

NEXT GENERATION SPACE DEFENSE

MILSATMAGAZINE

SPRING 2026 ISSUE



Space Development Agency's (SDA)
Proliferated Warfighter Space
Architecture Tranche 1 satellite,
image courtesy of Terran Orbital



Secure Space Solutions
stephensonstellar.org

Stephenson Stellar
Corporation
Securing What Matters

A satellite is shown in orbit above the Earth. The satellite's solar panels are overlaid with various data visualizations, including flight paths, network maps, and city lights. The background features a grid of blue dots and a glowing blue arc, suggesting a global network or data flow.

Unrivaled power from above and beyond

The future demands a new class of connectivity—one built for every mission, market and altitude. The Hughes JUPITER™ System is the proven, unified platform delivering that future today for secure global scalability.

Flexible Capacity Orchestration | High-Throughput Modems | Dynamic Inroute Reconfiguration

www.hughes.com/jupiter

AvL TECHNOLOGIES

Announcing the **enhanced** 1.35m XY Antenna
the next generation of precision tracking!



1.35XY Next Gen

- Full Hemisphere Coverage
- Faster Time to Target
- Less Peaking Time
- Two Checkable Cases

Email Sales@avltech.com connect with the
AvL Sales Team.

AvLTech.com

Sales@avltech.com



Publishing Operations

Silvano Payne
CEO + Writer

Simon Payne
Vice President

Teresa Sanderson
Savannah Baldwin
Advertising + Marketing

Sean Payne
Business Development
+ Writer

Don McGee
News Editor
Production Manager

Hartley Lesser
Pattie Lesser
Magazine Editors
+ Writers

Raj Singh Khehar
Events

Dan Makinster
Technical Advisor

Features

6 The Blake Brief
The Economics of an affordable Launch System

10 Game Day Heroes
How Verizon and iDirect Powered First Responder Connectivity

14 Military Leaders Seek More Commercial Partners

18 How Dual Use Satellites Are Powering a New Era of Operational Awareness

20 Why Modern SATCOM Is All About Innovation and Speed

24 COMMAND CENTER
Michael Fry, Sev I Tech

28 Autonomy With Isolation
No Longer Experimental Edge

Advertisers

9 ACORDE

1AvL Technologies

17CPI

2Hughes Network

32 Mission Microwave

31ND SatCom

5 Omnetics

1 Stephenson Stellar Corporation

15 Silicon Valley Space Week

23 SmallSat Europe

13Space Foundation

SatNews Publishers—Copyright 2026

SatNews Publishers, 800 Siesta Way, Sonoma, California—94576—Phone: (707) 939-9306—Fax: (707) 939-9235

SatNews Publishers reserves the right to edit, reschedule, or decline any submitted material. Submission does not guarantee publication. The views expressed in this publication are those of the respective authors and do not necessarily reflect those of SatNews Publishers. All imagery is copyright to its respective owners and is used with permission.



MICRO- & NANO- INTERCONNECT TECHNOLOGY FOR MISSION-CRITICAL APPLICATIONS.

Omnetics ruggedized connectors exceed the SWaP requirements of deep space, delivering exceptional performance in harsh environments.



200°C
RATED
**HIGH
SHOCK**
& VIBRATION

EXCEEDS
MIL-DTL-32139

SMALL SIZE
& WEIGHT



The Blake Brief The Economics of an Affordable Launch System

The launch via a SpaceX Falcon 9 rocket of the USSF's GPS III mission. Photo is courtesy of SpaceX.

For much of the space age, the dominant cost of getting anything into space has been launch. Rockets were often treated as disposable machines and the infrastructure for launches was used infrequently, at best. This model essentially guaranteed high prices, but today, affordability is improving.

This improvement is not due to a single breakthrough, but rather, due to four structural conditions: deep reusability, high launch cadence, launch companies' creation of their own cadence, and (hopefully, soon to be) real competition in the market. Together, these forces transform launch from a low-volume, high-cost activity into a repeatable and economically sustainable service.

Two of these ideas are obvious, yet essential for creating true affordability. First, increasing the reusability of a launch vehicle guarantees a lower per-flight cost. Second, the more often a launch vehicle flies, the more a company's fixed costs are spread across missions.

However, there are two twists on these concepts that strengthen their results. First, companies that create their own demand can guarantee high cadence, and second, competition ensures collective movement toward savings.

Ultimately, affordability in launch is not just about better technology, it requires better economics.

Reusability Can Be the Primary Cost Lever

The largest driver of costs in traditional launch systems is hardware replacement. In the past, expendable rockets meant the build of a new vehicle for every mission. Even with efficient manufacturing and design, disposable models limited how far prices could fall.

Why did it take so long to embrace reusability? The equipment necessary to make a launch vehicle reusable adds mass to the vehicle, which reduces the mass the vehicle can deploy on orbit.

As long as governments were almost exclusively footing the bill for launch payload mass to orbit, higher mass won out. However, once commercial space began to take hold, the pendulum swung in favor of lower cost to orbit.

Using reusable launch vehicles changes the equation by spreading hardware costs across multiple flights. Rather than paying the entire cost a rocket for one use, companies can effectively pay for a fraction of its total cost with each use.



The launch via United Launch Alliance's Atlas 5 of the USSF's GPS III mission. Photo is courtesy of ULA.

The economic logic behind reusability, in this case, is the same as that in commercial aviation. While an aircraft is expensive to build, it is relatively inexpensive on a per-flight basis because it is often reused thousands of times.

Many companies understand this logic and are pursuing multiple levels of reuse. Partially reusable rockets, such as the SpaceX Falcon 9, allow for recovery of first-stage boosters, and are already producing significant cost savings.

Blue Origin's New Glenn and Rocket Lab's Neutron are partially reusable launch vehicles at various stages of development, with New Glenn having made it to orbit and returned to land on a drone-ship and Neutron scheduled to launch this year.

Fully reusable rockets, which allow for both first-stage and upper-stage recovery, promise even larger cost reductions given the complexity and higher value of upper stage systems.

SpaceX's advancement toward a rapid reuse rocket system with Starship has already shown major developmental success. In late 2024 and the latter half of 2025, Starship saw major success when both the spacecraft and its booster successfully returned to Earth. Stoke Space's Nova also attempts to attain 100 percent reusability, with its first launch scheduled for this year.

If market trends are any indication, attaining fully operational reuse of launch vehicles will likely bring a major change to the current launch model, not just in terms of technological advancement but also in terms of economic sustainability.

High Launch Cadence Multiplies Savings

Even fully reusable rockets continue to remain relatively expensive, if they fly infrequently. Launch operations include substantial fixed costs, such as launch sites, range support, regulatory compliance, engineering staff, mission control, and manufacturing facilities. Such costs exist regardless of whether a rocket flies twice a year or twice a week.

High launch cadence spreads these fixed costs across more flights, reducing the overall cost per launch. This high cadence launch model is more affordable because of classic capacity utilization economics.

If the same launch site, workforce, and infrastructure are used more frequently, the cost per launch decreases. Not only does high cadence reduce the overall cost per flight for space companies, it also provides several benefits.

Cadence drives operational learning curves, allowing teams to get faster and more efficient with more launches.



The 9x4 New Glenn Super-Heavy launch vehicle. Image is courtesy of Blue Origin.

Similarly, more flights require companies to standardize processes, resulting in fewer custom procedures and lower customization costs.

Finally, higher cadence can also boost profits, which provide necessary resources for reinvestment into the production system for even more efficient missions. The relationship between cadence and affordability is nonlinear. Doubling flight rates can reduce the unit cost by more than half when fixed costs dominate.

Again, the commercial aviation industry provides an illustrative example of this model. The per flight cost of commercial airlines is considerably higher if their operations are sparse and each flight requires more customization.

Once commercial flights became more standardized and frequent, the cost per flight dropped dramatically. This is why launch systems that are designed for frequent operations, rather than occasional flagship missions, are structurally advantaged on price.

Creating Your Own Cadence Furthers Progress

One challenge in achieving high cadence is demand uncertainty. Commercial (and even governmental) customers alone may not be able to provide sufficient steady launch volume to keep rockets flying frequently.

One solution to this issue is the creation of your own payload demand. Internal demand in the form of constellations allow launch providers to schedule missions independent of external customers and demand. This guarantees a steady flight rate and improves asset utilization.

A leading example of this is SpaceX's Starlink, which generates a continuous launch demand for constellation deployment and replenishment. Similar strategies are expected from other providers developing broadband and communications networks, including Blue Origin's TerraWave.

Ultimately, creating an internal cadence guarantees a baseline flight rate, reduces the risk of investing in reusable vehicles, and eases production planning. As a result, self-generated demand is one way to turn launch from a reactive service into a scheduled transportation pipeline. This predictability is an important factor in reducing costs.

Real Competition Is Required to Reduce Prices

Even with reusable launch vehicles and high cadence, launch cost savings will not turn into launch price reductions without competition. A dominant provider that faces little market pressure may choose to improve margins instead of lowering prices.

Competition would drive affordability by creating price pressure in contract bids, reducing complacency in operation, driving faster and more efficient innovation cycles, and, ultimately, giving customers more leverage in negotiations.



The Neutron launch vehicle. Image is courtesy of Rocket Lab.

The presence of multiple reusable launch providers is especially important. Launch providers using expandable vehicles cannot provide pricing competitive with reusable providers. Only when customers can switch between providers without a major pricing hit or technical penalties, providers will be forced to compete on price and service.

A lesson can once again be learned from the commercial aviation industry. An influx of carriers in the market forced airlines to provide better services at lower costs to consumers.

Conclusion

Ultimately, an affordable space launch emerges from a system, not just a single invention. Deep reusability reduces hardware costs per flight. High cadence spreads fixed operational and infrastructure costs. Self-generated demand ensures rockets fly often enough to realize reuse benefits. And competition ensures those efficiencies translate into lower prices rather than simply raising profits.

When these factors align, launch shifts from customized engineering marvels to a scalable transportation service. That transition, which is already underway, is what ultimately makes space broadly affordable.

Author Curt Blake co-founded and was CEO of Spaceflight Inc., the largest provider of integrated launch services for small satellites. He established Spaceflight's global network of launch providers that included SpaceX, Rocket Lab, Orbital, JAXA, Arianespace, and NSIL (the commercial arm of the Indian Space Agency). Curt was one of the first attorneys on-site at Microsoft, general counsel at Aldus, and COO at Starwave, giving him a solid combination of practical business experience and an intimate understanding of the legal risks involved in running companies. Curt has negotiated numerous launch contracts with companies all over the world, including India, Japan, Russia, New Zealand, Australia, France, Germany, Italy, the UK, Kazakhstan, Israel, Brazil, Luxembourg, Korea, and Canada, among others.



The views expressed in this article reflect those of the authors themselves and do not necessarily reflect the views of their employer or their clients. This communication is provided as a service to our clients and friends for general informational purposes. It should not be construed or relied on as legal advice or a legal opinion, and does not create an attorney-client relationship. This communication may be considered attorney advertising in some jurisdictions. Prior results do not guarantee a similar outcome.

wsgr.com





Game Day Heroes

How Verizon and iDirect Powered First Responder Connectivity

As the world came together for the Super Bowl, the championship game of the National Football League (NFL), an event defined by precision, teamwork, and preparation, another team worked tirelessly behind the scenes to ensure safety and connectivity: first responders.

Much like the athletes on the field, first responders rely on year-round training, cutting-edge tools, and seamless coordination to perform at their best when it matters most.

Verizon Frontline, with its advanced technology and deployable assets, plays a pivotal role in empowering these everyday heroes.

Leveraging iDirect Satellite Technology for Modernized Communications

First Responder Connectivity

At the heart of Verizon Frontline's success is its integration of iDirect satellite technology.

Last year, Verizon upgraded to Intuition infrastructure, featuring DCR/DBR, a virtualized, cloud-native hub architecture. This modernization reduces Verizon's physical footprint at the teleport and, once fully implemented, will accelerate the deployment and enhance scalability of mission-critical resources while maintaining uninterrupted services during emergencies.

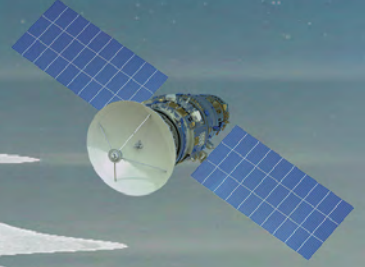
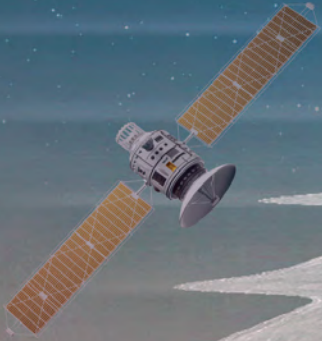


The adoption of virtualized ground systems empowers Verizon Frontline to deliver high-performance connectivity, ensuring first responders are always equipped and ready to rise to the occasion.



ACORDE

Space & Defence
RF EXPERTS



challenge the limits

CEPYME NATIONAL
AWARD 2024
TECHNOLOGICAL
INNOVATION

CEPYME AWARD 2025
PROMOTION OF
EMPLOYMENT
QUALITY

CANTABRIA
TALENT AWARD
ESTABLISHED
COMPANY 2025

CANTABRIA SME
OF THE YEAR
AWARD 2025



NATO
AQAP 2110



MORE INFORMATION:

⊕ ACORDE.COM



Satellite Picocell on Trailer (SPOT): A deployable solution that supported up to 400 users with satellite backhaul and Wi-Fi access, ensuring connectivity in remote or high-demand areas. Photo courtesy of iDirect and Verizon Frontline.

Preparation Is Everything

Super Bowl athletes spend countless hours training, strategizing, and perfecting their craft to deliver peak performance on game day.

Similarly, first responders prepare relentlessly to handle emergencies of any scale. Verizon Frontline supports this mission by providing state-of-the-art training, technology demonstrations, and real-time situational monitoring.

These efforts ensure that first responders are always ready to act with precision and confidence, whether it's a routine call or a large-scale event like the Super Bowl.

Verizon Frontline's deployable assets, command centers, and real-time monitoring capabilities — powered in part by iDirect satellite communications — ensure that first responders are equipped to handle both everyday emergencies and the unique challenges of high-profile events.

This commitment to readiness mirrors the dedication of athletes who train year-round to stay at the top of their game. Verizon Frontline's Pre-Super Bowl Activities in the Bay Area

In the week leading up to the Super Bowl, Verizon Frontline hosted a series of activities in the Bay Area to engage public safety officials and showcase their cutting-edge technology.

These events included customer visits, fleet tours for state and local government agencies, and a special ceremony recognizing the public safety teams of the next two Super Bowl host cities: Inglewood, California, for Super Bowl LXI in 2027, and Atlanta, Georgia, for Super Bowl LXII in 2028.

First Responder Connectivity

Showcasing the Fleet

Verizon Frontline's fleet of deployable assets was a testament to their commitment to innovation and public safety.

Highlights included:

- *Tactical Command: A mobile command center equipped with a conference room and additional surveillance capabilities, providing a hub for real-time decision-making and coordination.*
- *Tactical Humanitarian Operations Response (THOR): A vehicle equipped with private 5G Ultra-Wideband (UWB), mobile edge compute, and multiple backhaul options for seamless communication in critical situations.*

These assets demonstrated Verizon Frontline's ability to deliver reliable, high-performance satellite connectivity provided by iDirect, even in the most challenging environments.

From the sidelines to the frontlines, Verizon Frontline is redefining what it means to be ready. By equipping first responders with innovative technology and seamless connectivity, they ensure public safety teams can perform with the same precision and coordination as Super Bowl champions.

Whether it's a routine emergency or a high-profile event, Verizon Frontline is always there, empowering first responders to protect and serve when it matters most.

The Best Investment

You'll Make in Space This Year

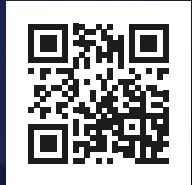
When 11,500 attendees from more than 60 countries come together in one place, something powerful happens.

Momentum accelerates.

Decisions move faster.

Connections turn into collaboration.

That's Space Symposium.



REGISTER NOW

spacesymposium.org

April 13-16, 2026 | The Broadmoor, Colorado Springs, CO USA

Military Leaders Seek More Commercial Partners

Department of Defense Secretary Pete Hegseth, U.S. Air Force Secretary Troy Meink and Chief of Space Operations Gen. B. Chance Saltzman are delivering the same message: They want satellite constellations that can survive conflict in space, deliver more capability to the battlefield, and bring innovation that will keep the United States ahead of rivals racing toward parity in orbit. And they want it yesterday.

“For generations, the battle was fought on land, in the air and subsea. But today, the ultimate high ground — the single most decisive battlefield of this century and centuries to come — is hundreds of miles above our heads,” Hegseth said during a Feb. 23 visit to Sierra Space outside Denver.¹

The push for space capability comes as Congress approved \$40 billion in Space Force spending for the 2026 fiscal year. That number could grow substantially in 2027 as the Trump administration presses to grow Pentagon spending nearly 50% to \$1.5 trillion with a focus on purchasing innovative weapons systems.²

President Donald Trump, who established the Space Force in 2019, signaled plans to strengthen military satellite programs in his State of the Union address.³ “Look at Space Force. Space Force is my baby... my baby is becoming so important,” Trump said.

The Trump administration in January released its National Defense Strategy, which pledged to supercharge the defense industrial base. “We must return to being the world’s premier arsenal, one that can produce not only for ourselves but also for our allies and partners at scale, rapidly, and at the highest levels of quality,” the Defense Strategy document states.⁴

Saltzman and Meink, who spoke Feb. 24 at an Air Force Association gathering near Denver, said cutting red tape and infusing cash into nimble startups are part of an agenda to win the decades-old war for Pentagon acquisition reform.

“Our focus is to deliver mission-effective capabilities faster and to do that we must innovate faster than our adversaries,” Meink said.⁵

That kind of fast innovation has changed the Space Force’s view on what gets sent to space.

“We no longer have the luxury of pursuing perfection, a system that’s good enough and delivered sooner provides real combat capability,” Saltzman said.⁶



USSF’s General Purday speaking at the Space Foundation’s Innovate Space: Finance Forum.

On Feb. 18, at Space Foundation’s Innovate Space: Finance Forum in Dallas, Space Force Maj. Gen. Stephen Purdy, whose leadership background includes launch and acquisition oversight, said in recent years, government and national defense have slowed acquisition, innovation, and manufacturing.⁷



SILICON VALLEY

SPACE WEEK

3 Impactful days

2 Conferences

1 Mission



SAVE THE DATE!

OCTOBER 27- 29, 2026

The current administration, through appointees and executive orders, is restoring innovation at speed, Purdy said. A key component of that effort is defense-based program awards through Small Business Innovation Research (SBIR) funding, which had been put on hold since Oct. 1 amid congressional deadlock.⁸

Congress in late February was reportedly nearing a deal to reauthorize the program.⁹

SBIR has been a key tool for the Pentagon to acquire innovative technologies, with 33,551 deals awarded from 2015 to 2025.¹⁰

But Purdy had advice for firms looking for Pentagon work: Find commercial customers to help pay the tab by creating dual-use technologies similar to Varda Space Industries and its W-5 mission.

On the defense side, W-5 provides hypersonic re-entry data and on the commercial side, serves to develop pharmaceutical crystals in orbit.

Purdy also cautioned, however, that the Department of War cannot serve as a company's R&D arm. He also stressed that the current timeline of two to three years to plan, launch and deploy a satellite is still much too long. He wants satellites in orbit and on mission in a week's time.

The urgency is driven, in part, by a surge in China's space capabilities, which included a record 92 orbital launch attempts in 2025, up from 55 in 2021. While the United States more than doubled China's launch number in 2025, it trailed in military space launches, with 16 to China's 20.¹¹

At the Dallas Finance Forum, Dean Cheng, senior policy fellow for the Potomac Institute for Policy Studies, warned that China's success could even change the language of spaceflight. "If they have a dominant role in services, in broadband, and cislunar, why wouldn't (the official language) be Chinese?" He also told attendees, "You can be sure when China says they will land astronauts on the moon by 2030, they will land astronauts on the moon by 2030."

The U.S. lunar effort suffered another delay with the Feb. 27 announcement that postponed moon landing plans into 2028 aboard the Artemis IV Mission. "With credible competition from our greatest geopolitical adversary increasing by the day, we need to move faster, eliminate delays, and achieve our objectives," NASA Administrator Jared Isaacman stated in a news release.¹²

To counter China's rising space ambitions, Secretary Meink said the Pentagon is no longer a boutique shopper looking for custom-tailored items. Instead, the military needs goods and services at speed and scale.

"It doesn't matter if we have something that works perfectly under all conditions — if it is too expensive and I can't build enough of them to be effective, it's a failed program," Meink said.

Saltzman has led the off-the-rack philosophy by looking to companies like SpaceX as an alternative to launching new Space Force constellations. The Space Force is also acquiring imagery, radio monitoring services, weather data and other products from commercial constellations, a major shift from the Pentagon's Cold War philosophy of building military satellites to meet every need.

"There may be some risk in change," Saltzman said, "but it pales in comparison to the risk of accepting the status quo."

Authors Tom Roeder and Lesley Conn are members of Space Foundation's Insights team.

Space Foundation is a nonprofit organization founded in 1983 as a gateway to advance the global space community. Space Symposium, created by Space Foundation in 1984, is the premier assembly of the global space community, bringing together more than 10,000 space professionals, business leaders, and decision-makers. Attendees from more than 40 countries gather annually in Colorado Springs to form partnerships and explore the latest in space technology. Representing all sectors of the space ecosystem, participants include space agencies, commercial businesses, military organizations, government agencies, R&D facilities, educational institutions, and entrepreneurs. The event also extends its global reach with virtual access through livestream and on-demand programming. Learn more at www.spacesymposium.org.

References

- ¹ Department of War. "Hegseth, Arsenal of Freedom Tour Look to Space From 'Mile High City.'" Feb. 23, 2026. <https://www.war.gov/News/News-Stories/Article/Article/4412555/hegseth-arsenal-of-freedom-tour-look-to-space-from-mile-high-city/>.
- ² House Armed Services Committee. "Chairmen of Senate and House Armed Services Committees Back President Trump's \$1.5 Trillion Defense Budget Topline Proposal." Jan. 8, 2026. <https://armedservices.house.gov/news/documentsingle.aspx?DocumentID=6380>
- ³ The Associated Press. "Read the complete transcript of Trump's 2026 State of the Union." Feb. 25, 2026. <https://apnews.com/article/donald-trump-transcript-state-of-union-2026-c13e2a07df999b464b733f4a6e84dbd4>

⁴ Department of War. “2026 National Defense Strategy.” Jan. 23, 2026. <https://media.defense.gov/2026/Jan/23/2003864773/-1/-1/0/2026-NATIONAL-DEFENSE-STRATEGY.PDF>.

⁵ Space Force. “SECAF opens 2026 AFA Warfare Symposium with ‘Innovating Faster: Acquisition Transformation’.” Feb. 24, 2026. <https://www.spaceforce.mil/News/Article-Display/Article/4413083/secaf-opens-2026-afa-warfare-symposium-with-innovating-faster-acquisition-trans/>

⁶ Space Force. “Saltzman details focus on speed, accepting risk.” Feb. 24, 2026. <https://www.spaceforce.mil/News/Article-Display/Article/4413046/saltzman-details-focus-on-speed-accepting-risk-long-term-force-design/>.

⁷ Lesley Conn. “Growing alignment between U.S. government, commercial ventures will help assure U.S. space superiority, Finance Forum presenters agree.” Feb. 26, 2026. <https://www.yumpu.com/en/document/read/71027716/space-foundation-finance-forum-panelist-insights226>.

⁸ Department of War. “SBIR-STTR.” Feb. 27, 2025. <https://www.dodsbirsttr.mil/>

⁹ NSBA. “Agreement Reached to Restart SBIR, STTR Innovation Programs .” Feb. 25, 2026. <http://nsbaadvocate.org/post/nsba-sbtc-press-agreement-reached-to-restart-sbir-sttr-innovation-programs>.

¹⁰ Small Business Administration. “Awards.” Feb. 27, 2026. <https://www.sbir.gov/awards>.

¹¹ Space Foundation database. “Launch 2025.”

¹² NASA. Email to author. Feb. 27, 2026.

www.spacefoundation.org



ENABLING CONNECTIVITY ON EARTH, ACROSS ORBITS AND BEYOND

ANTENNAS • AMPLIFIERS • PODS • RADOMES • MORE



Explore more at:
cpii.com



Advances in small satellites are creating a new class of dual-use data, information from the same sensors that can serve both national weather forecasting and tactical military awareness. One of the clearest examples of this convergence is how radio-frequency geolocation (RFGL) and weather intelligence from space complement one another.

Commercial small-sat constellations measuring how GPS and GNSS signals bend as they pass through Earth's atmosphere, a technique known as radio occultation (RO), produce precise profiles of temperature, pressure, and humidity.

These observations feed directly into global forecasting models used by the National Oceanic and Atmospheric Administration (NOAA) and other civil agencies. NOAA's plan to scale up to roughly 20,000 RO profiles per day, for example, reflects how critical these measurements are to improving forecast accuracy.

Through dual-use capabilities, those same satellites can also detect and locate radiofrequency (RF) transmissions from emitters on land or in the air. By revealing interference sources, tracking communications activity, and strengthening spectrum awareness, this RFGL capability provides insights for both civilian and strategic missions.

Operating as a distributed constellation across low Earth orbit, these satellites offer resilient space-based sensing even in contested or degraded environments, maintaining visibility where traditional systems may face interference or access constraints. These commercial sensors integrate easily with government systems through open data standards, reducing latency from orbit to operator.

If weather shapes the physical space, radio-frequency activity defines the invisible one. In today's congested spectrum, operators face increasing challenges from jamming, spoofing, and interference.

Commercial RFGL data gives analysts a persistent view into this domain. By monitoring RF activity across regions of interest, defense organizations can detect unusual signal patterns, identify unauthorized transmissions, or locate interference affecting critical systems such as GPS and radar.

During major operations or humanitarian missions, understanding the RF environment helps planners deconflict communications and ensure spectrum availability.



RO and RFGL data by helping planners assess terrain mobility, identifying areas where heavy rainfall or saturated ground could hinder the movement of vehicles and troops.

These capabilities are increasingly being built domestically, as U.S. companies expand manufacturing to strengthen the nation's space infrastructure. At Spire Global, for example, we are growing our production capacity in Boulder, Colorado, to assemble small dual-use satellites on American soil, providing both weather agencies and deployed forces with faster access to critical data.

In regions experiencing elevated GPS interference, such as parts of the Baltics, RFGL data can pinpoint the source and extent of disruption, supporting both navigation safety and situational awareness.

When paired with atmospheric data, these RF insights gain additional context. Variations in ionospheric conditions, humidity, and temperature affect signal propagation. Integrating both data types enables analysts to distinguish natural effects from intentional interference: a crucial distinction for both national security and civilian operations.

The same measurements can also support monitoring of space-weather conditions, including ionospheric disturbances that affect satellite communications and navigation. As the number of LEO satellites grows, understanding and forecasting these effects becomes increasingly critical for both civilian and military operators.

A single satellite can collect data that feeds something like NOAA's weather models, for example, while contributing to a defense customer's mission-specific forecast or RF map. This shared infrastructure builds resilience on both sides. Civil agencies gain greater data diversity and redundancy, while defense users access commercial capacity that can supplement government assets during crises or high demand.

Beyond atmospheric profiling, similar satellites equipped with GNSS reflectometry (GNSS-R) sensors can derive surface conditions such as soil moisture. These insights complement

As severe weather accelerates and geopolitical competition intensifies, the need for timely, integrated information from space will only grow. The same constellations tracking storms and droughts also reveal how environmental and electromagnetic conditions affect operations and security.

The convergence of weather intelligence and RF awareness is redefining how space contributes to Earth's defense. Rather than building separate systems for each mission, nations can leverage shared, resilient, and cost-effective commercial infrastructures.

As the Department of War advances data-to-decision frameworks such as CJADC2 and Project Maven, commercial environmental intelligence can serve as a foundational data layer: delivering fused, real-time insights directly into command and control systems and strengthening national decision advantage.

Through dual-use satellites, weather and RFGL data together provide the context that enables decision dominance.



Author Quintin Jones is the Vice President and Head of North America at Spire Global



Why Modern SATCOM is All About Innovation and Speed



The war in Ukraine didn't just redraw borders — it rewrote the rulebook for modern warfare.

What began as a conventional conflict quickly evolved into a high-tech arms race, where real-time intelligence, satellite imagery, and resilient communications proved just as critical as boots on the ground. Low Earth Orbit (LEO) satellites have become a battlefield advantage, providing agile, secure connectivity in environments where traditional infrastructure has been wiped out or jammed. However, as the tempo of war accelerated, so, too, did the demands on military communications.

Today's frontline isn't fixed; it moves quickly, unpredictably, and constantly. If you stop, you're a target.

Without advanced communications, success on the modern battlefield cannot be achieved. Militaries now need more than just LEO. LEO, GEO and cellular must work together to deliver seamless, always-on, multi-orbit connectivity, whether on foot, at sea, in a vehicle, or in the air. Comms-On-The-Move (COTM) and resilient connectivity are a lifeline.

Satellite communications play a pivotal role in powering all military combat operations. Warfighting philosophy is a great example of this, displayed in maneuver warfare. It seeks to shatter the enemy's cohesion through a variety of rapid, focused, and unexpected actions that create a turbulent and rapidly deteriorating situation that the enemy cannot cope with.



Kymeta's Osprey u8 Multi-Orbit Terminal.

SATCOM technology enables combatants to make decisions faster with more precise and focused impact. However, if that connection is disrupted or disabled, frontline forces lose connectivity and are not just inconvenienced but are cut off, isolated from command, and placed in immediate danger. In these moments, the shortcomings of being heavily reliant on one data source become evident.

As European nations work to bolster their defense capabilities, increase their independence and give themselves optionality to existing communications infrastructures, the focus has shifted from a reliance on a few dominant players to building a more balanced and resilient connectivity ecosystem. Why put all your eggs in one basket?

This is where multi-orbit makes all the difference, providing a more competitive resilience to meet the demands of modern military operations that often occur in contested environments that are subject to jamming and interference.

These systems integrate seamlessly with LEO and GEO satellites as well as cellular networks to create a consistent, resilient network that can be relied upon.

These networks are fully secure and work exactly when needed. This ensures that the warfighter's access to data is survivable, resilient, reliable, and simple.

For trusted defense communications, military operations require terminals that are engineered from the outset to perform reliably in rugged environments. Purpose-built terminals are designed to withstand the rigors of the frontline, offering robust protection against intense levels of attack and supporting operations even in GNSS-denied environments.

Currently, traditional phased array antennas being used on the frontline bring much complexity that goes against the design philosophy modern fighters need — higher power dissipation from active components, usage intensity, signal strength, and motor-based antenna movement.



For the warfighter, optimized SWaP-C (Size, Weight, Power, and Cost) means resilient, on-the-move connectivity without adding weight, power burden, and thermal detection, which ensures mission agility and survivability in the field.

This is why hardware matters. Communication terminals must be built for the realities of modern conflict. These next-generation terminals are durable, intelligent, and resilient, and are quietly becoming the unsung enablers of trusted communications on the frontline.

The ability to blend LEO, GEO and cellular networks is perfectly aligned with the PACE (Primary, Alternate, Contingency, and Emergency) model. This open architecture allows systems to switch dynamically between primary and alternate networks, maintaining communications even amid jamming, interference, or outages.

Designed from the ground up for a wide variety of uses including critical operations, terminals which have proven their value in Ukraine as well as other theaters across the globe aim to support intelligence, surveillance, and reconnaissance (ISR) missions with rugged, reliable performance.

Satellites harnessing metamaterials can also achieve polar agility, enabling seamless connectivity with both LEO and GEO satellites through a single, flat-panel antenna. There are no motors and no bulky hardware — just low-power, software-defined beamforming that steers the beam electronically. The result is a highly agile terminal that can shift between satellite networks and receive new capabilities via over-the-air updates, like a software app.

In a world where staying connected is mission-critical, these solutions go beyond resilience. They deliver a dynamic, always-on network that adapts in real time, no matter the terrain, the threat, or the theatre of operations.

As defense strategies evolve to meet the demands of the modern battlefield and optionality comes into play, communications infrastructure must keep pace. The days of static command centers and predictable lines of contact are over. Victory now belongs to those who can move, adapt, and communicate on-the-go and at speed, regardless of adversarial interference.

In this new battlespace, militaries must move beyond legacy systems and embrace multi-orbit, software-defined, on-the-move solutions that are now readily available. This is about operational lifelines — delivering the speed, security, adaptability and resilience modern warfare demands. **When comms fails, missions fail. And when missions fail, lives are lost.**

kymetacorp.com

KYMETA

Author Tom Goebelbecker is the Senior Vice President, National Security Programs with Kymeta. He joined Kymeta in September of 2025. He leads the company's global defense-focused growth initiatives, including expanding strategic partnerships, penetrating new markets, and aligning U.S. DoW sales and operations with Kymeta's long-term objectives. With more than 25 years of executive leadership in aerospace, defense, and satellite communications, Tom has a proven track record of driving scalable growth and building high-performing teams.





SMALLSAT EUROPE

EUROPE'S PREMIER SMALLSAT EVENT

26-28 MAY 2026
RAI AMSTERDAM

Propel your knowledge,
connections, and business
at SmallSat Europe

2,500+ ATTENDEES

250+ PRESENTERS

200+ EXHIBITORS

REGISTER TODAY AT [SMALLSATEUROPE.COM](https://smallsat-europe.com)

Michael Fry

**General Manager
Space Division
SevI Tech**

Michael Fry is the general manager of SevI Tech's Space division. Fry oversees the operations delivery, quality of customer solutions and services as well as growth for the Space division and ensures that they meet the highest standards of compliance, performance and innovation.

Fry is an industry leader with more than 15 years of experience in cybersecurity and information technology. He collaborates with senior leaders across the company, industry partners, and stakeholders to align vision, strategy and culture with the goals and values of the organization and its customers.

Fry holds a master's degree in computer and information systems security/information assurance from the University of Denver and a Bachelor of Sciences degree in computer and information systems security/information assurance from University of Maryland Global Campus.



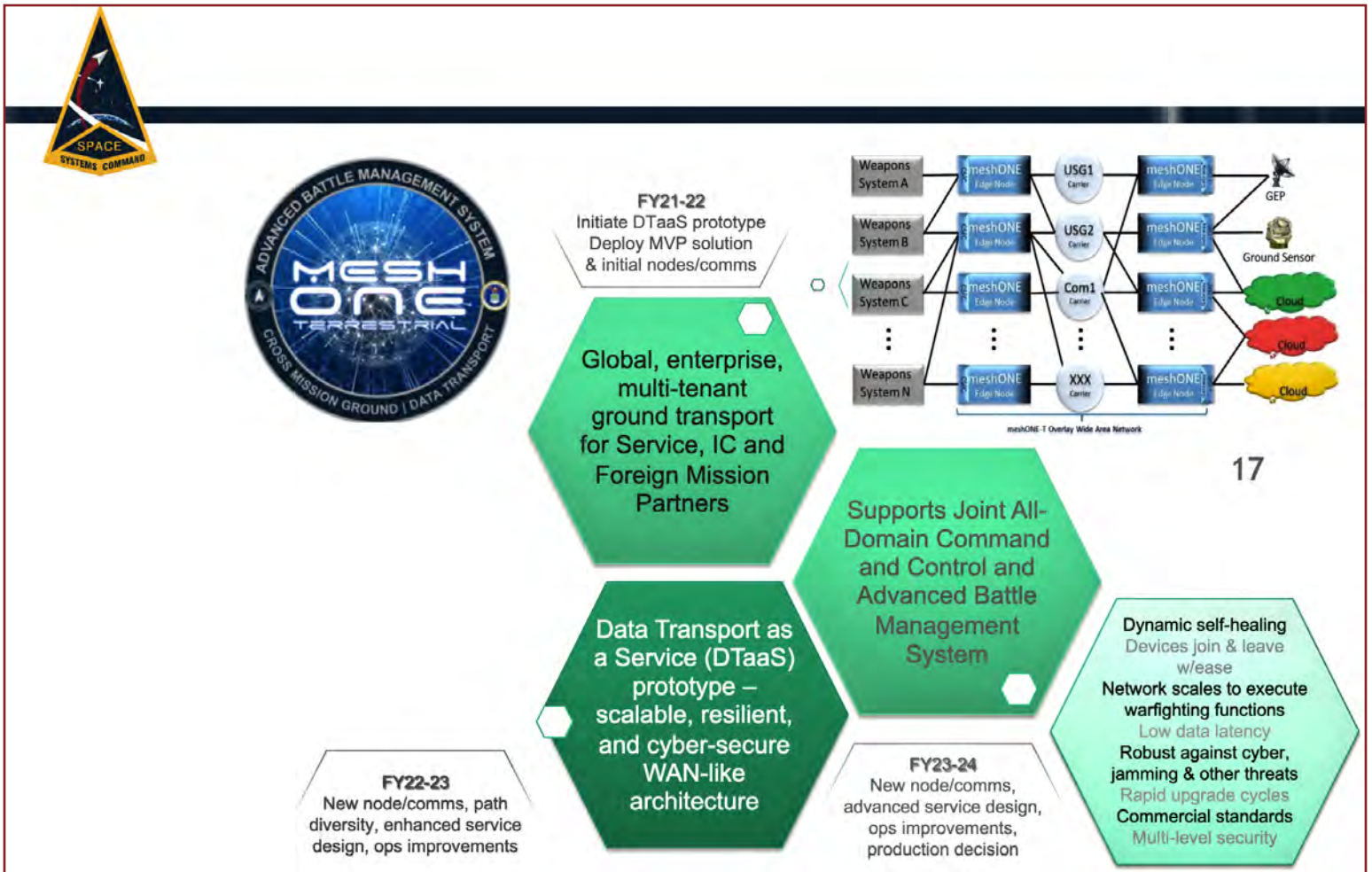
Who is SevI Tech and how are you supporting the space and national security mission?

Michael Fry

SevI Tech is a trusted partner of the federal and commercial space industry, supporting critical missions with transformative and secure space operations technology.

We provide solutions backed by powerful data analytics and logistics support that empowers technicians and engineers to thrive while working with today's complex aerospace systems. The company has been supporting Space Force missions since 2016.

In 2021, SevI Tech developed the prototype for meshONE-T, which supports critical Space Force missions and Department of War's Combined Joint All-Domain Command and Control (CJADC2) initiative. meshONE-T is a scalable, resilient, secure Wide Area Network that supports the high-speed exchange of large volumes of mission critical data. Ultimately the program enables warfighters to seamlessly exchange critical data across services and domains, directly impacting mission success.



MESH ONE Summary chart, courtesy of the USSF.

Last fall, our support for the meshONE-Terrestrial network contract expanded to more than 80 locations. To date, meshONE-T has been deployed at 44 Space and Air Force sites averaging 1-2 site deployment a month and an expanded capability to deploy three sites a month in the follow on.

How is the Department of War looking at space data and the evolving landscape of space now?

Michael Fry

Interest in space is growing and it's no longer just a domain of exploration, but an increasingly vital warfighting domain.

Unsurprisingly in today's world, data plays a significant role in this. In early 2025, Space Force published its Data and Artificial Intelligence FY 2025 Strategic Action Plan, seeking to become more data and AI-driven — just one illustration of its recognition of this need.

Through the work we're doing, we're focused on advancing the way information is shared. Reducing latency and time to data access is essential.

Data needs to move across the network much faster and more securely than it can across the open internet. This is what we're doing with MeshONE-T, which connects essential data between space and terrestrial endpoints.

If a missile warning takes five seconds to get across the U.S., that can mean the difference between an adversary succeeding or preventing a potential disaster.

What are some of the key challenges when it comes to protecting data in transit?

Michael Fry

Protecting data in transit presents a range of challenges, especially as DoW operations grow more interconnected and contested. Key issues include a lack of standardized protocols across vendors, integration of legacy satellite systems, and siloed infrastructures that hinder secure, seamless communication. On top of this, traditional cybersecurity concerns such as insider threats and encryption remain considerations.



As the demand for higher bandwidth, lower latency, greater redundancy, and data sharing grows, ensuring the security of that data in motion becomes even more complex, especially when extraterrestrial operations are involved.

This challenge is driven by agencies handling enormous data volumes from diverse sources, achieving approval processes for data sharing across branches, and sharing that data across classification levels that requires secure, efficient data tagging to ensure information reaches only those with appropriate clearances.

The DoW and United States Space Force (USSF) recognize that every communication link (satellite, terrestrial, cross-domain, etc.) can eventually be contested in times of conflict.

Therefore, investing in next-generation encryption, agile security frameworks and hardened systems will be critical to maintaining secure communications across contested and diverse environments.

How are DevSecOps, Zero Trust and continuous monitoring embedded into space mission systems to prevent cyber risks?

Michael Fry

DevSecOps, Zero Trust, and continuous monitoring have become core components of the Space Force's mission to expand and secure its space mission systems.

In particular, DevSecOps is rapidly expanding across the department, particularly through the growth of software factories that align closely with the U.S. Air Force and U.S. Space Force (USSF) efforts.

As the department continues to modernize the ATO process, these software factories will empower rapid software delivery that embeds security into the development process.

Zero Trust principles are also being embedded across mission systems to ensure networks are secure.

Utilizing DevNetOps to automate configurations and deployments, these systems can scale securely while minimizing manual errors or stale configurations that adversaries could exploit.

On the monitoring front, the Space Force and DOW are prioritizing continuous monitoring tools, such as SevITech's Next-Generation monitoring. The company's monitoring tool analyzes both network performance and security using real-time traffic extraction techniques.



With this capability, every data packet is inspected, and AI-driven analytics can flag anomalies in real-time.

This, combined with physical monitoring and built-in resiliency, ensures that even if adversaries breach the system, communications can reroute and sustain mission operations while under attack.

At SevI Tech, how are you and your team working to increase interconnectivity and security for space data?

Michael Fry

SevI Tech is supporting the DoW in bolstering space data interconnectivity and security with mesh networks, providing mission-critical capabilities for the Missile Warning Community and Air Defense sectors.

In high-stakes defense missions — where every second counts — latency and speed to data access can determine whether adversarial threats are addressed in time or escalate into serious incidents.

Mesh networks transform satellite communications to support the future warfighter, enabling greater data sharing, closing kill chains and mitigating threat attacks across ground and SATCOM communications to ensure mission resiliency.

By implementing mesh networks as an interoperability framework, military departments are improving network connectivity to overcome data hurdles — empowering faster data transmission that is essential for real-time analytics and operational coordination across service branches, industry and foreign mission partners.

From a terrestrial perspective, mesh networks are critical to enabling SATCOM ground assets to share data, enhance resiliency, and seamlessly stitch together downlinks during contested environments, emerging threats, or other disruptions.

Additionally, mesh networks provide advanced encryption for secure communications and policy aware routing to enable missions to route traffic based on SLAs, perceived threats, or guidance from military leadership.

This enhanced transparency, routing awareness, and security empowers the DoW to transform raw data into actionable intelligence, driving more efficient and effective national defense operations.



FYI...

On February 24, 2026, ERT, a Macquarie Capital-backed company, announced it acquired SevI Tech, a digital modernization and IT transformation partner supporting complex space, defense and national security initiatives.

The acquisition expands ERT’s ability to deliver secure, mission-aligned digital solutions to support modernization, resilience and operational effectiveness for government customers operating in highly regulated mission environments.

“Today’s missions require reliable, secure and cost-effective solutions built with an understanding of how things actually get done,” said Mark Lee, chief executive officer of ERT. “SevI Tech’s work with the USSF, along with their networking and IT modernization expertise broaden ERT’s capabilities and strengthen our ability to deliver solutions to current customers while opening up new markets for both teams.”

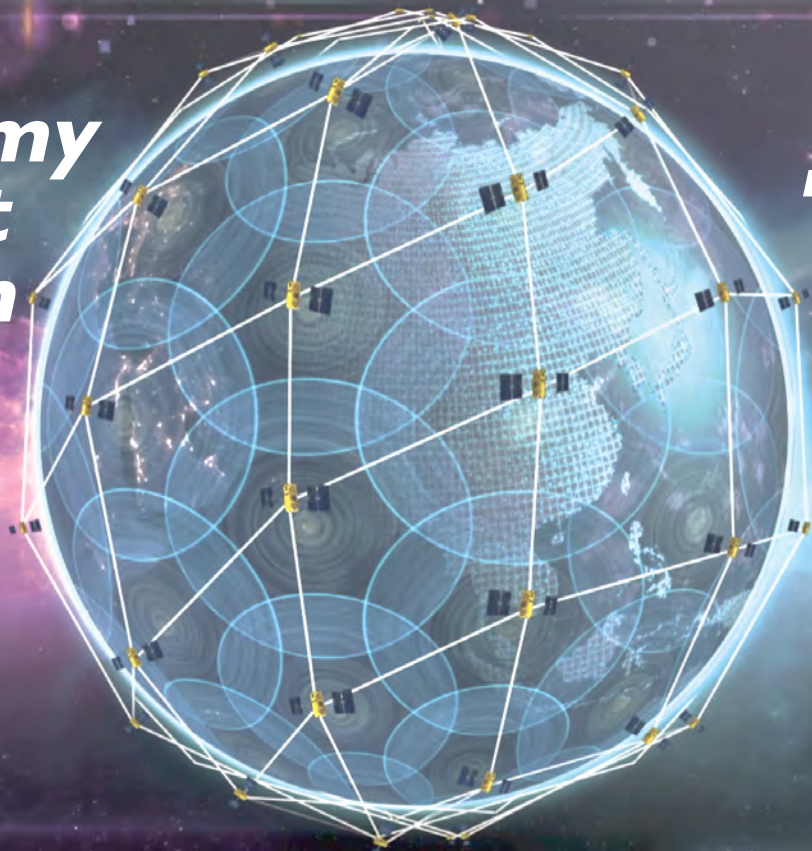
SevI Tech is known for supporting government organizations as they modernize legacy systems, enhance cyber resilience and accelerate digital adoption across complex enterprise environments. Uniting with ERT will allow its personnel to continue supporting existing customers and contribute to expanded IT and digital engineering offerings.

“Joining ERT allows us to expand our impact while staying focused on the mission outcomes our customers expect,” said Bob Lohfeld, chief executive officer of SevI Tech. “The combination doesn’t just benefit our space and signal customers. With deeper insights into advanced engineering and operations, we can offer even more value to all our customers while accelerating the exceptional delivery we are known for.”

The transaction reflects ERT’s continued investment in integrating digital modernization capabilities into mission engineering and operational support across the space and defense enterprise for their customers.

www.ert.space

Autonomy Without Isolation



**Why LEO
networks are
the critical
connectivity
layer for
uncrewed
systems**

Autonomous systems are no longer experimental edge capabilities. They're central to how governments project power, secure borders, monitor oceans, respond to disasters, and operate in contested theaters.

From uncrewed aerial systems flying beyond visual line-of-sight (BVLOS) and uncrewed surface vehicles operating in contested waters to unattended sensors collecting data in remote locations, autonomy is redefining operational reach.

But autonomy without assured connectivity? That's asking for a failure mode.

As governments place growing strategic emphasis on uncrewed systems across land, sea, air, and space, one requirement has emerged as non-negotiable: persistent, resilient satellite communications that function in denied, degraded, intermittent, and limited (DDIL) environments.

In this emerging operational reality, low-Earth orbit (LEO) L-band enables the critical layer of connectivity for autonomous systems across complex and contested environments.

Assurance Over Bandwidth

Much of today's satellite conversation revolves around throughput. Broadband has its place, but autonomous systems do not fail because they lack streaming capacity. They fail when Command-and-Control (C2) links drop, when telemetry is lost, or when navigation is disrupted.

In contested and remote environments, reliability—not bandwidth—defines mission success.

Global mesh LEO satellite constellations such as Iridium provide true pole-to-pole coverage without reliance on local ground gateways. Signals route from satellite to satellite in space, eliminating the regional vulnerabilities that can disrupt other architectures.

That network design ensures that unmanned platforms operating over the Arctic, the open ocean, or austere land corridors remain connected when beyond the coverage of terrestrial networks or when higher-frequency beyond visual line-of-sight systems degrade.



LEO signals also travel a much shorter distance than with traditional geostationary orbit (GEO) systems, delivering significantly lower latency and more responsive communications for mission-critical operations. The result is near-real-time connectivity for command, control, and data exchange.

In inclement weather or increased electronic interference, L-band can hold the link. Some L-band SATCOM services also provide unique capabilities that can minimize electromagnetic signatures, distribute one-to-one or one-to-many commands, and allow seamless integration with line-of-sight and broadband elements of the communication stack.

Built for the Edge

Even on larger-class airborne, maritime, and ground autonomous systems, size, weight, and power (SWaP) are limited, so communications systems must efficiently use the space available. Every gram and watt counts.

Twenty years ago, SWaP-efficient commercial satellite communication links became critical in deploying Group 4 and Group 5 UAS in the Global War on Terror. Today, advances in compact LEO L-band transceivers allow integration into the communications and navigation subsystems of smaller Group 1 and 2 uncrewed solutions without creating a payload burden, preserving endurance while ensuring persistent command and telemetry beyond terrestrial coverage.

Low-SWaP L-band transceivers also foster the use of compact unattended sensors that detect and help classify activity in remote environments. Warfighters can literally drop rugged sensor devices into locations of interest and receive critical collected data over L-band SATCOM links for analysis.

As autonomy scales from individual platforms to distributed fleets, connectivity must scale with it—securely, efficiently, and without dependence on theater-specific infrastructure.

The strategic advantage lies not in connecting one asset, but in enabling synchronized sensors, swarms, squadrons, or fleets to operate as coherent groups.

Persistent Control in Contested Environments

Modern autonomous missions often operate beyond visual line-of-sight and in RF-contested environments. Maintaining secure C2 and telemetry in these conditions is essential.

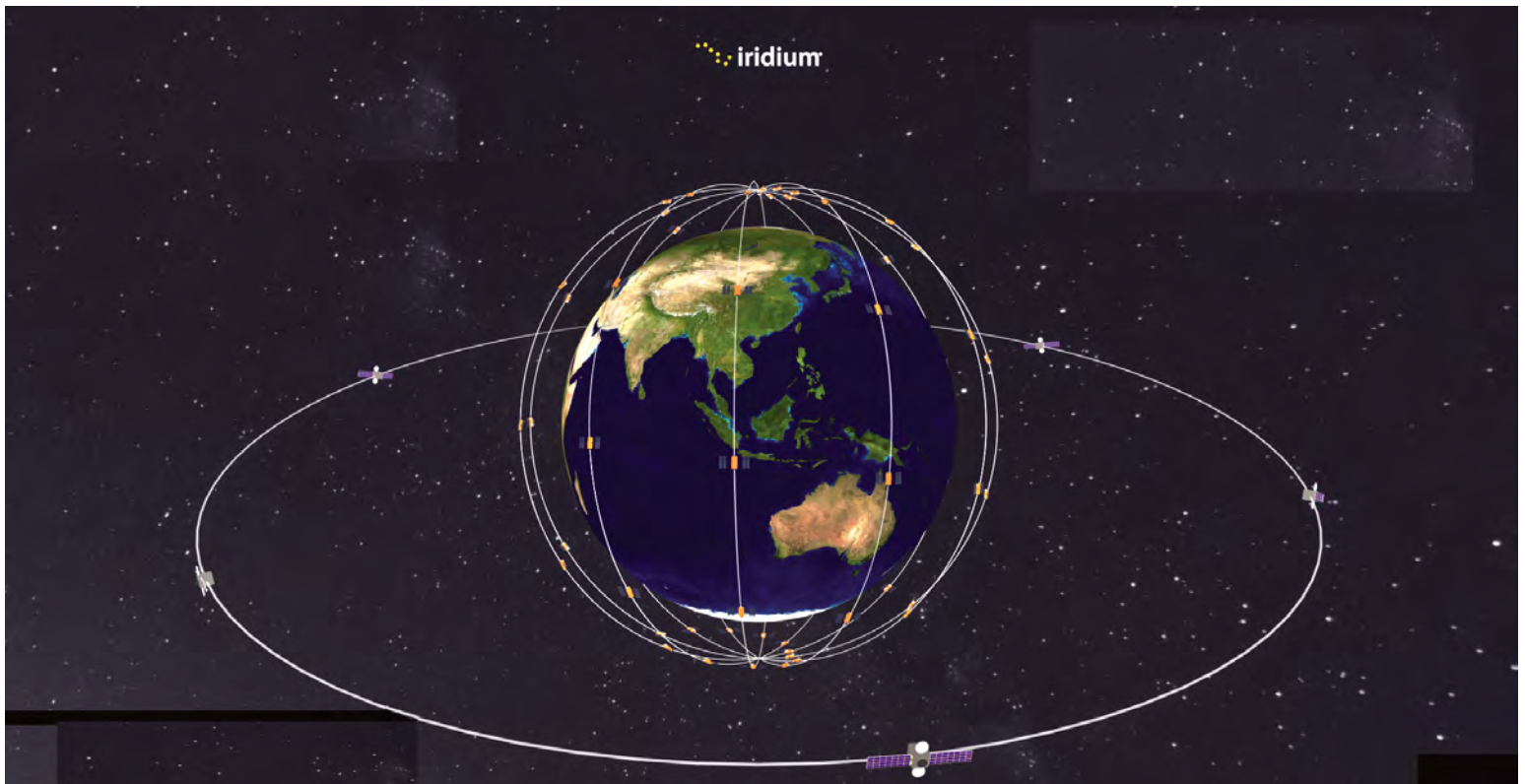
L-band SATCOM's low-bandwidth, high-reliability services provide a strategic advantage for resilient C2 connections, fleet-wide tasking, broadcast messaging, and assured commands. In swarm or distributed C2, persistent connectivity with minimal RF signature can mean the difference between mission success and asset loss.

Autonomy cannot pause when the spectrum becomes contested. It must continue operating with assured oversight.

Resilient PNT: Another Strategic Layer

Positioning, navigation, and timing (PNT) underpins every autonomous function — from navigation algorithms to sensor synchronization to secure communications protocols.

As issues with spoofing or jamming PNT systems such as GPS/GNSS emerge, it's critical to have multiple solutions that can provide resiliency. Iridium offers LEO-based GPS-independent PNT capabilities that can serve as a resilient layer for critical applications.



Trusted timing is not a redundancy. It's a prerequisite for the necessary coherence that enables autonomy. Resilient PNT delivered from space strengthens not only navigation but also network synchronization, data integrity, and mission assurance.

Operational Readiness Today

Capability alone is insufficient. Governments require deployable, accredited, and interoperable solutions. Established LEO L-band mesh networks already support defense and civil agencies worldwide through existing procurement pathways and certified service frameworks.

This reduces integration timelines and avoids the need for new infrastructure buildouts when fielding autonomous systems at scale. In practical terms, this means immediate global reach, proven interoperability, reduced technical risk, and faster fielding cycles.

For governments modernizing force structure around autonomy, that readiness is critical.

The Continuity Layer for Autonomous Government Operations

Autonomous systems extend operational reach and mission capabilities. They reduce risk to personnel and enable persistent presence in remote or hostile environments.

But autonomy depends on trust—trust that command links will hold, that telemetry will flow, and that navigation will remain synchronized.

A satellite network needs to deliver that trust. In an era where unmanned platforms increasingly define operational advantage, the most strategically relevant networks are not those optimized solely for throughput.

They're the architectures designed to guarantee continuity—built to operate beyond terrestrial infrastructure, through adverse weather, across polar regions, and in denied or degraded electromagnetic environments.

For autonomous systems operating at the edge of infrastructure, global LEO L-band networks deliver the continuity layer that keeps missions connected, controlled, and synchronized.

www.iridium.com



Author Ethan Haase is the Vice President of Government Solutions for Iridium.

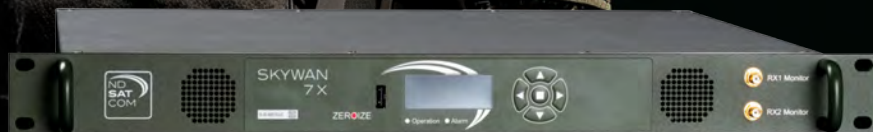
SKYWAN 7X



INSTALLING
RELIABILITY

BECAUSE

EVERY SIGNAL COUNTS



Whether at the command post or in the field, armed forces demand and depend on secure and reliable satellite-based communications worldwide. The advanced standards-compliant **SKYWAN 7X** meets this challenge and continues the success story of **SKYWAN** technology. Highly reliable, available, and secure communications for every mission. The robust solution is **SKYWAN 7X**.

More Security for the Military.

www.ndsatcom.com/SKYWAN7X/





NEXT-GENERATION

SOLID-STATE POWER

Mission Microwave leads the evolution to solid-state power, designing smaller, lighter, more efficient amplifiers and RF assemblies for next-generation SATCOM. Across S, X, Ku, Ka, Q, and V bands, we deliver for the missions where performance and reliability matters most.

