U.S. Chamber of Commerce

Low Earth Orbit

The New High Ground of National Security

Center for National Security Policy

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The Role of Space in Security: Lessons From the Front Lines

Within days of Russia's full-scale invasion of Ukraine in February 2022, missiles and cyberattacks had crippled much of Ukraine's communications infrastructure. Amid widespread blackouts, Mykhailo Fedorov, Ukraine's Minister of Digital Transformation at the time, pleaded for help restoring communication services. Within 12 hours of Fedorov's appeal, Elon Musk answered over Twitter, "Starlink service is now active in Ukraine."[1]

Within weeks, thousands of pizza-box-sized terminals had been deployed across Ukraine. The network that would reestablish communications and save Ukraine from being conquered was not a traditional military satellite system. Instead, Ukraine relied on a civilian broadband satellite constellation to provide public internet services, coordinate artillery strikes, conduct drone operations, and connect infantry units on the frontline.[2]

The system's performance under fire provided proof that a proliferated Low Earth Orbit (pLEO) constellation could deliver resilient satellite communications (satcom) downrange in a major conflict. As terrestrial networks came under sustained attack and other communications systems failed, technology from a range of providers proved itself to be a critical wartime capability, linking Ukrainian forces across thousands of miles of battlefield.

Commercial remote sensing constellations delivered a parallel lesson in Ukraine. In August 2022, a Ukrainian charity crowdfunded the procurement of a synthetic aperture radar (SAR) satellite operated by ICEYE. Ukraine's access to a dedicated radar satellite and ICEYE's wider LEO constellation provided a valuable new capability able to see through clouds, darkness, and smoke. Ukrainian military intelligence has credited the imagery with distinguishing real equipment from decoys and exposing camouflaged and forest-concealed vehicles, revisiting the same target as many as two dozen times a day.

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The impact of commercial remote sensing constellations on Ukraine's ability to defend itself cannot be dismissed. Companies operating fleets of satellites across phenomenologies provided situational awareness, battle damage assessment, and evidence of war crimes in unclassified formats at a frequency that gave policymakers and decision-makers new options to deter and defeat Russian forces. Commercial constellations showed that proliferation, persistence, and rapid revisit provided strategically valuable military capabilities that exquisite assets lacked. Defense ministries around the world took notice.

How America Built Its Space Power Across Three Orbits

It is important to recognize how national security, the economy, and modern life depend upon satellites. Satellites in GEO provide broadcast television, weather data, and secure communications. GPS satellites operating in medium Earth orbit (MEO) synchronize the power grid, timestamp financial transactions, and enable mobile phone networks. The emergence of satellites in LEO is transforming communities in rural and remote areas around the world, enabling communications and internet connectivity for the first time.

Modern militaries run on data. Every precision strike, drone operation, and command decision depends on moving information across battlespaces faster—and more secure—than our adversaries. Space is often the primary pathway through which military forces communicate, coordinate, and fight.

Satellite connectivity has become as indispensable to military operations as fuel and ammunition.

The U.S. Government first designed its national security space architecture during the Cold War. The Eisenhower administration's 1958 Purcell Report established the foundational guidelines for U.S. military space exploitation, endorsing three core missions: reconnaissance, communications, and weather forecasting to be built around Geosynchronous (GEO) and medium Earth orbit (MEO).

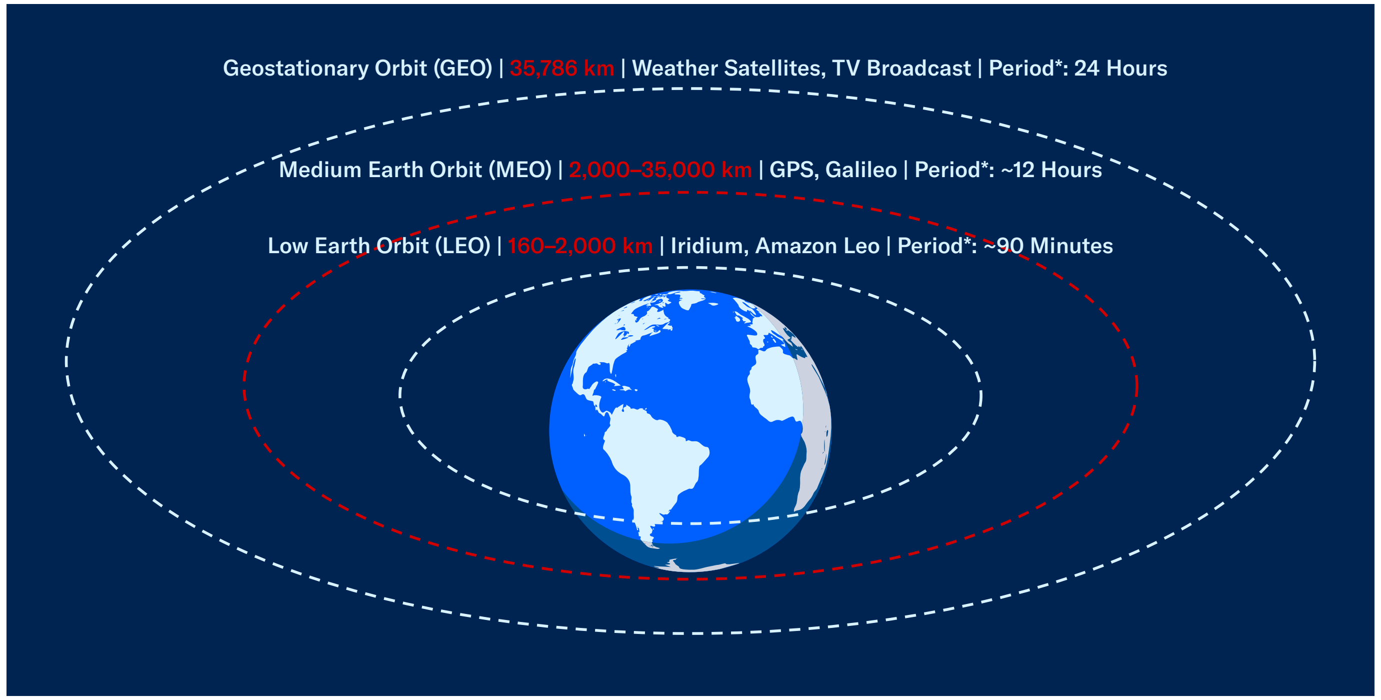
The choices of GEO and MEO for the first major national security satellite programs were driven by mission requirements and the physics of the orbits that offered decisive advantages, including shielding against threats such as a nuclear detonation.

A single GEO satellite parked roughly 22,000 miles above the equator maintains a fixed position relative to Earth, providing continuous wide-area coverage of nearly an entire hemisphere. This footprint therefore made GEO the best location to detect an intercontinental ballistic missile (ICBM) launch from Russia or China, support strategic communications, and host weather satellites—capabilities that all required uninterrupted coverage of fixed geographic areas.

MEO offered a different but equally compelling set of advantages to deploy Global Positioning System (GPS) satellites. This orbital band allowed the government to provide what has become vitally important continuous global coverage with a modest constellation of satellites (24 in the initial operational configuration) that today synchronizes the power grid, timestamps financial transactions, enables precision-guided munitions, and underpins virtually every modern military operation.[3]

Those orbits remain strategically indispensable today. GEO satellites provide the wide-area, high-capacity communications and missile-warning capabilities that underpin allied command structures and nuclear deterrence—missions that demand persistence and reach that no other orbit can match at comparable cost.

MEO remains the backbone of global navigation and timing through GPS, a system so deeply embedded in military and civilian infrastructure that its disruption would cascade across every domain of national power. By virtue of their altitude, MEO and GEO satellites are largely insulated from threats that could disrupt operations in LEO, providing a survivable backstop for the most critical national security missions.



For half a century, national power in space was projected through these extraordinarily capable, exquisite assets deployed in GEO and MEO. By 2000, however, they had also become targets. Russia and China had spent decades developing plans to degrade these satellites[4], attacking an important vulnerability. The small number of these high-value platforms, fixed in known orbits, presented adversaries with a manageable targeting problem.

The threat calculus shifted decisively in the 2010s as a new generation of weapons emerged. China's 2007 direct-ascent anti-satellite (ASAT) test demonstrated that GEO and LEO satellites could be physically destroyed. Russia's development of co-orbital ASAT systems—satellites capable of maneuvering alongside and disabling other spacecraft—extended that threat across all orbits.

Advances in weapons systems presented another challenge to the GEO/MEO architecture when it came to missile warning and defense. Hypersonic missiles exposed a fundamental gap. Traveling at speeds above Mach 5 along unpredictable flight paths, these weapons were designed to evade missile defenses built to track ballistic missile trajectories. The current architecture lacked the geometry and revisit rate to maintain persistent custody of a maneuvering hypersonic threat throughout its flight.[5]

At the same time, a revolution was taking place in the commercial space industry where innovative breakthroughs in small satellite manufacturing, reusable rockets, and software-defined systems made deploying satellites into LEO economically viable. The innovation driven by U.S. space companies would be transformative for our national security space architecture.

The Evolution to Hybrid Architectures

To address these new hypersonic threats, the Pentagon and the U.S. Intelligence Community turned to layering in a proliferated LEO architecture. The U.S. could field hundreds of sensors in LEO. The closer vantage point delivers sharper viewing angles and enables persistent custody of maneuvering hypersonic targets throughout flight.

Where there was great risk if a few GEO or MEO assets were lost, the new architecture provides resilience through scale.

The 2018 National Defense Strategy (NDS) formally addressed the challenge of hypersonic weapons systems. Acknowledging that the legacy architecture was vulnerable, the NDS signaled a hard pivot toward a more distributed approach, establishing a new mandate toward more dispersed, resilient space architectures, namely, "Prioritize investments in resilience, reconstitution, and operations to assure our space capabilities."[6]

The shift toward a hybrid architecture sought to leverage LEO and thousands of spacecraft orbiting a few hundred miles overhead. Where there was great risk if a few GEO or MEO assets were lost, the new architecture provides resilience through scale. This makes communications and intelligence, surveillance, and reconnaissance (ISR) networks extremely difficult to shut down completely.

LEO's Value to Space and National Security

A truly resilient national security space posture, one capable of absorbing a first strike, reconstituting rapidly, and continuing to operate demands deliberate investment across all three orbital regimes. LEO's proliferated architecture offers speed, scale, and redundancy; MEO offers proven navigation and timing; GEO offers persistence and reach. Together, they form the layered, interoperable foundation that no single orbit can provide alone.

In 2025, President Trump signed an executive order (EO) directing the development of a layered homeland missile defense system—known as Golden Dome for America.[7] The EO reflected a growing recognition that LEO offers the persistent, global coverage required for the U.S. to track and defeat next-generation missile threats.

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The EO also represented a paradigm shift in U.S. national security space strategy by redistributing U.S. space power across GEO, MEO, and LEO and integrating the three orbits into an interoperable multi-orbit network. Commercial innovation and private investment have made the transition economically possible.

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The Pentagon is institutionalizing this by funding contract vehicles, such as the Proliferated LEO (pLEO) Satellite-Based Services IDIQ, whose ceiling has increased from $900 million to $13 billion.[8] It wisely selected 20 vendors to compete for individual task orders.

The contracting strategy mirrors the logic of proliferation itself. Just as a network of hundreds of satellites can absorb the loss of an individual spacecraft, a national security architecture built on multiple commercial constellations can withstand the disruption, degradation, or failure of any single provider.

How Commercial Speed and Innovation Transformed Space

The Pentagon's answer to the buildout of a hybrid space architecture arrived in 2019 when it stood up the Space Development Agency (SDA) to field a satellite network in LEO known as the Proliferated Warfighter Space Architecture (PWSA). SDA's mandate was ambitious: "Quickly deliver needed space capabilities to the warfighter to support terrestrial missions" by building satellite constellations in LEO capable of surviving attack, rapid innovation, and fielding new capabilities on commercial timelines.[9]

SDA would harness the power of the U.S. industrial base by awarding work to a diverse mix of companies to build interoperable LEO constellations that could be refreshed every few years as technology evolved. SDA operates under the motto *Semper Citius*, Latin for "Always Faster," and follows the guiding principle that good-enough capability in orbit now beats a system that shows up too late.

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Rather than relying on a small number of exquisite spacecraft, SDA procures hundreds of satellites through competitive contracts, builds them on commercial satellite buses, launches them on commercial rockets, and operates them as a military-owned network. Under this model, the U.S. government maintains control of the architecture, data, and mission priorities while harnessing the speed and scale of the U.S. space industry to drive efficiencies.

The Transport Layer—a communications network that relays data across the architecture and connects its various mission layers—operates at the center of the PWSA, and these satellites themselves embody the Pentagon's new acquisition philosophy.

The first Transport Layer satellites reached orbit in April 2023, just over two years after the contract award.[10] The buildout accelerated rapidly from there with each successive tranche introducing new technology and replenishing existing capacity. This allowed the constellation to evolve continuously rather than waiting decades for a wholesale replacement to come online.

The integrated PWSA network is designed for the realities of modern warfare. Optical satellite links plug the spacecraft into a jam-resistant mesh capable of moving targeting and sensor data around the globe in milliseconds. Each Transport satellite carries a Link 16 tactical data payload and onboard processing that allows information to be routed, fused, and distributed in orbit rather than passed through a chain of ground stations. The result is an architecture built to support the compressed decision timelines of modern kill chains.

SDA has deliberately spread awards for more than 500 satellites among seven prime contractors. The strategy reflects SDA's core belief that resilience derives not only from proliferation but also from supplier diversity. No single company builds the network. No single failure can cripple it.

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Strength in Numbers

Settlers moving West in the 1800s joined wagon trains to protect against threats, demonstrating how proliferation inverts the economics of an attack. An adversary that once had to neutralize a small handful of known, high-value platforms is then forced to confront hundreds of distributed nodes—a targeting problem with greater costs. This is analogous to the proliferation and distribution of the LEO constellations being deployed today.

Rapid reconstitution, driven by industrial-scale manufacturing and high-cadence launch, further compounds the adversary's problem because LEO satellites can be replaced in weeks or months. The expense of attacking the constellation has changed the calculus for adversary counterspace operations.

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The Power of Proximity

Distance is a cost and a constraint. A satellite in LEO much closer to Earth can capture sharp imagery with smaller, less expensive sensors than those in GEO. The same physics benefits communications. Signals travel only a fraction of the distance, reducing latency and allowing ground terminals to become smaller, lighter, and less power hungry. For the warfighter, that can mean the difference between carrying a secure satcom-enabled radio in a rucksack on one's person versus hauling a communications system in the back of a truck.

Age of Iteration

The same economics that make a proliferated constellation resilient also make it technologically relevant. Satellites deployed to GEO are designed with a 15-year life span expectancy. Much of their service life is therefore spent carrying hardware designed a decade or more earlier. On the other hand, LEO satellites are being designed to be refreshed on a much shorter 3-to-5-year cycle, allowing new capabilities to be incorporated as technology advances and threats evolve.[11] These LEO networks can introduce more capable payloads, improved sensors, updated software, and address changing mission sets with each generational deployment.

The Industrialization of pLEO

Five major technologies are helping advance pLEO from aspiration into architecture:

Optical intersatellite links (OISLs)—This government-funded technology was successfully transitioned to the commercial sector. It enables satellites to pass data directly between one another, creating an orbital relay network. Today, a sensor's data can travel across the Pacific to a command post in North Carolina without ever touching a ground station that an adversary can jam, hack, or destroy.

According to Amazon Leo, data can move across satellites 30% faster than through fiber-optic cables on the ground because light travels slower through glass than through space.[12] To accelerate adoption and ensure interoperability, SDA began publicly releasing updated optical communications terminal (OCT) standards in 2020, establishing a common set of technical requirements that commercial vendors could build to connect with the network.

- **Automotive-style production lines—**Amazon Leo is churning out nearly 30 satellites a week for its constellation, which will deploy 3,232 satellites by 2029. SpaceX has industrialized production and launched more than 12,000 Starlink satellites since 2019. Startups are building their businesses around the same premise. Companies such as K2 and Rocket Lab have built their go-to-market strategies on configurable, high-volume satellite bus platforms designed for mass production.
- **Smartphone updates for satellites—**Eutelsat's Quantum, the world's first fully software-defined commercial satellite, can be reprogrammed on orbit to reshape coverage areas, reallocate bandwidth, shift frequencies, and adjust power levels in near real time. It can also detect hostile jamming and modify its operating parameters to counter interference. Instead of locking in capabilities years before launch, operators can continuously adapt a satellite's performance and respond to emerging threats to evolving customer requirements long after it reaches orbit.
- **Artificial intelligence—**A network of thousands of satellites generates more data than any analyst team can review in real time, so the triage is now happening on orbit. Planet Labs proved the model in March 2026, when its Pelican-4 satellite identified aircraft at an Australian airport and geolocated it within moments—transmitting the completed dataset rather than the raw image. Satellites now equipped with edge processors can compress the latency between capture and action from hours to minutes.

This trend extends beyond data processing. Spacecraft increasingly use autonomous systems to manage routine operations such as conjunction assessment and collision avoidance. Starlink satellites alone performed roughly 300,000 collision-avoidance maneuvers in 2025, a volume that would be impractical to manage manually and will be necessary as more constellations are deployed into LEO.

- **Reusable rockets—**For most of the Space Age, every launch required discarding a rocket worth tens of millions of dollars into the ocean or atmosphere. That sunk cost kept access to orbit expensive and infrequent. Recovering and reusing the rocket's booster stage fundamentally changed the equation.

The impact of more companies like Firefly, Stoke Space, and Blue Origin introducing new rockets with reusable booster stages will improve the economics of deploying a hybrid space for national security missions.

Building Out the Architecture

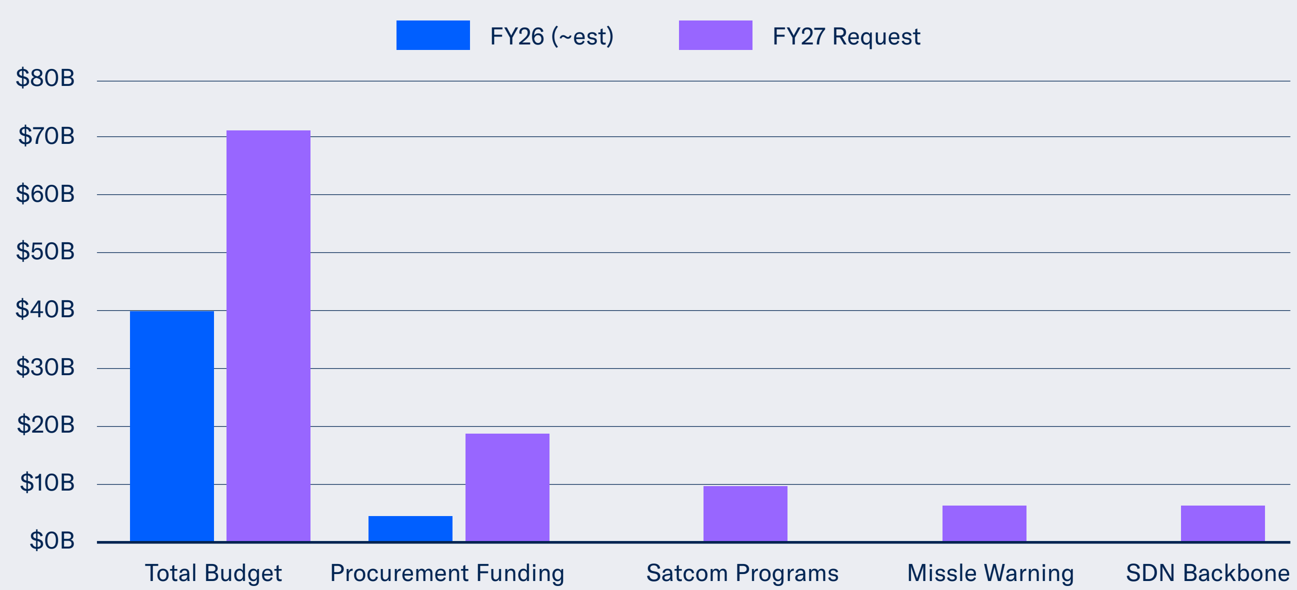
The FY2027 defense budget request signals an unprecedented acceleration in military space spending, seeking $71 billion for the Space Force and more than quadrupling procurement funding to $19 billion.

At least $4 billion is allocated to begin fielding the Space Data Network (SDN), which is envisioned as a hybrid government-commercial constellation of 480+ proliferated LEO satcom satellites supporting three core missions for the joint force: space data transport, tactical communications, and broadband satcom.[13]

Its architecture brings together a data relay constellation formerly known as MILNET—developed jointly by the Space Force and the National Reconnaissance Office—and SDA's PWSA Transport Layer. The goal is to create a seamless network that can move data securely across military, intelligence, and commercial space assets instead of relying on separate, mission-specific constellations.

FY2027 Space Force Budget Request

$40B	$71B	$19B	+78%
FY 26 Total	FY 27 Total	FY 27 Procurement	Budget Increase



LEO-Enabled Defense: Golden Dome for America and Beyond

Golden Dome for America reportedly leans on LEO at nearly every layer of its architecture: Proliferated tracking satellites descended from SDA's Tracking Layer maintain custody of maneuvering hypersonic threats. The SDN is expected to carry the resulting sensor-to-shooter traffic to space-based interceptors, which are envisioned as a proliferated LEO constellation capable of engaging enemy missiles during the boost, glide, and midcourse phases of flight.

The U.S. government's procurement strategy is expanding in parallel. Space Systems Command has awarded 20 Other Transaction Agreements (OTA) worth up to $3.2 billion to a dozen firms[14] to prototype space-based interceptors for demonstration by 2028.

Sustaining Advantage

If Ukraine proved the value of proliferated architectures, maintaining the high ground will require more than just buying more satellites. It will require supporting a diverse, competitive supplier base that rapidly innovates with reliable access to space in order for the U.S. to preserve its lead over increasingly capable and well-funded adversaries for decades to come.

Institutionalizing Semper Citius

The same budget cycle that is investing in proliferated space networks is likely dissolving the agency most responsible for building them. The House Armed Services Committee chairman's mark of the FY2027 NDAA repeals the statutes that created both the SDA and the Space Rapid Capabilities Office (Space RCO). The plan is to transfer their authorities to the Space Force's new Portfolio Acquisition Executives (PAEs).[15] The Senate's version of the bill also backs folding SDA and Space RCO into the Space Force.

The streamlining logic is straightforward: Pull space procurement under a single chain of acquisition authority. But the harder question is cultural: Will *Semper Citius* remain a governing philosophy in the Pentagon's acquisition reform efforts or will it become a historical footnote?

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In many respects, the proposed reorganization represents an attempt to institutionalize this culture. If successful, the PAE structure could extend SDA-style procurement practices across the acquisition enterprise. If unsuccessful, the Pentagon risks folding one of its most effective acquisition experiments back into the very processes it was created to disrupt.

Low Earth Orbit & National Security:

Recommendations at a Glance

Two years after the release of the U.S. Space Force Commercial Space Strategy, the U.S. Chamber of Commerce believes there is more the Department of War, and the U.S. Intelligence Community can do to maximize the integration of commercial space capabilities and leverage the innovation being driven in the space industrial base. To put the principle of “exploit what we have, buy what we can, and build what we must” into practice, the U.S. Government should act on the following five recommendations. These recommendations are presented in order of appearance, not priority.

> “We will leverage American industrial strength to counter threats to our advantages in space; we owe it to American forces putting their lives on the line, to American businesses developing solutions to outpace the adversary, and to the American taxpayers expecting us to get the most out of their dollar*”

General B. Chance Saltzman,
Second Chief of Space Operations
U.S. Space Force (Ret.)

*_U.S. Space Force Commercial Space Strategy_, April 10, 2024

Build The Space Industrial Base That Will Win

- End the reliance on single providers
- Fund multiyear programs
- Map and secure critical supply chains
- Scale hybrid infrastructure

Expand Access to Space

- Recognize that space is infrastructure
- Onboard more launch providers
- Fund spaceport expansion
- Target 1,000 annual launch and reentries
- Fund launch/reentry control modernization

Buy What Works. Build What’s Missing

- Educate and Train

Open Systems Are America’s Advantage

- Adopt open standards
- Unlock exports to Five Eyes/NATO partners
- Modernize critical remote sensing licensing
- Modernize spectrum sharing

Industry Is Leading. Help It Scale.

- Adopt industry-led standards
- Encourage operator-to-operator coordination
- Make space a public good
- Leverage commercial capacity
- Measure. Adopt. Regulate

U.S. Chamber Recommendations

Proliferated space architectures are the product of a competitive industrial base, expanded access to orbit, and an acquisition strategy developed to translate commercial innovation into military capability.

The U.S. Chamber of Commerce recommends several steps to strengthen the U.S. space industry that is rapidly becoming a cornerstone of U.S. national security.

Build the Space Industrial Base that will Win

Reliance on a single provider creates distortions in the supply chain that reduce investment, surge capacity, and innovation while increasing costs to the taxpayer.

Satellites, programs, and organizations will change. The resilience of proliferated constellations depends on the breadth of the industrial base that builds, launches, and operates them.

To capture this wave of innovation, the U.S. Chamber recommends the following:

- **Diverse supplier base—**The Department of War and the U.S. Intelligence Community should design future satcom and remote sensing constellation acquisitions to sustain supplier diversity and maintain competitive industrial bases.

  The Pentagon and the U.S. Intelligence Community must prioritize procurement strategies that include proper budgeting for multi-provider awards, flexible requirements, milestone-base incentives, and new-entrant on-ramps throughout program development and execution.

  Portfolio Acquisition Executives should invite competition into each procurement and design open architectures that mitigate the risk of vendor lock-in and broaden the range of technologies available to the government over the long term.

- **Multiyear funding—**Congress should provide multiyear appropriations authority for major space programs. Stable funding profiles would improve industrial planning, reduce cost and schedule risk, and provide clear demand signals to suppliers, banks, and other investors making long-term manufacturing investments.

- **Sourcing critical components—**Congress and the Department of Commerce should designate key components with long lead times as strategic priorities for domestic production. The Pentagon should require greater supply chain visibility from prime contractors and evaluate mechanisms such as a strategic reserve for key space components modeled on the National Defense Stockpile.

- **Hybrid infrastructure—**The U.S. Government should continue investing in equipment like multi-constellation user terminals capable of roaming across multiple providers' networks. Preserving the ability to shift traffic enhances resilience, strengthens competition, and ensures that the U.S. retains leverage as the market matures.

Buy What Works. Build What's Missing

The U.S. Government's approach to space-based ISR must prioritize integrating proven commercial capabilities first. Commercial remote sensing constellations offer capabilities at a speed, cost, and access profile that closed architectures cannot match.

- **Only build if it can't be bought—**Government should treat commercial remote sensing as the foundational layer of future architectures, not a gap-filler. An August 2026 Government Accountability Office (GAO) report (*GAO-26-107959*) found that the Pentagon has significant untapped opportunities to leverage commercial data and services, enabling the department to capitalize on private-sector innovation, avoid duplicative development costs, and fill collection gaps left by government-owned systems. The GAO also found that awareness and access barriers are preventing users from utilizing commercial data already purchased by the government, underscoring the urgency of a deliberate commercial-first integration policy. Prioritizing commercial integration allows government to field capability faster, avoid duplicative development, and preserve scarce resources for the exquisite missions only government resources can build. Procurement vehicles should assume commercial-first and require justification for building what can be bought.

- **Educate and train—**The workforce that tasks, exploits, and makes decisions from space-based data needs fluency across the full range of remote sensing phenomenologies. Investment in training and education at the schoolhouse level will turn available commercial capability into operational advantage.

Expand Access to Space

Space infrastructure is the foundation of American space power. Aging launch infrastructure concentrated at two federal ranges, the Kennedy Space Center and the Wallops Flight Center, and a lack of operating launch providers have become vulnerable choke points. The Space Force highlighted this in 2025[16] and now projects launch cadence to grow from less than 200 to 3,000 by 2036.

Congress should treat this directive as a mandate to act—not a permission slip to study.

On August 20, 2026, President Trump signed the National Space Transportation Policy (NSPM-17), setting a bold national goal: more than 1,000 launches and reentries annually by 2030. That target represents roughly a fivefold increase over current launch cadence and would require the U.S. to build, permit, staff, and operate launch infrastructure at a pace and scale the country has never attempted. Concrete congressional action, sustained investment, and regulatory follow-through will be needed to achieve this ambitious goal. Congress should treat this directive as a mandate to act—not a permission slip to study.

NSPM-17 directs federal agencies to incentivize co-development of launch infrastructure through leases, commercial investment, and public-private partnerships on federal property. The U.S. Chamber supported the private activity bond authority secured in the One Big Beautiful Bill Act. It is a critical first step, but reaching 1,000 annual launches will require a sustained, multiyear capital commitment to spaceport construction, range modernization, and workforce development that no single financing mechanism can deliver alone. Congress should establish a dedicated space infrastructure fund and authorize multiyear appropriations to match the scale of the 2030 goal.

The recommendations below are not merely aspirational; they are the operational prerequisites for meeting the president's 2030 target.

- **Space is infrastructure—**When Congress and policymakers look at any type of national infrastructure in the future, space must be part of that discussion.

  Transportation and public works legislation previously excluded space because federal funding for space is traditionally routed through annual defense or NASA budgets. In addition, spaceports are often not listed in conventional definitions of public or civilian critical infrastructure.

  To address this oversight, the U.S. Chamber advocated for legislation in the One Big Beautiful Bill Act that amended the U.S. Internal Revenue Code to authorize the use of tax exempt private activity bonds for spaceport facilities. It gave launch "infrastructure access to the same capital architecture that built every other essential system in the U.S.," and has the potential to "fundamentally change how space infrastructure—and the ecosystems that grow around launch and reentry sites—can be financed, scaled and sustained."[17]

- **More Launch Providers—**NSPM-17 directs the Assistant to the President for Science and Technology (APST) to develop and implement a space transportation industrial base strategy within 180 days—one that promotes a vibrant, competitive, and resilient launch industry. The U.S. Chamber strongly supports this directive and recommends that the strategy explicitly address provider diversity. The statutory requirement to maintain at least two providers capable of launching national security payloads was designed for a prior era of low launch cadence. Reaching 1,000 annual launches will require a much broader provider base. To strengthen the national security launch ecosystem, the Space Force should continue and expand its use of Launch Service Agreements, OTA vehicles, and technology maturation programs to bring emerging launch providers into the market as a deliberate strategic investment, not merely a backup plan.

- **Spaceports of the Future—** NSPM-17 requires the Secretary of War and the NASA Administrator to develop federal range scheduling criteria within 180 days and to regularly publish range schedules to maximize launch capacity. Congress should treat these deadlines as binding milestones and conduct oversight hearings to ensure compliance. The Space Force's Spaceports of the Future initiative should be fully funded and accelerated in parallel—the two efforts are mutually reinforcing. Without modernized infrastructure and transparent scheduling, the commercial launch industry cannot plan, invest, or scale to meet the 1,000-launch target.

- **More Launch and Reentry Infrastructure—** NSPM-17 directs the Secretary of Transportation, in coordination with the Secretary of War and the NASA Administrator, to identify potential locations for additional launch facilities within 180 days and report findings to the president . The Pacific Spaceport Complex in Alaska, Wallops Island, and potential new sites identified under NSPM-17 must be treated as strategic assets, not contingency options. Reaching 1,000 annual launches requires geographic distribution of launch capacity; concentration risk at Cape Canaveral and Vandenberg is incompatible with that goal.

- **Range Scheduling and Airspace Integration—** NSPM-17 directs the Secretary of Transportation to integrate space launch and reentry management into airspace and traffic control modernization efforts and to designate priority airspace for critical space launch corridors. This is a critical and often overlooked bottleneck. Congress should provide the Federal Aviation Administration (FAA) with the resources and authority to execute this integration on a timeline consistent with the 2030 goal.

Open Systems Are America's Advantage

The long-term success of proliferated architectures depends on ensuring that the broader ecosystem remains accessible to allies, commercial providers, and future entrants. The same principles that enabled the success of SDA's Transport Layer—open interfaces, interoperability, and vendor diversity—should guide the next generation of national security space networks.

- **Open Standards—**The Space Force should continue collaborating closely with industry to ensure that government, commercial providers, and emerging vendors develop standards together from the outset. Open standards reduce barriers to entry, expand the supplier base, and accelerate innovation. Standards such as Link-182 should remain transparent, government controlled, and accessible to all qualified providers seeking to participate in the architecture.

- **Export Control Reform—**The U.S. should clear the regulatory underbrush to enhance interoperability with Five Eyes and NATO partners. To grow our national commercial space ecosystem, the government needs to provide U.S. companies with access to a larger addressable market. In accordance with Executive Order 14268, International Traffic in Arms Control Regulations (ITAR) and Export Control reviews that were opened in 2024 must be completed expeditiously.

  The reviews should adhere to a simple principle: Enable more defense cooperation with allies while safeguarding the capabilities that truly need protection.

- **Modernize Commercial Remote Sensing Licensing—**Current policy and licensing regulations governing the commercial remote sensing industry place U.S. providers at a competitive disadvantage in global markets. The Commercial Remote Sensing Regulatory Affairs (CRSRA) licensing process can be greatly improved simply by the government applying some commonsense measures that reflect how the industry and technology have developed over the last decade:

  - Publish clear, objective licensing standards with firm deadlines that require final action within 60 days of submission consistent with the objectives of the 2020 CRSRA rules.
  - Reduce broad compliance requirements and enforcement. Administrative updates and systems that have not entered into initial operation should not be subject to enforcement actions.
  - The government should revise the definition of "material fact." This would give NOAA more time to spend on changes that substantively impact imaging capabilities and national security.

  Addressing these matters and ITAR would expand opportunities for U.S. electro-optical (EO), radiofrequency (RF) sensing, hyperspectral, and synthetic aperture radar (SAR), to give U.S. forces and allied militaries more capable tools to complete their missions.

- **Spectrum Access—**The U.S. Chamber supports the Federal Communications Commission's (FCC's) efforts to modernize the spectrum sharing framework in ways that reflect the realities of today's hybrid satellite ecosystem, including the FCC's Space Modernization for the 21st Century Notice of Proposed Rulemaking. Modernization must be pursued in a manner that protects the spectrum rights of defense critical users and preserves the technical standards that ensure interoperability across the commercial and government satellite ecosystem.

  The U.S. should lead—not follow—in international spectrum standards bodies, including at the International Telecommunication Union (ITU). Adversary nations are actively working to supplant U.S. leadership through standards-setting processes. Ceding spectrum standards to foreign actors creates long-term vulnerabilities for U.S. defense systems that depend on those bands.

Industry Is Leading. Help It Scale.

The successful deployment and operation of proliferated LEO architectures depend on the long-term viability of the orbital environment. The private sector's significant financial and operational investments in LEO have made commercial satellite operators the most active stewards of orbital safety. Operators are inherently incentivized to reduce collision risk, preserve safe access to space, and ensure that the orbital environment remains usable for future missions.

Industry's efforts to implement sophisticated best practices for collision avoidance, debris mitigation, and safe satellite operations increasingly rely on advanced automation, high-quality data, operator-to-operator coordination, and real-time maneuver planning that can reduce operational risk at scale. U.S. Government policy should build on this foundation rather than impose duplicative or prescriptive requirements that slow innovation without improving safety outcomes.

To preserve safe access to orbit while sustaining U.S. leadership in proliferated architectures, the U.S. Chamber recommends the following:

- **Industry-Led Standards**—Policymakers should recognize industry- developed best practices as the foundation for space safety policy. Commercial operators have the strongest operational incentives to maintain a safe and sustainable orbital environment, and many have already developed advanced tools for conjunction assessment, collision avoidance, debris mitigation, and satellite disposal. Regulatory frameworks should be performance based and technology neutral, allowing operators to meet clear safety objectives without locking the industry into outdated processes or one-size-fits-all technical mandates.

- **Operator-to-Operator Coordination**—The U.S. Government should encourage and enable direct coordination among satellite operators as one of the most effective ways to reduce collision risk. Operators are best positioned to exchange timely information, assess maneuver options, and coordinate actions in ways that reflect the real-time dynamics of their constellations. Public policy should support trusted data-sharing mechanisms, interoperability, and common coordination practices that make operator-to-operator engagement faster, more reliable, and more scalable.

- **Space Situational Awareness as a Public Good**—The U.S. Government should continue providing a reliable baseline space situational awareness capability as a public good. A common public foundation improves transparency, supports new entrants, enhances safety across the ecosystem, and strengthens U.S. leadership in setting norms for responsible space operations. That baseline should be designed to enable and integrate commercial capabilities, not replicate or displace them.

- **Commercial Space Safety Services**—Government systems should leverage commercial data, processing, analytics, and advanced space safety services to improve the quality, resilience, and scalability of the broader space traffic coordination ecosystem. Commercial providers are rapidly advancing capabilities that can supplement public systems with more frequent updates, higher-fidelity data, automated risk assessment, and mission-specific operational support. Public systems should be open, interoperable, and structured to incorporate these services where they improve safety outcomes.

- **Performance-Based Regulation**—Space safety standards should focus on measurable outcomes instead of prescriptive compliance. A performance-based approach will allow regulators to set clear expectations for collision-risk reduction, debris mitigation, and responsible operations while giving industry the flexibility to innovate. This will reduce operational risk, strengthen the resilience of proliferated architectures, protect future access to orbit, and ensure that safety policy reinforces—not undermines—the commercial innovation driving U.S. leadership in space.

Conclusion

Governments, investors, and industry are increasingly recognizing how the economy and national security depends on capabilities delivered from orbit: communications, navigation, and finance to disaster response; intelligence collection; and national security. Over the past decade, the U.S. Government has worked to harness the commercial sector's speed, scale, and innovation to build modern capabilities.

Each orbit serves a distinct and irreplaceable role. LEO's proliferated architecture offers speed, scale, and redundancy; MEO offers proven navigation and timing with inherent survivability; GEO offers persistence, reach, and the wide-area coverage that underpins nuclear command and control.

The U.S. Space Force and its predecessors have invested generations of engineering and operational expertise into GEO and MEO, and that institutional knowledge represents a strategic asset in its own right.

The Golden Dome executive order and the broader shift toward hybrid architectures reflect a growing recognition that the future of American space power is not a choice between orbits—it is the deliberate, interoperable integration of all three.

The challenge now is preserving the industrial depth, competitive ecosystem, and policy environment required to maintain U.S. space superiority. The U.S. Chamber will continue to champion U.S. industry's role in providing cutting-edge technologies needed by the Pentagon and the U.S. Intelligence Community to maintain lethality and accomplish it national security missions.

We look forward to continuing working with the U.S. Government to ensure it has access to the most robust, resilient, innovative industrial base in the world so that American citizens continue to benefit from products and services delivered from space.

Endnotes

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9 https://www.sda.mil/home/about-us

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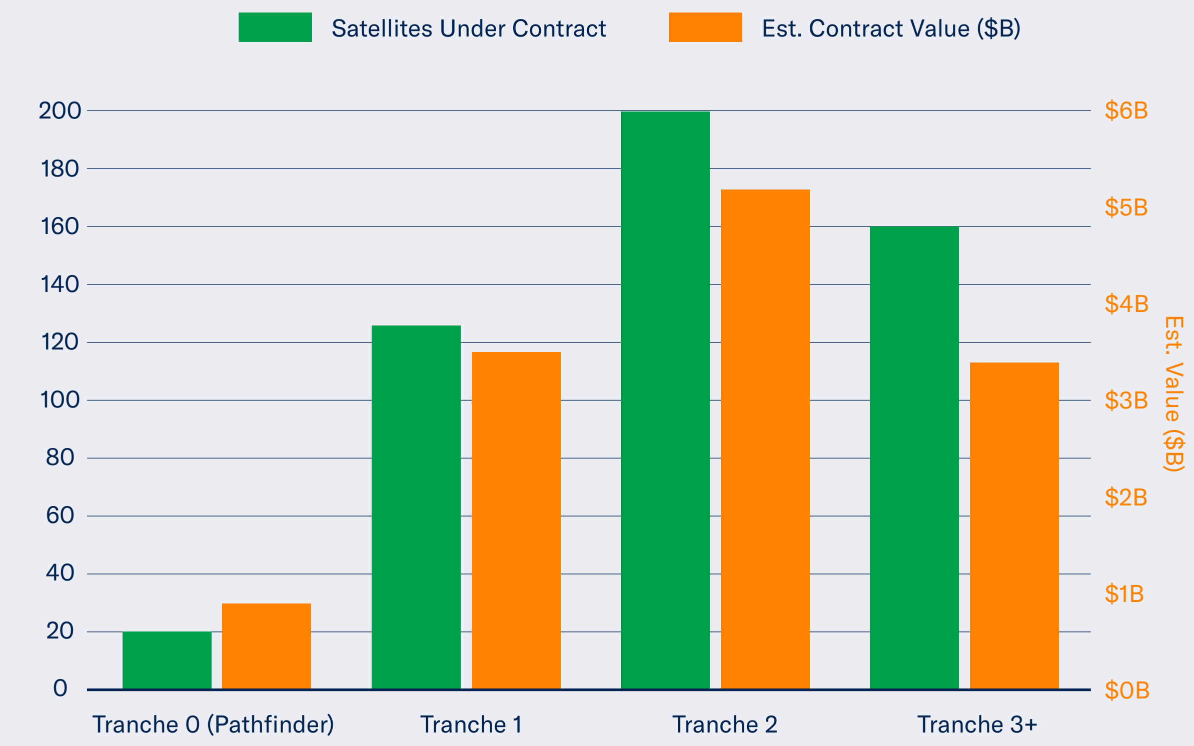
15 Under the PAE model, nine senior leaders manage programs by mission area and eventually have the authority to reallocate funding and adjust requirements as threats evolve.

SDA PWSA Transport Layer—Satellites & Contractors by Tranche



Prime contractors: Northrop Grumman • Lockheed Martin • L3Harris • York Space • Sierra Space • Rocket Lab • SpaceX | Total committed: ~$13B

16 U.S. Space Force, available at: 2025 annex to its Commercial Space Strategy.

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