct involvement from Guardians. It delivers operational advantage through enhancements including AI/ML augmentation for dramatic performance improvements and an operational interface built on state-of-the-art gaming technology, to detect and track stealthier threats sooner and longer.

FORGE is purpose-built to integrate the coming transformation in space sensing systems, beginning with the Space Development Agency's (SDA) Tranche 1 Tracking Layer. This proliferated low-earth orbit constellation, launching in 2025, represents the first-ever operational, proliferated missile detection system, and is the first major realization of Space Force's transition to a resilient architecture. It is quickly followed by Space System Command's (SSC) Medium Earth Orbit Missile Track Custody (MEO MTC) constellation. The new force design moves Missile Warning, Missile Tracking (MW/MT), and related missions from relying on a few, exquisite satellites represented by the legacy Space Based Infrared System (SBIRS) to leveraging a mixed orbit, proliferated, resilient constellation with unprecedented capability.

SSC and SDA are delivering these critical, resilient space- and ground-system capabilities on a rapid, mission-relevant timeline. They are also demonstrating the power of competitive acquisition to deliver superior performance and build a resilient supply chain. The Tracking Layer is integrating systems from multiple prime vendors, driving down per-satellite cost, and demonstrating a two-year on-orbit technical insertion cycle. MTC is leveraging digital engineering to run an incremental, data-driven, multi-vendor acquisition approach with standards-based integration. FORGE is tapping a small business-led team to fully modernize ground mission processing in under three years, field an open Government-owned architecture for continuous tech insertion, and drive down sustainment cost. All three programs are shaving years (decades!?) – and hundreds of millions of dollars – off traditional MW/MT acquisitions while expanding the defense industrial base from a couple traditional participants to dozens of entrants.

Today we face an exponentially expanding threat environment unforeseen even after the Cold War. With technologies like FORGE and the proliferated sensing architectures delivering into operations, we are providing our Guardians the tools and capabilities to meet – and defeat – the threat.


SCiTEC
Science & Technology Innovation
SciTec.com
Transforming missile warning to deliver
operational advantage. **Detect. Deter. Defeat.**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SPACE FORCE ASSOCIATION
BECOME A
SFA MEMBER
COLLABORATE WITH USSF
LEADERS AND SPACE
INDUSTRY PROFESSIONALS
WHILE ADVOCATING FOR OUR
PLACE IN SPACE.
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BUILDING A PURPOSE-BUILT SPACE FORCE: TOWARDS A BETTER STATE OF SPACEPOWER

BY COL (RET) ELVERT GARDNER, USSF, VP SPACE OPERATIONS, APERIO GLOBAL LLC

The 2017 DOD dictionary defined spacepower as, "The total strength of a nation's capabilities to conduct and influence activities to, in, through, and from space to achieve its objectives."[1] The term is vital in today's context, and the U.S. Space Force plays a pivotal role in wielding the Nation's space power (hereafter spacepower). To achieve the fullness of spacepower, the Space Force must be purpose-built along three pillars: deterrence, active defense, and offensive space superiority capabilities. These are essential steps towards a better state of spacepower.

Purpose-Built Deterrence

Deterrence is the cornerstone of U.S. military strategy, but traditional approaches fall short in space and create what should be referred to as a 'deterrence deficit.'[2] Space is an inherently offensive dominant domain with an intrinsic first-mover advantage. Additionally, Russia's use of counterspace capabilities in Ukraine and China's recognition of space as a critical element of information warfare highlights space's importance in military operations. These factors complicate traditional thinking on deterrence. As a result, statements about responding to a space attack "at a time, place, and domain of our choosing" lack credibility. Adversaries must know the U.S. Space Force can deliver meaningful punishment, which means the Space Force requires a purpose-built deterrent with the organic capability to credibly deter.

[1] "Space power", in DOD Dictionary of Military and Associated Terms (Washington, D.C.: Department of Defense, 2020), s.v. "Space power".

[2] Elvert L. Gardner, "Understanding Commercial Space Capabilities Influence on Deterrence and National Security Policy," Unpublished Doctoral Capstone Research Project, Missouri State University, 2024.

Building a resilient hybrid architecture is an essential step towards a better state of spacepower and contributes to a deterrence by denial strategy, but resilience is not enough. Resilience limits the impact of an attack but does not necessarily deter one. If an adversary is motivated enough, they may still attack resilient systems if they believe they are critical to U.S. operations. Therefore, a resilient architecture must also possess additional features to bolster the Space Force's ability to secure the Nation's interest in, from, and through space. Ideally, leading-edge technologies such as autonomy and artificial intelligence (AI) would be integral to these additive capabilities.

Purpose-Built Active Defense

A better state of spacepower must include the ability to withstand and neutralize attacks. Resilience is essentially passive defense and is an incomplete solution for credible deterrence and meaningful defense. However, by adding active defense capabilities capable of thwarting an imminent attack, the Space Force can create a force that can withstand an initial attack as well as defend dynamically in space.

Active defense enables real-time protection of space systems through technologies that detect, intercept, and neutralize threats before significant damage occurs. Maneuverable satellites, countermeasures, autonomous systems, and other technologies designed to mitigate attacks would help maintain operational capabilities, improve mission assurance, and strategically evolve from surviving attacks to actively denying adversaries the ability to achieve their objectives.

Purpose-Built Offensive Space Superiority

The latest revision to DOD Directive 3100.10 directs the Chief of Space Operations to "protect U.S. interests in space."[3] To do this, the U.S. Space Force must be equipped to move beyond deterrence and defense. The Space Force must be purpose-built for space superiority, including the active organic ability to deny adversary use of space against U.S. and allied forces.

[3] DOD Instruction 3100.10 (Washington, D.C. Department of Defense, 2024) 16.

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This goes beyond just holding space assets at risk; it means having the capability to disrupt, degrade, and destroy adversaries' space capabilities when necessary.

Commercial space capabilities will be vital to a purpose-built force design capable of attaining space superiority. They will provide persistent surveillance, resilient communications, and enhanced space domain awareness. Integrated AI will also play a pivotal role by automating threat detection, characterization, and maneuvering, significantly improving the Space Force's response to real-time threats. As the space domain grows more contested, split-second decisions may exceed human capability, making AI and other commercially available technologies crucial for mission assurance, data integrity, and decision advantage.

Conclusion

Attaining the full potency of US spacepower requires a combat-credible force purpose-built for succeeding in a contested domain. This requires a fielded force that is purpose-built for credible deterrence, purpose-built to defend against attacks actively, and purpose-built with space superiority capabilities needed to take away adversary ability to exploit space against the US and its allies. This three-pronged strategy is designed to move toward a better state of spacepower. The Space Force is underfunded for this objective. This strategy must be adequately resourced to fully organize, train, and equip to secure the Nation's interest in, from, and through space.

Elvert Gardner is Vice President of Space Operations at Aperio Global LLC. He is also a retired Space Force Colonel who served over 30 years on active duty. In his final job, Gardner was the Director of Space Force Strategy, Policy, and Plans. Gardner is completing his doctorate in defense and strategic studies at Missouri State University, where he studies deterrence in the space domain and the contributions of commercial space. Mr. Gardner is also an adjunct professor at Georgetown University, where he teaches a space policy and security course.

SFA PARTNER ARTICLE:
Thought Leadership

INNOVATION HUB
Powered by VT-ARC

BY VT-ARC,
COLORADO SPRINGS, CO

Modern Problems Require Modern Approaches

For any one organization, tracking and responding to anti-satellite weapons in four different orbits while also maintaining defensive cyber operations represents a challenging task. But as the number of unknown and adversarial objects in space grows, so does the Department of Defense's need to quickly integrate technological solutions to monitor and react to an array of potential threats.

In the beginning of 2023, Space Systems Command stood up the Space Domain Awareness Tools, Applications, and Processing Lab. The SDA TAP Lab brings together industry, academia, and government under one common mission: accelerate delivery of space battle management software to operational units.

The Apollo Accelerator Program

To accomplish their mission, the SDA TAP Lab established the Apollo Accelerator program. This initiative decomposes five adversarial kill chains into problem statements digestible enough for engineers to solve in three-month cycles, or cohorts. Individuals and companies from industry, academia, and government apply to participate in these cohorts by demonstrating how they can help solve one or more of these problem statements.

The lab operates on a completely voluntary basis, with participants retaining their intellectual property while agreeing to share their solution with other cohort members. Collaboration serves at the heart of all work done in the Lab, where companies can comfortably work together to solve one common problem set. To support that shared environment, the Lab provides access to an unclassified sandbox compute environment, where participants can host their data and applications and interact with others' software.

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At the end of each three-month Cohort, participants gather in-person for a demo day at the Innovation Hub in Colorado Springs -- a partnership between SSC, AFOSR, and VT-ARC to provide a space complete with resources that help government teams like the SDA TAP Lab advance their technology goals. At these demo days, Cohort members present their prototype battle management solutions by walking through a sample kill chain scenario from launch detection, through identification and classification, to reaction.

With the fifth cohort kicking off at the beginning of November, the SDA TAP Lab has seen extraordinary success thus far. Over 450 individuals from more than 70 organizations have participated in the Lab, including international allies and partners. Undergrad and graduate level interns from more than 30 schools have worked with the Lab to support its mission. So far, the SDA TAP Lab and other government teams have awarded 39 subscriptions to solutions developed and matured in the Lab -- ranging in value from $20,000 to $200,000.

Providing Mission Ready Solutions

Since its inception, the SDA TAP Lab has developed innovative solutions to combat anti-satellite weapon threats and support cyber operations without any specific mission deadline. Recently, however, the Lab has entered new partnerships with a variety of government agencies.

Most notably, the Lab will support the Space Safari Program office in their Victus Haze satellite launch mission. This multi-vehicle demonstration will exercise Space Systems Command's ability to rapidly respond to orbital threats by generating a launch with just 24 hours' notice. The launch will include surrogate threat and defender satellites.

When those payloads reach the desired low earth orbit, operational teams will run through several scenarios to test and demonstrate space domain awareness capabilities.

As part of that launch mission, the SDA TAP Lab is developing the "Welders ARC" -- a battle management solution that will help operators distinguish between priorities and identify gaps in technology. A team of seven individuals from Pacific Northwest National Laboratory will lead the charge to create an operationally viable system by October 2025.

Expanding into the Indo-Pacific

While the Lab continues to grow in size and scope, it is also expanding to a new location. As part of a new partnership with the Maui Economic Development Board, the Lab will leverage state and federal grants to stand up SDA TAP Lab, Maui. The team will work closely with Maui County to develop space domain awareness capabilities specifically tailored to the Indo-Pacific Command. Already, the Lab has welcomed two local companies -- Cloudstone Innovation and Aloha Autonomy -- to support this theater.

"We're so excited to see what the small business on Maui will develop as we prototype new battle management solutions," noted Major Sean Allen, chief of the SDA TAP Lab. "This new partnership will not only diversify and expand our work as a Lab, but also bring new connections to the blossoming aerospace industry on Maui."

INNOVATION HUB
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LSAS Tec, short for Land, Sea, Air, and Space Technology, is founded on key pillars that drive customer success. At our core, we offer some of the industry's most widely used commercial software, including Ansys's Systems Tool Kit and Orbit Determination Tool Kit. We recognize the importance of giving our customers the freedom to choose the best functionalities from different vendors. To support this, LSAS Tec continuously pushes boundaries by collaborating with strategic partners worldwide, integrating their software and data seamlessly with ours. Additionally, we enhance our partners' software with proprietary tools developed by LSAS Tec.

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Every one of our customers is on a remarkable mission, and that's why we focus on the software—so they can focus on their goals. Recognizing the challenges of mastering complex software, LSAS Tec offers unparalleled customer support and comprehensive training in partnership with our collaborators. This level of expertise and commitment is what we bring to every customer.

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FOCUS ON GUARDIANS:
Thought Leaders Op-Ed

BY DANIEL EVANS

Future Frontiers: Shifts of the Promethean Age

The Outer Space Treaty, created in 1967, stated that Outer Space is the province for all of humanity and should be preserved for all nations and people, and posited that space is to be the province of all mankind (Treaty on Principles, Nd). It also contains sub agreements and treaties that formulate rules for other aspects of space exploration, including the Liability Convention, in which nations shall be held accountable for any damages they commit in space; The Registration Convention, in which nations must register any object launched into space with the Secretary General of the UN; The Rescue Agreement, in which astronauts are treated as emissaries of humanity, and must be safely returned to their nation of origin should something require emergency assistance from another nation; and lastly, the Moon Agreement, in which each nation agrees to use the Moon for peaceful purposes, explore freely for all, and not place weapons of mass destruction on its surface or orbit (International Space Law, Nd).

This was effective for the time in which it was used, allowing the technology of the age to flourish while securing continuing peace between the then two world superpowers, the US & USSR. However, as technology and space exploration advanced through the decades, the idea of putting humans into space and keeping them there became a reality. Although the current human ambition is a Martian colony, an extended trip to the Moon for resource mining and spacecraft launches would appear to be the most feasible idea with the current technology. A return to the Moon has reinvigorated a space race between governments and private organizations such as the United States and China, or SpaceX and Blue Origin. However, the Moon Treaty was not written to consider the inculcation of private organizations and free enterprise. Therefore, it is prudent to understand the legal implications of Moon mining, and the Moon Treaty itself.

At the time of the creation of the Moon Treaty, it was understood that the Moon had a significant role to play in exploring space, as it is the only natural Earth Satellite (International Space Law, Nd). It was also a goal of nations to keep the Moon from becoming an “area of international conflict,” while bearing in mind the “exploitation of the natural resources of the Moon and other celestial bodies.” (International Space Law, Nd). This leaves the interesting and inevitable question about the ability of governments or private entities to move forward with a return to the moon, and how property rights would be settled. There are also questions about the enforcement of regulations. If space and celestial bodies are to remain free for all nations to openly explore and mine, property rights, jurisdiction, and district authority would need to be followed. The OST states that nations cannot lay claim to property in space, but the application of this rule to private companies remains unclear (Howell, 2017).

In 2015, the US Space Launch Competitiveness Act was formed, disabling a private company to lay claim to any territory in space (US Commercial Space Launch, 2015). Eventually, these laws and regulations would shift. In 2020, NASA announced it would start signing contracts with private companies to buy resources that those companies extract from the Moon (DePagter, Nd). Under this law, companies would have the ability to gain property rights over space resources if the government of the country that organization belongs to approves of their research. However, the vague concepts of resources are where the description of mineable resources ends, leaving a lack of differentiation between a resource on or within the celestial body, such as chemicals or compounds in soil or craters, and the celestial object itself, such as an asteroid (Gamillo, 2022). This forms profoundly serious considerations for property and district rights in space, which have yet to be sufficiently resolved.

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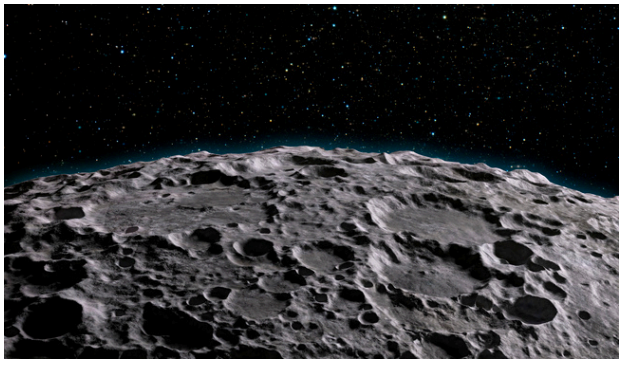
In 2014, it became clear that Rare Earth Metals were essential to every aspect of life in the West. A rare Earth metal (REM), or rare Earth material can be defined as a set of seventeen metallic elements that are an essential part of high-tech devices (What Are Rare Earth Elements, Nd). It is of increasing international concern that China is the repository for many of these elements, including anywhere between 85-90% of available REMs in the world (Campbell, 2014). This allows China the potential for a monopoly on these elements, forcing nations into circumstances in which China can impose their will.

Although such elements are rarely found outside of China on Earth, they are of plentiful bounty on the Lunar surface. Scientist Robert Zubrin has elucidated an idea to build a Moon base, not only to launch craft further into the solar system without the necessity of breaking through the gravitational pull of Earth, thereby saving fuel should propellant be extracted from the ice water in the craters of the Moon, but also for mining purposes. Should a nation or corporation land on the Moon and establish a base, ownership of the land and resources would be in question. The act of moon mining could solve the problem of reliance on Chinese REMs, but the OST would prohibit exclusive ownership of these Moon elements, thereby voiding the prospect.

Should humanity continue forward to Mars, the question of who would own what property and what resources would be gleaned from the lunar and Martian surfaces remains unresolved. If humanity is to continue into space and expand upon lunar principles for resource mining and Martian practices to establish permanent colonies, thereby making humanity a multi-planet species, the questions of who owns what land and what resources found by governmental and corporate interests belong to who must be resolved if the peaceful use of space and celestial bodies is to be continued by each nation.



Signing of the Outer Space Treaty, United Nations

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SFA OP-ED COLUMN:

The Role of Spacepower in National Security

BY BRENT PAGE,
SFA LOS ANGELES

Spacepower has become an increasingly important component of national security in recent years. Space-based assets such as satellites provide critical capabilities for military communications, intelligence, and navigation, and are essential for maintaining the technological edge that many nations rely on for their security.

Providing military communications is crucial to National Security. Satellite-based communications systems allow military forces to communicate with each other and with civilian authorities in real-time, even in remote or hostile environments. This capability is essential for coordinating military operations, as well as for maintaining situational awareness and ensuring the safety of troops.

Spacepower can also provide intelligence data to the warfighter. Satellite-based sensors and other data can be used to monitor the activities of potential adversaries, as well as to assess the damage caused by natural disasters or other events. This intelligence can be used to inform decision-making and to support military operations.

In addition to these specific roles, spacepower provides a broader strategic advantage to nations that possess it. This ability gives nations a unique perspective on the world, as well as the ability to project power and influence beyond their borders. This can be an asset in diplomacy and deterrence, as well as in military operations.

In a recent interview, the Chief of Space Operations for the U.S. Space Force, Gen. B. Chance Saltzman discussed the role of spacepower in national security and some of the challenges and opportunities presented by the growing importance of space in the military domain.

According to Saltzman, "Spacepower is absolutely critical to our national security. It provides the foundation for many of the capabilities that our military relies on, from communications and navigation to intelligence and surveillance. And as our reliance on space-based assets grows, so too does the importance of protecting and defending those assets."

One of the biggest challenges facing the Space Force, according to Saltzman, is the growing number of players in the space domain. "We're seeing more and more nations and commercial entities getting involved in space, which is great in many ways. But it also creates new challenges, such as the need to coordinate and deconflict activities, and to protect our assets from potential threats."

Despite these challenges, Saltzman sees many opportunities for the Space Force and for the broader space community. "One of the biggest opportunities is the potential for increased cooperation and collaboration between nations and commercial entities. By working together, we can pool our resources and expertise to develop new space-based capabilities and to address common challenges."

Another opportunity is the potential for commercial entities to play a larger role in providing space-based services and capabilities. As the demand for space-based assets grows, there is likely to be a greater role for commercial entities in providing these services, which could help to reduce costs and improve efficiency.

In the end, the growing importance of spacepower presents several challenges and opportunities. To address these challenges and to take advantage of the opportunities presented, it will be important for nations to work together and to engage with commercial entities in a collaborative and cooperative manner.

SFA OP-ED COLUMN:

From Service to Space: Bridging the Gap for Veterans in a New Frontier

BY JACK SMITH, CEO OF FORTUNA & SFA NORTHERN CALIFORNIA PRESIDENT

The journey from military service to civilian life is one that only those who have lived it can fully understand. It's a transition marked by pride, resilience, and often, uncertainty—a process where service members carry the discipline, courage, and teamwork they honed over years of dedication. Yet as these veterans turn their gaze to the future, many discover a world that doesn't quite know how to embrace the wealth of skill and experience they bring. This disconnect is especially evident in industries as specialized and demanding as space. And for veterans with the vision and grit to take on this new frontier, it's time we, as a society, laid out a clear and welcoming path.

The space sector represents perhaps the most rapidly evolving industry of our time. This domain demands precision, quick decision-making, and an unwavering commitment to mission; all qualities that veterans embody at their core. For those who've served, the transition into space-related roles should be seamless. And yet, the infrastructure to bring them into these roles remains largely unbuilt. We, as leaders in the space community, have the privilege—and the responsibility—to construct this necessary bridge.

Veterans come to us battle-tested, with an unmatched ability to focus under pressure, collaborate in diverse teams, and lead with purpose. They bring an internal compass for integrity and adaptability that's critical in fields like aerospace engineering, cybersecurity, satellite operations, and beyond. These are not just job functions; they're missions in themselves—missions that could benefit greatly from the very qualities veterans carry with them from years of service.

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When I think about how we can support our veterans as they enter this new field, I think about what it means to truly serve those who have served us. It's about creating not just jobs but career pathways—sustainable, fulfilling work that gives veterans a renewed sense of purpose. This involves ensuring veterans have access to specialized training, mentorship, and guidance as they transition from military roles to civilian ones. It's about giving them the confidence that there's a seat at the table, not just because of a set of qualifications, but because they are uniquely equipped to excel.

This is where the Space Force Association and partners across the space industry come into play. By connecting with educational institutions and aerospace companies, we're crafting tailored training programs that speak directly to veterans' existing skills while filling in the technical gaps they need for success in space-focused roles. Together, we're setting the stage for their success by aligning the industry's needs with veterans' unique abilities.

At Fortuna, we're passionate about doing our part. As a veteran-owned company, we've walked the path of transition ourselves, and we know that success in the civilian world doesn't just happen; it's cultivated. That's why we've built initiatives to provide veterans with immediate access to jobs in tech and aerospace. We believe that a qualified, driven veteran can be ready to work tomorrow, if they're given the right opportunity today. Our mantra, "Want to hire a veteran tomorrow? Call us today," reflects our commitment to making sure that any company, at any time, has the ability to tap into this extraordinary pool of talent.

But the onus is not just on veterans or a handful of companies. It's on all of us—to work together in forging pathways that are as accessible as they are rewarding. We need public and private partnerships that invest in training and certification programs, creating hands-on experiences that guide veterans into high-demand space roles. The future of space is one that requires excellence, discipline, and the ability to adapt—qualities that veterans have in abundance. It's time we make that connection clear, building pathways that recognize and honor what veterans have to offer.

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As we look to the stars, we must remember the commitment that our veterans have already made to the safety and advancement of this country. They are, and always have been, a cornerstone of our society's progress. By giving them the support they need to thrive in the space industry, we're doing more than just filling jobs; we're honoring the best of what they represent. And as we open doors for veterans to take on new roles in space, we're not just building careers. We're building a legacy—a testament to what it means to serve, to transition, and to contribute once again.

So, as the space industry evolves, let's lead with purpose and unity. Let's make it clear that in this new chapter, veterans will continue to serve—not only as assets to our national security but as pioneers in the most challenging and inspiring arena of all. With every door we open, we're not just making room for veterans; we're empowering them to transform the future, carrying their mission-driven spirit into the boundless possibilities that lie ahead.

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SFA PARTNER ARTICLE:
Advancing Low Earth Orbit

BY ELVIS SILVA, BLUE CANYON TECHNOLOGIES EXECUTIVE DIRECTOR OF BUSINESS DEVELOPMENT AND STRATEGY

In 2017, the Defense Advanced Research Projects Agency (DARPA) launched the Blackjack program to create resilient, responsive and affordable proliferated space architectures to address evolving military needs and limitations of traditional satellite systems.

Since its inception, the Blackjack program has focused on leveraging advancements in commercial space technology to develop and deploy a constellation of small satellites that can deliver military-grade capabilities at a fraction of the cost and time typically associated with traditional satellite programs, which utilize much larger, complex, singular assets. By harnessing commercial off-the-shelf components, rapid manufacturing processes and innovative mission architectures, DARPA has demonstrated the potential of low Earth orbit (LEO) satellite constellations to meet the diverse needs of the defense community more effectively and efficiently.

Previously, DARPA's R3D2 (Radio Frequency Risk Reduction Deployment Demonstration) mission had a goal to space-qualify a new type of Kapton membrane reflect array antenna. The agency turned to Blue Canyon to manage the guidance and navigation challenges of controlling a large, deployable structure with a much smaller spacecraft – the Venus-class microsat. Blue Canyon launched its first two microsatellites – including R3D2 – March 2019.

Blackjack String of Pearls

Building on the success of these microsatellite architectures, and several other successful CubeSat programs, Blue Canyon was well positioned to meet the needs of the Blackjack program. The company integrated new capabilities to create the Saturn-200 bus platform, giving DARPA the propulsion, power management, thermal regulation and guidance navigation and control needed for the demonstration to support higher mass, power, processing and more.

To bring this design to fruition, Blue Canyon relied on its vertical integration, using modular componentry and off-the-shelf systems to simplify manufacturing while reducing risk. Blackjack also benefitted from Blue Canyon's iterative improvement process, which addresses previous issues and perfects core technologies from one refresh cycle to the next. Specifically, as part of the Blackjack's development, Blue Canyon worked to address issues with memory and autonomous mission reset, while also overhauling the flight software, creating a unified architecture verified through extensive testing.

In addition, through the development of the Blackjack constellation, Blue Canyon expanded its guidance, navigation and control (GNC) systems in two key ways: first, an increase in the size of the GNC subsystems to accommodate larger payload capacity; and second, implementation of additional design modifications by decoupling the heritage avionics design into distinct modules: an enhanced avionics processor responsible for managing and directing the flow of commands and telemetry between all bus components and a separate, more robust power delivery electronics module.

Blackjack was a first-of-its-kind small spacecraft constellation, proving critical capabilities with autonomy, optical link communications, RF technologies and data transport across multiple buses. The project showcases the successful progression of technology development, prototype demonstration and operational experimentation utilizing cutting-edge space technologies. Blackjack also bolstered the supply chain and collaboration of industry partners to enhance national security and drive the innovation required to support critical defense programs.

Big discoveries start small.

Blue Canyon Technologies' heritage of innovation is what keeps our fleet of spacecraft and components revolutionary. By using sophisticated manufacturing to produce higher volumes of hardware, we successfully launch more spacecraft into orbit – bringing the vastness of space a little more down to earth.

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SFA PARTNER ARTICLE:

How Agencies Can Overcome Edge Data Challenges, in Space and on Land

BY PHIL FUSTER, CHIEF GROWTH OFFICER, HITACHI VANTARA FEDERAL

As Federal agencies increasingly deploy devices at the edge to collect and analyze data, information is flowing back to core infrastructures at ever-increasing volumes. The data deluge presents challenges for agencies working to manage data efficiently and make it actionable – challenges and costs that are magnified when the data stream flows from satellites in space.

For data flowing from space, the National Aeronautics and Space Administration (NASA) is already taking notable steps to manage the increasingly complicated data flow, using cloud and artificial intelligence (AI), while ground stations evolve and adapt to meet emerging threats.

Data Flows for Federal Agencies

Fueled by increasing adoption of AI and machine learning, cloud-based services, and analytics, as well as increasing use of Internet of Things (IoT) and mobile devices, data is growing exponentially. Data volume is expected to grow globally at a compound annual rate of 21.2 percent over the next three years, according to IDC.

While this data surge has created vast opportunities for technological innovation and transformative changes in workflows and customer engagement, the sheer volume of data is overwhelming Federal agencies, making it difficult to draw actionable insights from this data ocean.

Agencies are deluged, and not just from structured data, the traditional data primarily seen in the data center. Instead, the increase in data volume is coming from newer and diverse data types, including IoT data, multimedia data, geospatial and location data, sensor data, and unstructured data.

Space Data Presents Special Challenges

One Federal agency with a unique set of data challenges is NASA, which collects vast quantities of data about stars, planets, and other objects, with the volume of that data seeing "huge increases" in recent years. Satellites send data back to ground stations, where engineers and analysts turn the raw information into measurements and intelligence that are understandable and actionable.

But for more recent missions like NASA's SWOT satellite, however, downloading these masses of data is difficult. Other challenges include ensuring the data's accuracy, storing it, recalling it, and keeping it secure. In response, NASA is turning to the cloud, "setting up systems in the cloud capable of processing, storing, and analyzing all of that digital information." New AI algorithms are also helping to streamline the processing of space data, while ground stations are adapting by growing more modular, flexible, and resistant to cyberattacks.

The Data Challenge

The challenges created by this data growth, in the context of siloed repositories and outdated legacy systems, are significant. Agencies must navigate the deluge while ensuring data integrity, lineage, security, and compliance.

As data volume continues to increase, and data sources continue to explode, agencies can take a series of steps to adjust their data strategies. It is essential to establish a robust data foundation that spans all system types – block, file, and object. This will effectively decouple data infrastructure from individual data types, addressing the complexity of the data landscape.

Specifically, as edge computing advances, agencies will need to incorporate advanced data management and tiering strategies. Those include efficient data compression, smart data aggregation, and intelligent filtering techniques to ensure that only relevant data is transmitted to central servers for further processing.

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Agencies also must focus on efficient management of data storage, which is crucial for seamless data integration and analytics. Properly implemented storage solutions and data fabrics can optimize decision-making, ensuring compliance with operational, security, and legal policies.

The Data Foundation Solution

Agencies must move towards modern storage environments that simplify the movement and access of data wherever it is required. With data dispersed across multiple, disparate storage architectures, each with different experiences and considerations, creates storage challenges that surpass traditional issues of cost, performance, and protection.

The right data infrastructure will equip agencies to simplify the complex landscape of data storage, enabling the management of structured and unstructured data across distributed hybrid environments. This allows them to seamlessly operate and optimize applications, whether hosted on-premises, in the cloud, hybrid, or at the edge.

Whether they operate in outer space or fully on land, transformation and modernization will be key for agencies to continue utilizing the growing streams of data to support agency missions with actionable insights based on quality and timely data.

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Space Force Association inquiries, contact: support@ussfa.org.

SFA OP-ED COLUMN:

From Concepts to Commercialization: Why Space Companies Need Marketing to Thrive

BY COLLEEN MCLEOD GARNER, SFA LOS ANGELES

As the space industry continues to evolve, the partnership between commercial ventures and the U.S. Space Force is driving the future of space operations. These collaborations are helping push the boundaries of innovation, ensuring both national security and technological advancement. However, beyond the complex engineering and bold ideas, there's a key component that often doesn't get enough attention: commercialization, and the role of strategic marketing in making it all possible.

Marketing: The Force Behind Commercial Success

In today's space economy, it's clear that marketing is no longer a "nice to have" but an essential part of every company's success. Whether you're an emerging startup with a revolutionary idea or a legacy company transitioning into commercial partnerships, effective marketing is what helps communicate your value, build partnerships, and gain investor confidence.

Space is a highly specialized and technical industry, making it even more critical for companies to find a way to connect their innovations to the broader market. For many space companies, this means working with experts who understand the unique challenges of this sector. Firms like **Excalibur Alliance**, which has extensive experience in this field, can offer invaluable support. Rather than simply being a marketing firm, Excalibur Alliance serves as a strategic partner, guiding companies through the complexities of building a brand, crafting messages that resonate, and navigating the highly competitive market landscape.

Commercialization and Communication Go Hand in Hand

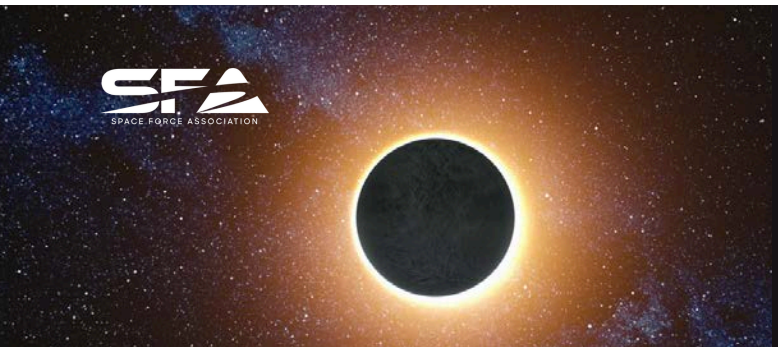
Bringing space technologies to market is not just about innovation. It's about effectively communicating the why behind these innovations. While groundbreaking technology can change the industry, without a clear and compelling story, it risks being lost amid the noise. For startups, especially, this can mean the difference between gaining traction or fading into obscurity.

Legacy companies, too, must adapt to a changing marketplace. With the shift toward commercial opportunities, these companies face the challenge of rebranding themselves to appeal to new partners and customers. A well-defined marketing strategy can help these firms stay relevant, position them as thought leaders, and demonstrate their continued importance in this new phase of space exploration.

Collaboration for a Stronger Space Future

As more commercial enterprises work alongside the U.S. Space Force, these partnerships present exciting new possibilities. Yet, with these opportunities comes an increased need for space companies to differentiate themselves and clearly communicate their value. That's where marketing becomes vital—not just in promoting a product or service but in creating lasting connections that can drive long-term success.

In this fast-paced and competitive landscape, marketing serves as the bridge between innovation and commercial success. By working with trusted partners who understand the intricacies of the space sector, companies can build stronger brands, attract target audiences, and ultimately thrive. Whether you're a rising startup or a well-established player in the industry, marketing isn't just an added bonus—it's the vehicle that will transform your business for the better.



SFA Feature Interview:
Dr Jean-François Morizur, CEO and co-founder of Cailabs

BY KAREN LAWRIE,
SFA MAGAZINE EDITOR &
COMMUNICATIONS MANAGER

Breaking Barriers: The Role of Cailabs in Advancing Space-Based Optical Communication

In the ever-evolving domain of space communication, innovative solutions are crucial to maintaining a technological edge. One company at the forefront of this transformation is Cailabs, a French enterprise specializing in shaping and controlling light. Led by Dr. Jean-François Morizur, Cailabs has been pivotal in overcoming challenges associated with optical communications, particularly in turbulence mitigation and ground station technology.

A Vision Rooted in Innovation

Dr. Morizur's journey into the realm of advanced optics began with his Ph.D. in Quantum Optics, where he co-developed the Multi-Plane Light Converter (MPLC). This breakthrough laid the foundation for Cailabs, founded in 2013 as a spin-out to commercialize MPLC technology. Though Cailabs initially focused on fiber optics and industrial laser systems, the potential applications in space communication became clear in 2017.

Optical communication, leveraging laser-based data transmission, offers unparalleled advantages over traditional radio frequency (RF) systems, including greater speed, discretion, and resistance to jamming. These attributes are especially critical for military applications and Earth observation, where secure and rapid data transfer is paramount.

Groundbreaking Developments in Ground Stations

Cailabs' work in space communications centers on the ground segment, particularly optical ground stations. Unlike academic demonstrations, which often prioritize research over operational deployment, Cailabs has developed commercial, off-the-shelf ground stations designed for stability, automation, and ease of integration.

The crown jewel of this effort is their turbulence-mitigating TILBAR-ATMO device. Atmospheric turbulence has long posed a challenge for laser communication, distorting the beam and reducing data fidelity. Cailabs' solution reshapes and corrects the laser beam, enabling stable links between satellites and ground stations.

This technology has already been proven in several collaborations, including partnerships with NASA and the French Ministry of Defense. The ability to establish robust, repeatable links demonstrates the readiness of optical communication to complement, and in specific scenarios, surpass RF systems.

Advantages in Military and Earth Observation

In military contexts, the benefits of optical communication are compelling. One major advantage is discretion. In scenarios where RF emissions can reveal a ship's position, such as naval operations, laser communication enables data transfer while maintaining radio silence.

Speed is another critical advantage. Downloading large datasets from Earth observation satellites currently requires multiple orbital passes using RF links. Laser communication, with its higher bandwidth, can transmit this data in a single pass, significantly accelerating decision-making in time-sensitive missions.

Resilience to jamming adds another layer of utility. In conflict zones or missile defense operations, where RF links can be disrupted, optical communication ensures continued functionality, safeguarding critical communications.

However, Dr. Morizur emphasizes that optical communication is not a wholesale replacement for RF systems. Instead, it complements existing technologies, addressing specific use cases where its advantages shine.

 Continued on Page 37

The KERAUNOS Project: A Collaborative Triumph

One of Cailabs' standout achievements is the KERAUNOS project, undertaken with Unseenlabs and the French Defense Innovation Agency (AID). This initiative showcases the power of collaboration between innovative, agile companies and forward-thinking government agencies.

Cailabs contributed its expertise in ground segments and turbulence mitigation, while Unseenlabs provided the satellite platform and handled launch and operational logistics. AID played a pivotal role, taking a calculated risk to bring nontraditional players into the defense ecosystem.

The project succeeded in demonstrating optical communication's viability for defense applications, with potential implications for future integration into France's satellite systems. While specific details remain confidential, it's clear that KERAUNOS has positioned Cailabs as a key player in both national and international space defense markets.

Expanding Beyond France

Cailabs' ambitions extend well beyond French borders. The company is deploying optical ground stations in countries such as South Korea, Australia, Greece, and the United States. These deployments highlight the global demand for reliable, high-speed optical communication solutions and Cailabs' ability to meet this demand.

This international expansion underscores the universal need for enhanced data transfer capabilities in a world increasingly reliant on space-based systems. From defense to scientific research, the applications of optical communication are vast and growing.

Looking Ahead

The future of space-based optical communication holds immense promise. As Cailabs continues to refine its technology and expand its reach, it is poised to play a central role in shaping the next generation of communication infrastructure.

For military operators, commercial satellite companies, and national space agencies, the benefits are clear: greater speed, enhanced security, and the ability to operate in challenging environments. Cailabs' work exemplifies the power of innovation, collaboration, and persistence in overcoming the challenges of a rapidly evolving technological landscape.

Dr. Morizur's journey—from quantum optics researcher to CEO of a groundbreaking company—is a testament to the transformative potential of science and entrepreneurship. With companies like Cailabs leading the charge, the future of optical communication in space looks brighter than ever.

In this rapidly advancing field, Cailabs is not just observing the future—it is actively building it. For the Space Force and allied organizations worldwide, this partnership heralds a new era of capability and connectivity in space.

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