FEBRUARY 2026 SPACE IS INFRASTRUCTURE FOR OUR FUTURE VOL 1.4

COSMOS

Space is Scaling Up

Spotlights On:
D2D and ODCs
EO for Insurance

Interview with Sophia Space CEO Rob DeMillo

KPMG

Ignition

In 2025, commercial space entered its new era as a dual-use industrial platform

There was a surge in space sovereignty

Throughout 2025, governments across the globe accelerated space spending, relaxed regulations, transformed procurement processes, and pulled commercial providers deeper into national security architectures. Defense budgets got boosted to build out both space-based assets and counterspace capabilities. Nations everywhere sought to establish sovereign systems and nurture national champions while also establishing new cross-border partnerships. National security needs sent venture capital to startups, triggered a wave of M&A, and pushed public company valuations significantly higher.

In Q4, that momentum only intensified, reinforcing a clear near-term reality: Defense demand is accelerating investment & innovation across the commercial space ecosystem.

But defense is not the destination, it's the accelerator for enterprise adoption

The most important story wasn't simply who was buying space capabilities, but what those investments unlocked. Launch volume started to reach sustained industrial scale. Satellite constellations expanded coverage and capacity. Remote sensing payloads expanded from imagery into edge AI-enabled intelligence.

Innovative enterprises are becoming the beneficiaries of this boom. Satellite connectivity is expanding market sizes and transmitting intelligence into remote operations. Space-derived data is informing risk scoring and rapid disaster response. Orbital compute is becoming a backup layer to terrestrial data centers. World models built from decades of observations from orbit are underlying the AI models that will power autonomous operations here on Earth. Each of these layers are getting integrated into enterprise systems to create new competitive advantages.

Looking ahead to 2026, this spillover effect becomes the defining opportunity. Multi-billion-dollar defense architectures are not just security tools; they are the high-performance testing grounds for technologies that will soon provide global scale and intelligence to the private sector. Enterprises that learn how to tap into these systems will gain earlier access to intelligence, resilience, and global scale that was previously unreachable.

This edition of Cosmos Quarterly captures that inflection point. It examines what accelerated in Q4, what broke through in 2025, and why the next phase of the space economy will be defined by the dual-use of commercial space capabilities.

This isn't just a report – it's a launchpad.

Whether you're advising clients, exploring new markets, or shaping strategy, the intelligence within is meant to be used. To challenge assumptions. To unlock opportunity. To lead.

At KPMG, we believe space is not a sector - it's a platform. One that touches every industry, every region, every ambition. And as innovation accelerates, so does the need for clarity, foresight, and bold thinking. This report provides you the opportunity to identify opportunities here on Earth based on all the new activity emerging amongst the stars.

Because the future isn't waiting.

It's already lifting off.

— **Brian Miske**
Americas Space Lead

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Geopolitics + Space

United States + Space

On back-to-back days, in the final weeks of 2025 the US Senate confirmed a non-temp NASA administrator, and the White House issued an Executive Order aimed at ensuring American space superiority.

Jared Isaacman's confirmation as NASA administrator ended a year-long saga that became a proxy fight over Artemis risk tolerance and NASA's commercial posture. Isaacman was first nominated in December 2024, then advanced by the Senate Commerce Committee in April. But that nomination was withdrawn in May. He was then renominated in November amid growing frustration with acting administrator Sean Duffy, then finally confirmed on December 17, 2025.

At Isaacman's confirmation hearing, he aligned with senators noting the need to move faster on key programs such as Artemis.[1] And he brings a unique resume to the role: Isaacman's both led missions in space as a civilian commander (of SpaceX Inspiration4 and Polaris Dawn) and built successful businesses as a startup founder and entrepreneur. This mix has driven optimism that NASA will now be more comfortable operating at the pace and risk profile of the commercial space economy and be more open to partnerships with private companies.

The following day's Executive Order from the White House welcomed Isaacman to the role by accelerating the target dates for key space milestones like returning US astronauts to the Moon by 2028 and establishing a permanent lunar outpost by 2030. It also positioned NASA as a key piece of the Trump administration's objective of ensuring American superiority in space across civil, commercial & national security domains.

The EO also articulated the US's expansive space security agenda with objectives and timelines like the development of next-gen missile defense prototypes by 2028 (see: Golden Dome) and building a responsive national security space architecture. It followed the publication of Space Force Vector[2], which defined a directional guide for transforming the Space Force "from a service provider into a highly skilled warfighting organization" whose formative purpose is space superiority. [3]

Year	EO 14369 Directives (By Target Year)[4]
2028	Return Americans to the Moon Demo next-gen missile defense tech Attract $50B new investment US space markets
2030	Replace the ISS with commercial station(s) Permanent lunar outpost (initial elements) Lunar surface nuclear reactor (ready for launch)

The EO also explicitly promoted a "first preference for commercial solutions" and advocated for policy and regulatory changes aimed at accelerating the cadence of the space economy.

Many of these initiatives are already in the works: In October, Space Force set up a $1B working capital fund to streamline its ongoing acquisition of commercial space services. [5] The FCC released a 98-page NPRM (Space Modernization for the 21st Century) that proposed a complete redesign of how it licenses satellites and space operations.[6] Its new "licensing assembly line" operating model is meant to keep up with the dramatic growth in applications it's seeing as the space economy expands. In 2016, the FCC received ~1,000 space applications. In 2024, it received ~3,000. New space related bills are also passing through the House & Senate aimed at formalizing and scaling NASA's use of commercial Earth observation data (ASCEND Act)[7], directing DHS to designate space systems, services, and technology as a critical infrastructure sector (Space Infrastructure Act)[8], and deepening space security cooperation with Japan, India & Australia (Quad Space Act)[9].

The US Senate and Dept of Defense also continued to closely track and report on China's national space plans and policies.[10]

2025 Q4

China + Space

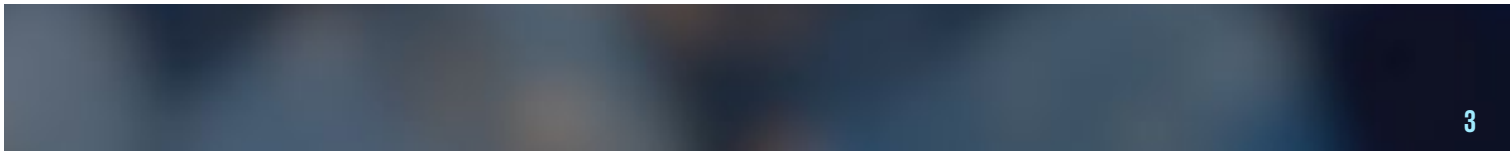
US Government officials believe China is currently executing a comprehensive, whole-of-government strategy to become the world's leading space power.

In Q4, annual reports to Congress from the US-China Economic and Security Review Commission and the Department of Defense claimed that China views Space as a critical area for military operations, national economic development, and geopolitical influence. These publications cited China's rapid advancements in launch and satellite capabilities and growth of ground-based infrastructure across its civil, military and commercial sectors. They also conclude that these developments have been reducing the historical capability gap between US and Chinese space systems.

Key Findings from US-China Economic and Security Review Commission[11] & US DoD 2025 Annual Reports to Congress[12]	
Military + Defense	China increasingly treats space as a critical operational domain for national defense and security planning • Satellites: China's expanded capacity for persistent surveillance, comms, and precision targeting with launch of 1,000+ satellites since 2014. ISR fleet nearing 400 satellites. 100+ are for imaging Earth • Counterspace: The PLA has already deployed or is developing ground and space-based counterspace capabilities intended to influence adversary space operations during periods of heightened tension
Civil Space	China's achieving "global firsts" in space exploration that are reshaping global perception of power and unlocking new opportunities for international collaborations • Exploration: Chang'e-6 mission returned world's first samples from far side of the Moon. Chang'e 7 and 8 missions plan to establish a prototype for its ILRS moon base • Cooperation: China has signed ~200 intergovernmental space cooperation agreements with more than 50 countries and international organizations. ILRS agreements rival US-led Artemis accords
Commercial Space	Over the last 10 years, China has transformed an almost non-existent commercial space sector into a thriving, state-orchestrated startup ecosystem with 600+ companies • Investment: China has seen increasing venture capital investment from government and private funds. There's a robust pipeline of space companies expected to IPO on STAR market in 2026 • Dual-Use: Many of China's commercial companies are part of its military-civil fusion strategy to develop dual-use technologies in the commercial sector for eventual integration into the military

The reports discuss China leveraging space capabilities as strategic tools to expand geopolitical influence, steer space governance, and export space-enabled technologies that underpin terrestrial power

By offering other countries the use of its satellite networks, launch services, & space infrastructure, China has enhanced the resilience and global coverage of its space architecture. China's space program is closely tied to its Belt and Road Initiative (BRI), with the construction of a global network of ground infrastructure to support space operations. It's also actively working to embed its civil and commercial space capabilities into international applications to transform them into core components of global infrastructure, creating long term strategic and economic dependencies on Chinese technology. China has agreements with countries across Africa and Asia to expand the use of BeiDou beyond navigation promote its role in economic and environmental development.

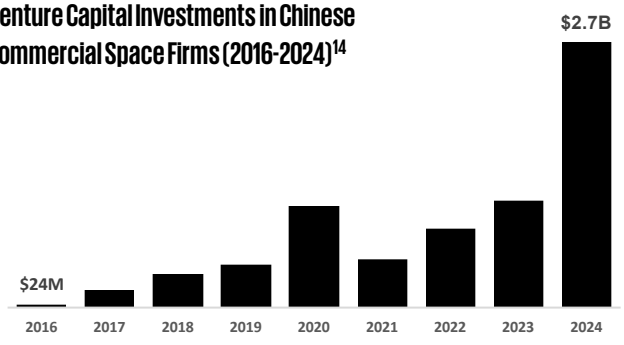


China + Space

China has increasingly looked to the commercial sector to achieve its space ambitions. Its new Action Plan for Promoting High-Quality and Safe Development of Commercial Spaceflight signals another step-change in ambition.

The Action Plan, published by the China National Space Administration (CNSA) aims to deliver a "significantly expanded" scale of China's commercial space industry by 2027 and explicitly commits to deeper integration of commercial space into the overall national space development plan.[13] It encourages government departments of all levels to expand procurement of commercial space services and opens national R&D programs for cutting-edge space tech (propulsion, navigation, remote sensing, etc.) to commercial companies for the first time. The plan prioritizes the development of emerging business models in markets like space resource utilization, space manufacturing, and space biopharma. It seeks to "guide patient capital" that can fund long-term space efforts, including establishing a national commercial aerospace development fund. That's on top of record VC raises YoY.

Venture Capital Investments in Chinese Commercial Space Firms (2016-2024)[14]



The Action Plan also aims to establish the China Commercial Space Promotion Association to provide an innovation platform for industry-academia-research-application cooperation. And it wants to work closely with companies to accelerate legal, policy, and standards setting nationally, then encourage them to actively participate in the formulation of international rules in the outer space domain. Shortly after publishing its Action Plan, CNSA announced the establishment of the Commercial Space Department.

The new department's mandate: oversee the rapidly growing roster of commercial space companies in the country and promote development to benefit the industry. It's expected to enable higher-level coordination and planning across the ecosystem. It provides a path to reduce major bottlenecks in commercial space launch approvals and satellite license issuance that the US is currently solving for. It also arrives at a crucial inflection point for China's commercial space economy. 2025 concluded with a robust pipeline of Chinese space startups looking to IPO. LandSpace, Galactic Energy, CAS Space, Space Pioneer, Yee Space, MinoSpace, and more have filed for listing on the Shanghai Stock Exchange's STAR Market in 2026. Public market success for these companies means maturing capital markets with an exit path for space startups, which could unlock even more growth capital across the ecosystem.

Space as an emerging platform for global influence and standards-setting

China also published its first comprehensive arms control white paper since 2005.[15] While it reiterates many of Beijing's long-standing positions, it also includes a new section on "leading international security governance in emerging fields" include Outer Space Security ("working on the prevention of an arms race in outer space").[16] In Q4, China also announced the launch of a joint lab for space tech with Brazil, where it's also building BINGO, which will be South America's largest radio telescope when it goes live NET 2026.[17] It also took "unprecedented" early steps toward operational space-traffic coordination between China, NASA, and major Western constellation operators.

2025 Q4

Europe + Space

Throughout 2025, European space leaders worked to translate the regional rhetoric for "strategic autonomy and resiliency in space" into concrete initiatives for developing "sovereign space capabilities." Then, in Q4, the ESA secured record levels of capital commitment to operationalize these ambitions.

EU countries have recently become acutely aware of the increasing need to strengthen national and regional security capabilities and reduce their reliance on existing space powers as the ongoing war in Ukraine made clear how space is now necessary to maintain military advantages. It's shown how vital imagery from space can be for survival, and to not solely rely on other countries for access to it (see: US halts satellite imagery support).[18] It's highlighted how satellite comms are crucial, and how non-state actors now have outsized control over battlefield optionality (see: Starlink service shut down over Crimea).[19] European infrastructure has experienced disruptions linked to space related cyber and communications incidents (see: ~6 German wind turbines malfunctioned after a cyberattack on ViaSat's satellite network).[20] The region can no longer rely on Russian rockets for access to orbit and recently proposed formally barring collaboration with Chinese institutions on research and innovation projects related to space. All this combined created a significant need for Europe to scale up its own space architecture.

The European Space Agency (ESA) 2025 ministerial in November – where member states and cooperating nations make multi-year funding commitments to EU space programs – was a milestone moment

In its first ministerial since 2022, the ESA secured a record €22.1B ($26B) in committed capital for its proposed 2026-2028 initiatives; both a 32% increase over the €16.9B secured in 2022 and 99% of the agency's original request. [21] This was a clear break from historical patterns where ESA typically received closer to 90-93% of its proposed budget, reflecting a remarkably strong alignment between political intent and financial commitment.

~90% of ESA members raised their contributions, many significantly. Many substantially increased the national (non-ESA) space investments as well; each of them defense focused. Which aligned with the elevation of space capabilities in the European Commission's Defence Readiness Roadmap 2030, also released in Q4. All signaled that EU's push for "strategic autonomy" has moved beyond policy positioning and into a new phase of large-scale capital deployment.

ESA Ministerial Capital Committed by Country 2025 v 2022 (Top 5 + Notable Increases)[22]

2025 (€Bs)	vs 2022	Country	Notes
€5.1	+46%	Germany	Sept: also committed €5B to space-related defense by 2030
€3.6	+15%	France	Nov: also doubled national space defense budget to €10 by 2030
€3.5	+13%	Italy	-
€1.9	+102%	Spain	Nov: published National Aerospace Security Strategy
€1.7	-9%	UK	-
€0.7	+277%	Poland	Sept: also raised defense spending to ~€47B
€0.7	+404%	Canada	-

The true signal from the ESA Ministerial was not the size of the package, but what EU member states chose to spend it on.

Every country automatically contributes to "mandatory" ESA activities - primarily science – based on the size of their economies. But that only makes up 20% the budget. The rest is for optional programs countries can choose to fund or not fund, with the expectation that their contributions return a proportional share of contracts to their nations' space companies. Which programs were elevated in 2025?

EO: ERS (European Resilience from Space)

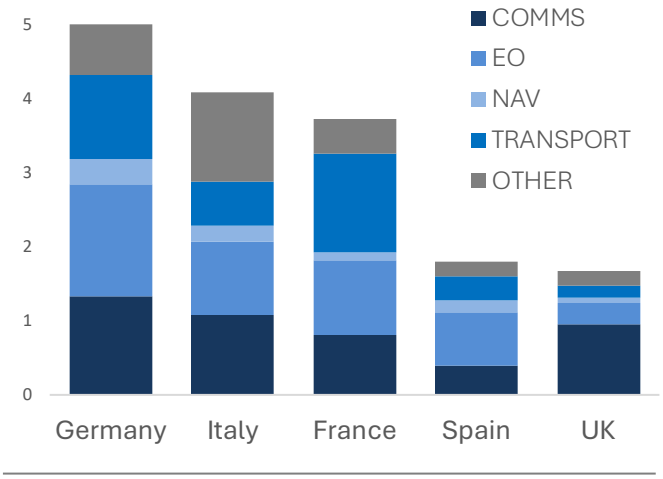
The largest new priority was for security-oriented satellite systems. The ESA introduced the ERS; a new €1.2B initiative to develop a dual-use ISR (Intelligence, Surveillance and Reconnaissance) constellation combining optical and radar imaging payloads. ERS also marks ESA's expanding role in security-adjacent space applications, reframing EO utility from just climate/science toward surveillance, targeting support, and operational intelligence.[23] ERS plans to leverage to IRIS^2 to handle data dissemination from ERS EO assets and tasking for EO sats.

Comms + Nav: IRIS^2 + Celeste

Funding also grew for existing programs focused on development of sovereign satellites. Secure connectivity was a key focus. Europe's sovereign broadband constellation was embedded directly into ESA's core budget lines for communications and navigation, with hundreds of millions allocated for early system architecture, tech demonstrations and user terminals. Unlike earlier European satcom programs, IRIS^2 is designed first for government and defense customers: encrypted communications for militaries, emergency services, border control, and critical infrastructure operators. In practice, IRIS^2 is Europe's attempt to ensure that secure connectivity does not become structurally dependent on US commercial constellations or foreign-owned platforms. Initiatives were also funded for LEO-PNT (Celeste), aimed at building low-Earth-orbit navigation capabilities to complement Galileo, reflecting growing concern that PNT itself has become a strategic vulnerability in contested environments.

Each of these are expected to become core to the European Commission's "Space Shield" concept (from the new Defense Readiness Roadmap) to integrate all of these (and other) satellites as component layers of single security "stack" spanning industrial policy, climate monitoring, and defense.[24]

2025 Ministerial: ESA Commitments by Country by Category (€ Billions)[25]



Launch: European Launcher Challenge

Space transportation was also a key theme. You can make as many satellites as you want, but it won't matter unless you can get them into orbit. Which led to oversubscribed funding for the European Launcher Challenge; enough to support development of all 5 rocket companies selected in the last round of the competition. That means nearly €1B will now flow to Isar & RFA (Germany), Maiaspace (France), PLD Space (Spain), and Orbex (UK) with the aim of nurturing a new class of national champions across the continents.

Official Publications 2025

JAN	US	➢ Executive Order #14186: The Iron Dome for America[26]
	US	➢ FCC: Space Modernization for the 21st Century Notice of Proposed Rulemaking[27]
	FI	➢ Finnish Government: Space Strategy 2030[28]
	IT	➢ Presidency of the Council of Ministers: Government guidelines on space and aerospace[29]
MAR	US	➢ US Space Force: Space Warfighting - A Framework for Planners[30]
	US	➢ NASA: 2025-2026 Science Plan[31]
	esa	➢ European Space Agency: ESA Strategy 2040[32]
	IN	➢ IN-SPACe: Projection of SATCOM capacity over India for next 5 Years[33]
	CN	➢ CNSA: Promoting the Standardized and Orderly Development of Commercial Aerospace Measurement and Control[34]
APR	US	➢ USSF: Space Force Doctrine Document[35] & US Air Force: Space Support Air Force Doctrine Publication 3-14[36]
	NZ	➢ New Zealand Government: 2025 Defense Capability Plan[38]
JUN	EU	➢ European Commission: Vision for the European Space Economy[39] & EU Space Act[40]
	esa	➢ European Space Agency: Technology 2040: A Vision for the European Space Agency[41]
	GB	➢ UK Government: The UK's Modern Industrial Strategy CP 1451[42]
	JP	➢ Council on Economic and Fiscal Policy: Basic Policy on Economic and Fiscal Management and Reform 2025[43]
	IN	➢ Department of Space: Space Vision 2040 PIB[44]
	US	➢ US Space Force: International Partnership Strategy[45] + US Navy: Navy Space Policy Implementation[46]
JUL	US	➢ US Space Force: Operations in the Information Environment Space Doctrine Publication 3-102[47]
	CN	➢ China National Space Admin: Strengthening Quality Supervision and Management of Commercial Space Projects[49]
AUG	JP	➢ Ministry of Defense: Outline of Space Domain Defense Guidelines[48]
	CN	➢ UK Space Agency: Size and health of the UK space industry 2024[50]
	GB	➢ Executive Order #14335: Enabling Competition in the Commercial Space Industry[51]
	US	➢ Guangdong Provincial Government: Measures for Promoting High-Quality Dev of Commercial Space (2025–2028)[52]
SEPT	GB	➢ UK Space Agency: Corporate Plan 2025-26[53]
	ES	➢ The Government of Spain: The National Aerospace Security Strategy[57]
OCT	GB	➢ European Commission: Preserving Peace - Defence Readiness Roadmap 2030[54]
NOV	FR	➢ SGDSN (General Secretariat for Defence and National Security): National Space Strategy 2025-2040[55]
	DE	➢ BMWg (Federal Ministry of Defense): Space Safety and Security Strategy[56]
	ES	➢ National Security Council: The National Aerospace Security Strategy[61]
	esa	➢ European Space Agency: CM25 Document 100 (ESA Program Financial Commitments by Member)[58]
	JP	➢ China National Space Administration: Promoting High-Quality and Safe Dev of Commercial Spaceflight (2025-2027)[59]
	JP	➢ State Council Information Office: China's Arms Control, Disarmament, and Nonproliferation in the New Era[60]
	US	➢ US-China 2025 Annual Report to Congress | China's Ambitions to Dominate Space[62] + US Space Force: Space Force Vector[63]
DEC	US	➢ US Department of Defense: Military and Security Developments Involving the People's Republic of China 2025[64]
	US	➢ Executive Order #14369: Ensuring American Space Superiority[65]

Defense + Space

Many commercial space companies spent this year scaling up, acquiring capabilities, spinning up new divisions & more to position themselves for defense contracts. What's been getting funded and who's getting the contracts?

Missile Warning + Defense

The EO-driven development of the Golden Dome is considered to be one of the biggest drivers of US commercial space companies' doubling down on defense in 2025. It's intended to be comprised of an integrated layer of remote sensing satellite (to spot and track threats) and a constellation of space-based interceptors (to detect and intercept potential risks). In October, SpaceX reportedly won $2B to build missile and aircraft tracking satellites.[1] In November, Space Force awarded its first round of contracts for Space-Based Interceptors (SBIs) but declined to disclose awardees. In December, the US Missile Defense Agency (MDA) qualified 1,000+ more companies to compete for task orders under the $151B Golden Dome SHIELD contract.[2] More than 2,100 companies are now qualified for the IDIQ. In October, Military leaders from France and Germany announced an initiative to create their own early warning capability.[3] It will be called JEWEL (Joint Early Warning for a European Lookout) and is planned to sync with NATO's Integrated Air & Missile Defense system.

In December, the US Space Development Agency (SDA) awarded $3.5B+ to Lockheed ($1.1B), L3Harris ($843M), Rocket Lab ($805M) and Northrop ($764M) to each build 18 satellites for the Tracking Layer of its Proliferated Warfighter Space Architecture (PWSA) constellation.[4] The layer will be made to provide missile warning & tracking and significantly increase the coverage and accuracy needed to close kill chains against advanced adversary threats when integrated with PWSA's Transport Layer. In October, Sierra Space passed a critical design review to begin assembly of its own batch of 18 Transport Layer satellites.[5]

Command + Control Constellations

Proliferated constellations are large networks of small, low-cost satellites, often with different capabilities, designed to work together as a single, resilient system. The US SDA's Proliferated Warfighter Space Architecture (PWSA) began deployment this year. This September and October, 42 Transport Layer satellites were sent up in batches of 21 to begin building up the space-based backbone for a JADC2 network connecting sensors, shooters, and command systems across all services and domains.[6] Batch 1 was built by York Space as part of a $382M contract. Batch 2 by Lockheed Martin as part of a $700M contract signed in 2022.[7] More Transport Layer satellites, including batches built by Northrop Grumman, are expected to launch in 2026.

Secure Communications

This October, procurement documents showed Germany's plan to spend €14B on satellite programs to create multiple networked constellations aligned to its new €35B space safety and security strategy.[8] It included €9.5B to develop a dedicated military/government secure communications constellation in LEO to ensure constant, jam-resistant connectivity for troops and command posts. This budget is expected to benefit German primes like OHB. In December, the newly formed Defense Investment Agency (DIA) of the Canadian government, struck a strategic partnership with Canadian space companies Telesat and MDA to build a state-of-the-art MILSATCOM architecture for Canada's Enhanced Satellite Communications Project – Polar (ESCP-P).[9] The objectives: strengthen and safeguard Canada's Arctic sovereignty while bolstering Canada's NORAD and NATO commitments.

In December, a classified payload for the US National Reconnaissance Office was flown to orbit on a Falcon 9 rocket. It was SpaceX's 10th mission for the NRO in 2025. Five of those carried up a combined 85 SpaceX Starshield satellites, which are government modified Starlink's with end-to-end encryption. Starshields are also often equipped to carry remote sensing payloads that can collect imagery and signals intelligence and feed it directly into military command-and-control networks. Additionally, SpaceX was selected by Space Force to develop another new 480-satellite dedicated military communications constellation, MILNET, that will operate as a high-capacity "backbone" layer alongside the SDA's PWSA Transport Layer, which focuses on low-latency tactical data inputs.

EO & AI for ISR
(Intelligence, Surveillance, and Reconnaissance)

ISR is the end-to-end process of collecting a broad range of information and transforming it into strategic intelligence. Commercial space companies now operate constellations that originate some of its most mission critical raw data sources. Defense customers now have a wide variety of signal types they can source. And AI is making each more valuable individually and exponentially more valuable when combined.

Imagery: Planet Labs operates the world's largest fleet of imaging satellites, which enables their customers to monitor entire regions of the Earth. Their solutions also integrate image recognition AI; they send users real-time alerts on things they need to action on rather than pictures they need to analyze themselves. This quarter, Planet won ~$20M in contracts for maritime intelligence and domain awareness (use cases like vessel detection and monitoring) for the US Navy[10] and National Geospatial-Intelligence Agency (NGA).[11] Those were followed by an "8-figure contract renewal" with an undisclosed international defense and intelligence customer.[12] Earlier in 2025, Planet expanded the scope of another DoD contract, secured a "seven-figure contract"[13] with NATO for Maritime Domain Awareness support, and scored a €240M contract[14] with Germany to deliver dedicated imaging capacity and direct downlink services over specific European regions.

While Planet's advantage is in scale of coverage, BlackSky's is in its Gen-3 very-high-resolution cameras' ability to autonomously detect and classify much smaller, more mobile objects like vessels, vehicles, and aircraft in near-real-time. Like Planet, they also use AI to provide a "real-time ISR" service layer that sends users notifications to action on, not just snapshots from space. In November, BlackSky won a $30M contract to "accelerate sovereign space-based intelligence capabilities" for "a strategic international defense customer."[15]

SAR: ICEYE, founded in Finland, operates the world's largest constellation of Synthetic Aperture Radar (SAR) satellites, which produces detailed images regardless of clouds or darkness that aims to provide uninterrupted monitoring. In May, ICEYE entered a joint venture with Rheinmetall, Germany's largest arms manufacturer. In December, "Rheinmetall ICEYE Space Solutions" was awarded $1.9B to build and operate a space-based surveillance constellation for Germany's armed forces. Two months prior, ICEYE had also partnered with one of Japan's top 3 defense contracts, IHI Corp, to build SAR satellites for security, civilian, and commercial use.[16] Throughout 2025, they also signed deals or delivered SAR satellites for the Finnish Defense Forces (€158M), Polish Armed Forces, and Portuguese Air Force.

Japan's Ministry of Defense is also commissioning a sovereign orbital reconnaissance constellation, which they selected Mitsubishi to lead a consortium for. In December, the consortium selected to add Synspective and integrate its SAR capabilities.[17]

Radio-Frequency (RF) Data

HawkEye 360's satellites provide another unique set of space-derived intelligence - radio-frequency (RF) data. They enable defense customers to detect and geolocate electronic emitters like communications, radar, and jamming systems, even when targets are hidden, mobile, or intentionally trying to avoid optical or radar detection. Unlike imagery-based systems, RF sensing captures who is transmitting, on what frequencies, from where, and how often, revealing patterns of operational behavior, not just the physical presence of assets. In Q4, the US Navy contract was renewed for the 4th consecutive year[18] and was awarded dedicated funding from the NRO for the next 2 years.[19]

AI Integration

Defense customers are awarding AI x space data contracts to more than just constellation operations: In Q4, Airbus was awarded a €50M contract to integrate AI into the weapons and information systems used by the French armed forces. Phase I will start with upgrading the Spationav maritime surveillance system with AI trained to process satellite-derived data. Voyager won a similar, $21M AI-driven signals processing contract from the US Air Force. [20] Enabled Intelligence specializes in AI data labeling for classified systems. The NGA awarded the startup $708M to train AI-enabled computer vision systems to process satellite imagery and identify targets of interest.[21]

The next evolution will come from integrating each of these individual data streams into multi-modal intelligence to world models. These AI-powered models can be continuously updated digital twins of physical and operational reality. This provides them with the potential to move ISR from isolated detections toward a persistent, predictive understanding of how different actors, assets, and environments behave over time.

Procurement as Competitive Advantage

Defense agencies are increasingly reshaping how they select and fund commercial space services to accelerate acquisition timelines.

Space Force announced a transformation to its acquisition approach that prioritizes speed and agility, embracing acceptable risk to favor quicker initial contracting with iterative delivery models rather than traditional long evaluation cycles and large, rigid milestones. In December 2025, Space Force & NRO were reported to be developing a multi-source acquisition strategy for satellites with structured solicitations for faster fielding of multiple vendors rather than single-source buys.[22] Space Force also said it's moving its Commercial Augmentation Space Reserve contracting strategy out of pilot phase for 2026 contracts. CASR selects commercial space firms to provide capabilities during peacetime that can be scaled rapidly during periods of elevated demand. Participating companies get access to threat intelligence and will be included in training events and wargames to help the service understand how to integrate commercial services into its operations and to determine how much capacity it needs in specific regions. And the NRO also announced a transformation to its approach to commercial satellite data acquisition: from episodic to continuous buying.[23] It introduced a new commercial solutions opening (CSO) contract mechanism with a standing, always-open procurement channel that lets companies submit unsolicited proposals over a rolling 5-year window, instead of waiting for tightly scoped, one-off government RFPs.

Moving forward, the ability to effectively procure commercial services will determine which forces can field and scale advanced capabilities at speed, conferring a durable advantage over those constrained by slower, legacy acquisition systems.

Defense + Space

OCT

- US DoT selected Iridium for PNT contract to protect against GPS disruption[24] while DARPA awarded Safran a contract to develop quantum sensors for US military's PNT architecture[25]
- UK MoD invested $672k for UKSA to develop sensors that protect sats from laser threats[26]
- Space Force selected Vantor to deploy its new "space-to-space" capability that monitors satellites in orbit from orbit[27] and awarded Muon ~$45M for prototype weather satellites[28]
- The Arc spacecraft is being built to deliver 500 pounds of supplies anywhere in the world for the US military in an hour [29]
- The US Army included counterspace capabilities as a top priority in its 5-year budget program for the first time as it plan to establish a new Space Branch[30]
- French Defense Procured Agency selected Thales/Airbus/Leonardo to develop Europe's largest ever ground-based surveillance radar AURORE to monitor LEO activity[31]

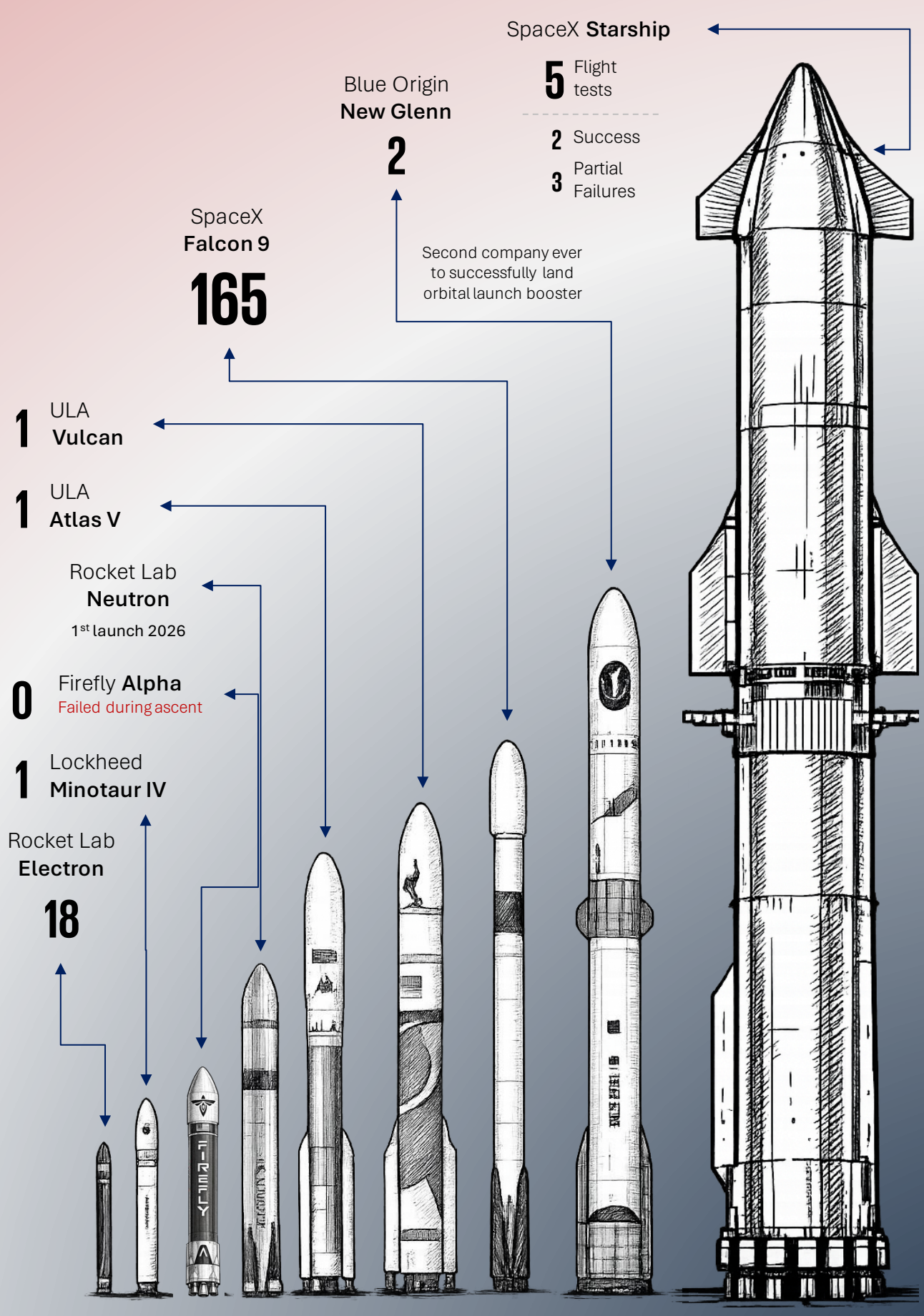
NOV

- Redwire won $44M DARPA contract to manufacture and deliver a demo VLEO satellite with air breathing electric propulsion (ABEP) technology[32]
- ICEYE unveiled on-demand tasking "tactical access" program for government customers[33]
- Spaceflux won all 3 major space surveillance & tracking (SST) contracts from UK Space Command and the UK Space Agency, cementing sovereign status[34]

DEC

- Helsing (Germany) and Kongsberg (Norway) partnered to build and deploy "a substantial number" ISR, SSA, and satcom satellites in LEO for EU defense needs[35]
- Iridium won ~$86M USSF award for mobile satellite services ground station upgrades[36]
- Commercial satellite manufacturer Apex's announced "Project Shadow" program plan to demo the first privately built Space-Based Interceptor in June 2026[37]
- Multiple space companies were selected to join NATO's DIANA defense accelerator[38]
- ESA confirmed cybersecurity breach leaked ~200GB of unclassified science server data[39]
- Tory Bruno stepped down as CEO of ULA to join Blue Origin as president of a newly formed National Security Group (NSG)[40] which will develop "cutting-edge products, services, and technologies aimed at enhancing national security missions," [41] consolidating and expanding Blue Origin's work with the US defense and intelligence community
- US & French military satellites successfully[42] practiced RPO joint maneuvers as part of US SPACECOM's Multinational Force-Operation Olympic Defender.[43] The UK also conducted a joint RPO with the US in September. [44]

Launch + Spaceports



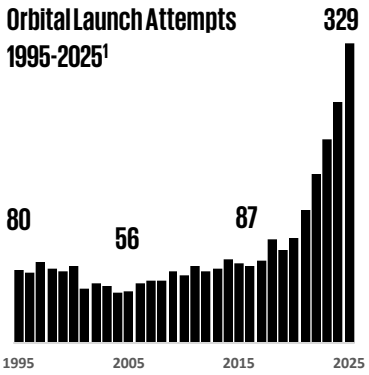
US Rockets Launched in 2025*

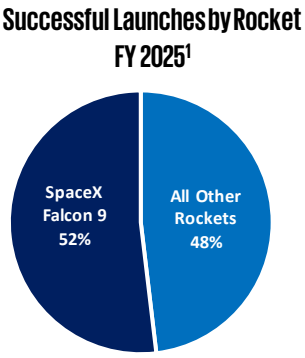
US

* Ordered by relative height. Rocket Lab Neutron launch delayed to 2026[1]

Global Launch Volume: Another Record Year

2025 brought new all-time highs across orbital launch activity, confirming that access to space is entering a new phase of sustained industrial scale. 329 orbital launch attempts were conducted worldwide, a rise of 25% YoY over the 2024's prior record (264). 318 made it to space, marking a 97% industry-wide success rate. More than 3.3M kilograms were delivered to orbit, comprised of 4,000+ satellites - the vast majority for commercial use.



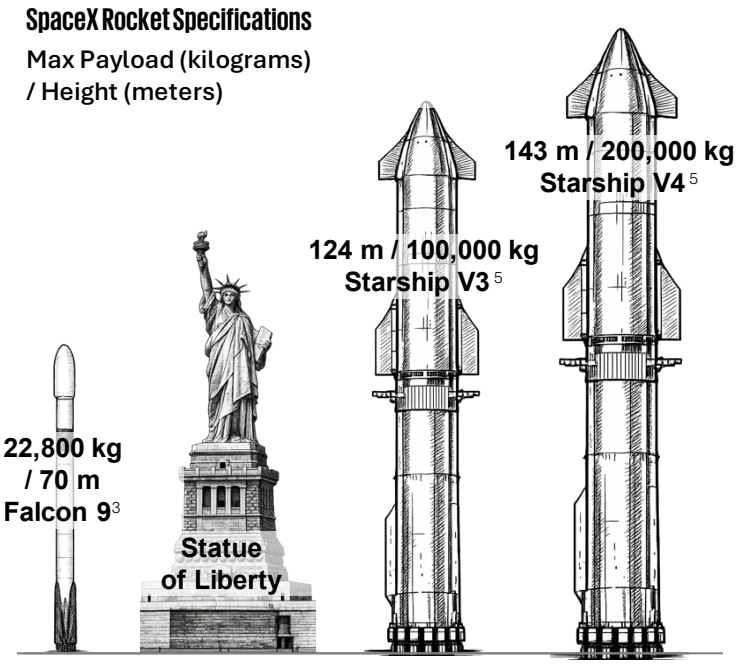


SpaceX continued to operate at a scale orders of magnitude larger than most other launchers

The company conducted another 41 orbital launches in Q4 to reach 165 for 2025, accounting for >50% of global launch activity and ~85% of all US attempts, effectively functioning as the world's primary orbital logistics provider. In aggregate, SpaceX deployed >3.8k payloads for 150+ different satellite and spacecraft operators. The company remained the NASA's primary transporter to the ISS, shuttling 8 astronauts and cargo delivery, with SpaceX's Crew Dragon and Cargo Dragon spacecraft carrying 8 astronauts and >5,300 kg of supplies to the station, respectively. Beyond NASA's Commercial Crew flights, SpaceX also completed 2 commercial human spaceflight missions, powering 4 private astronauts to the ISS for Axiom Space and sending 4 more flying over both of Earth's poles on the first crewed polar-orbit mission. We should expect to see even more missions in 2026. In October, the Air Force approved SpaceX's proposal to double its launch rate at Vandenberg Space Force Base (from 50 to 100) and begin using a second launch pad there.[2]

SpaceX also achieved major Starship milestones

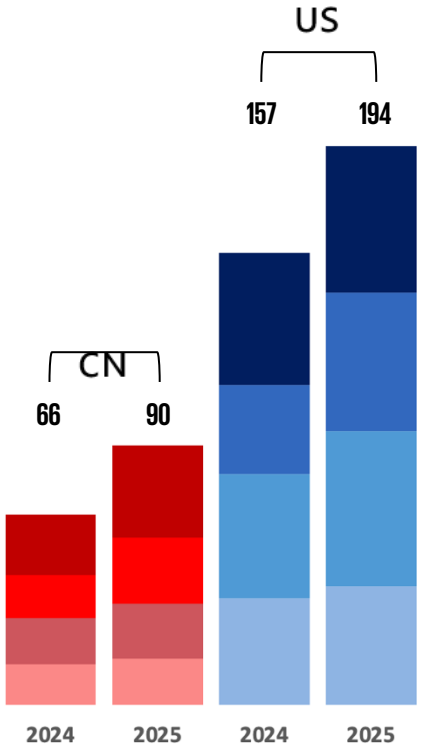
Starship is the biggest and most powerful rocket ever built, anticipated to have a payload capacity more than four times Falcon 9's. SpaceX sent Starship on 5 test flights in 2025, steadily stacking technical milestones on the path to a fully reusable super-heavy launch system. In January, the company caught its Super Heavy booster in mid-air using the tower's "chopsticks," a critical step toward rapid reuse. On its 10th test flight in August, Starship delivered payloads into orbit for the first time, crossing a key threshold from experimental system to operational platform.



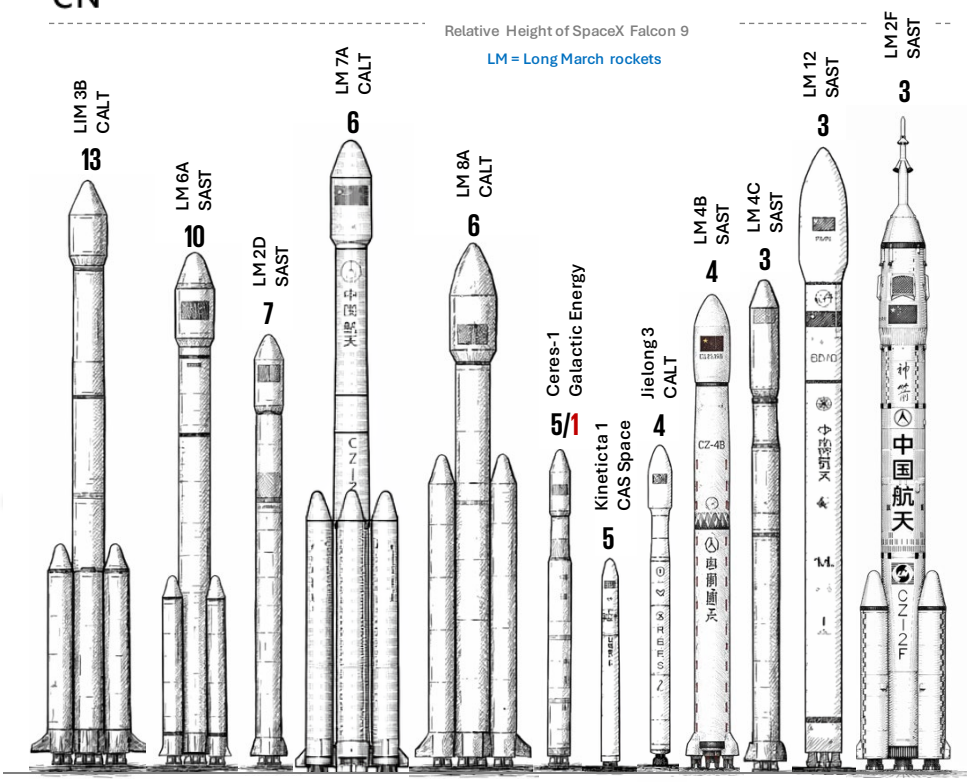
Launch

Successful Launches by Country

2024 & 2025 Stacked by Quarter[1]



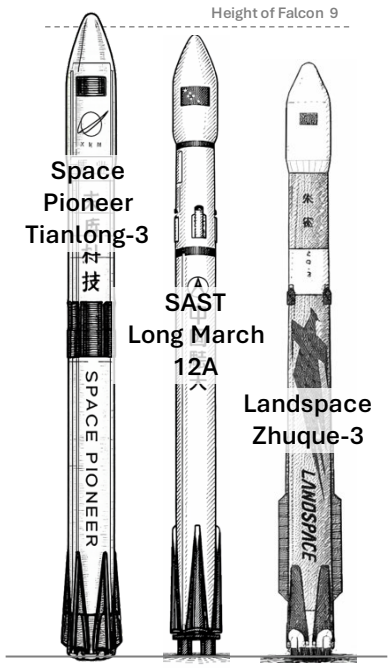
CN Top Rockets by 2025 Launches: CHINA Ordered by Count (Success / Fail)[1]



China's launch cadence is accelerating, but reusability bottleneck remains

China hit its own historic highs in 2025, with 90 successful launches across 93 attempts. Q4 alone accounted for roughly one-third of yearly total - including a week with 4 launches in 4 days during December - reflecting an acceleration in tempo. But the country's launch vehicle ecosystem remains fragmented. It required 10 different manufacturers fielding 29 different rocket types to achieve that count. Many are light to medium lift, able to deploy only single- to low double-digit satellite payloads per launch. So, despite higher launch volume, total mass-to-orbit and constellation deployment capacity remained well below SpaceX. Structurally, reusability remains China's critical gap.

In Q4, China lost the runner-up reusability race to Blue Origin, and both of their initial challengers (Landspace Zhuque-3 and SAST's Long March 12A) reached orbit, but failed to land their boosters, leaving China without an operational reusable orbital system, for now. For China, cracking this challenge is essential to scaling up and sustaining megaconstellations.



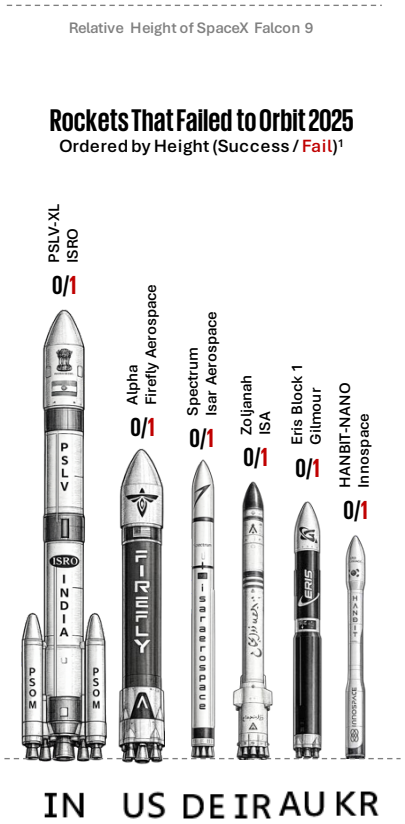
China's Reusability Challengers

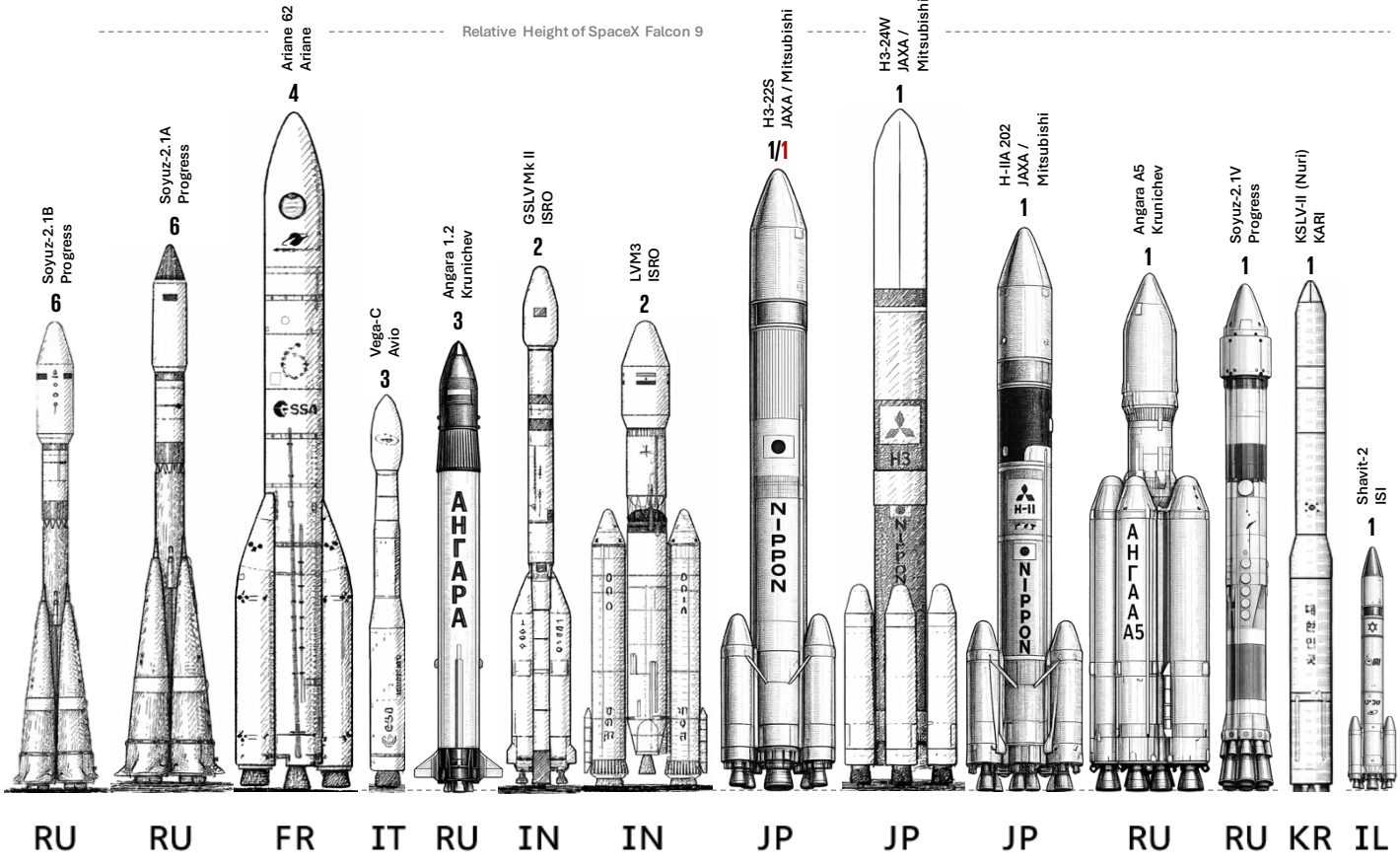
Global orbital access broadening, but not without speed bumps

Launch attempts by non-US/China countries continued to tick up in 2025, though they still comprised a relatively small share of global attempts (39, ~12%) and successful orbital flights (34, ~11%).

Russia's 2025 cadence held steady compared to recent years (17), but still well below Cold-War rates. France (4) & Italy (3) continued to field EU's most reliable sovereign rockets. India (5) and Japan (4) notched wins across multiple rockets, but each also had 1 fail to orbit.

2025 also highlighted the high barriers to entry that define orbital launch, especially for newcomers. Australia and Germany both brought homegrown rockets to the launchpad for the first time ever (each from commercial companies), but neither Gilmour's Eris rocket or Isar Aerospace's Spectrum had fully successful inaugural flights. Both plan to try again in 2026 along with commercial newcomers like Orbex (UK), RFA (Germany), and Skyroot (India).





2025 Q4

Spaceports

Beyond the Launchpad

US spaceports evolution in 2026 is far more than launch infrastructure. They are evolving into dynamic gateways that extend well beyond the launchpad - serving as critical nodes in an emerging orbital and cislunar economy where in-space services, logistics, energy distribution, and sustained operations redefine value creation as outlined in Space Port Infrastructure insights.

Key themes shaping the collective US spaceport network amid surging commercial & dual-use demand

- **Explosive growth in launch cadence and commercial dominance**: Record orbital activity continues into 2026, propelled by reusable systems, mega-constellations, and defense priorities. Spaceports generate escalating revenue through user fees, payload integration, and high-frequency services, transitioning toward airport-like economics with predictable margins.
- **Infrastructure bottlenecks and the race for scalability:** Legacy ranges grapple with congestion from larger vehicles and multi-mission demands, risking throughput limits as orbital cargo ambitions scale dramatically. Investments in modular pads, enhanced utilities, and diversified sites are essential to sustain exponential growth without systemic constraints.
- **Innovative financing models unlocking private capital:** Policy alignments—such as tax-exempt private activity bonds mirroring airport mechanisms—de-risk projects and attract institutional funds. Equity/risk-sharing frameworks supplant subsidy reliance, framing spaceports as durable, revenue-yielding assets primed for private-sector acceleration.
- **Regulatory streamlining to accelerate momentum:** Reforms under recent executive actions and FAA updates expedite licensing, environmental reviews, and novel operations. These enable rapid iteration in beyond-LEO activities, supporting Artemis crewed milestones and commercial in-space demonstrations by late 2026.
- **Broader economic and strategic ripple effects:** As dual-use hubs, spaceports drive regional manufacturing, defense integration, and STEM talent pipelines while bolstering supply-chain resilience. They position the US as the global preference for aerospace partnerships in a contested domain.

Underpinning these dynamics are deeper strategic themes

- **Risk-sharing over subsidies - mature market positioning:** The emphasis on equity models and bond financing fosters a bankable, self-sustaining ecosystem that sustains institutional inflows without ongoing fiscal dependency.
- **Proactive bottleneck removal as strategic moat:** Tackling utilities, permitting, and geographic diversification ahead of peers builds unmatched reliability and capacity advantages in a high-cadence future.
- **Defense-industrial base integration as national security anchor:** Commercial expansion aligns tightly with defense needs (e.g., assured access, resilience programs), securing sustained policy and funding support amid geopolitical tensions.

Spaceports

Understanding the current spaceport landscape & challenges

- **Identify Key Players:** The US spaceport system involves federal ranges (DoD/NASA), FAA-licensed commercial spaceports, and private facilities. Understanding their roles is the first step.
- **Acknowledge Bottlenecks:** Cape Canaveral's Eastern Range is setting launch records, but this highlights the need for modernization and operational reforms. Over-reliance on a few sites creates congestion and vulnerabilities.
- **Recognize Regulatory Hurdles:** The FAA's Part 450 framework needs updates to improve clarity and speed. Lengthy environmental reviews and fragmented oversight slow down licensing and expansion.
- **Cybersecurity Threats:** Increasing cyber threats to space systems and ground infrastructure pose national security vulnerabilities.
- **Geopolitical Competition:** Competition from China and Russia challenges U.S. dominance and creates strategic pressure.

Looking ahead, the true energy lies Beyond the Launchpad (an upcoming KPMG Share Forum Series).

US spaceports increasingly host and enable in-space services—orbital logistics, power beaming demos (e.g., optical grids for lunar/cislunar continuity), data/compute platforms, refueling, assembly, and debris management. These extend economic activity into orbit and beyond, turning spaceports into launch-to-lifecycle enablers for a circular space economy.

In KPMG's view, 2026 marks the inflection where spaceports become foundational to trillion-dollar value chains in energy, mobility, and persistent operations. Forward-thinking enterprises, whether in infrastructure, defense, or emerging services, are prioritizing adaptive positioning now to capture leadership in this expansive domain.

The launchpad was the starting line; the real race unfolds beyond the launchpad.

KPMG's Spaceport Microsite

Unleashing America's Spaceport Ascendancy

The rise of the non-DoD spaceport

VIEW FULL ARTICLE

Rethinking DoD space launch ranges

VIEW FULL ARTICLE

The Commercial Space Launch Act

VIEW FULL ARTICLE


Satellites

YEAR END 2025

~14,300

Active Satellites[1]

~65% SpaceX Starlinks

+321% Last 5 Yrs

~3.4k @ Year End 2020[3]

>3.1k # New Starlinks launched in 2025

EXPECT TO SEE

~100,000 by 2030[2]

+600% Next 5 Years

Current Megaconstellation Sizes

~9.3k	128	108	136
Starlink	Amazon Leo	Quianfan	Guowang

Planned Mega-constellation Sizes[4,5]

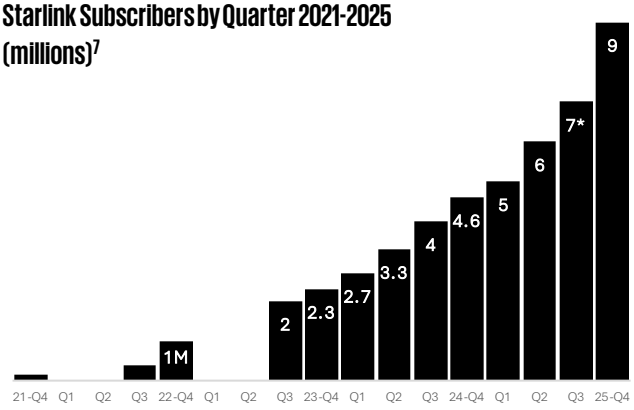
45k	3.2k	15k	13k

Megaconstellations

Megaconstellation deployment continued to make up the majority of mass to orbit. Most of it was Starlink.

SpaceX sent up nearly 1k more Starlinks in Q4 for a total of ~3.1k throughout 2025.[1] There are now >9,300 active satellites in its megaconstellation, including 650 D2D (Direct-to-Device) capable Starlink V2's, which SpaceX began deploying in January and completed in December. Customer adoption continues to surge: Starlink concluded the year "connecting >9M active customers across 155 countries, territories and other markets."[6] That's nearly double the 4.6M it had at the end of 2024. This quarter, it began obligatory testing in India, assumed to be one of the last steps before it can rollout commercial services in the country, which could net it millions more.

Starlink Subscribers by Quarter 2021-2025 (millions)[7]



Amazon went from Kuiper to Leo

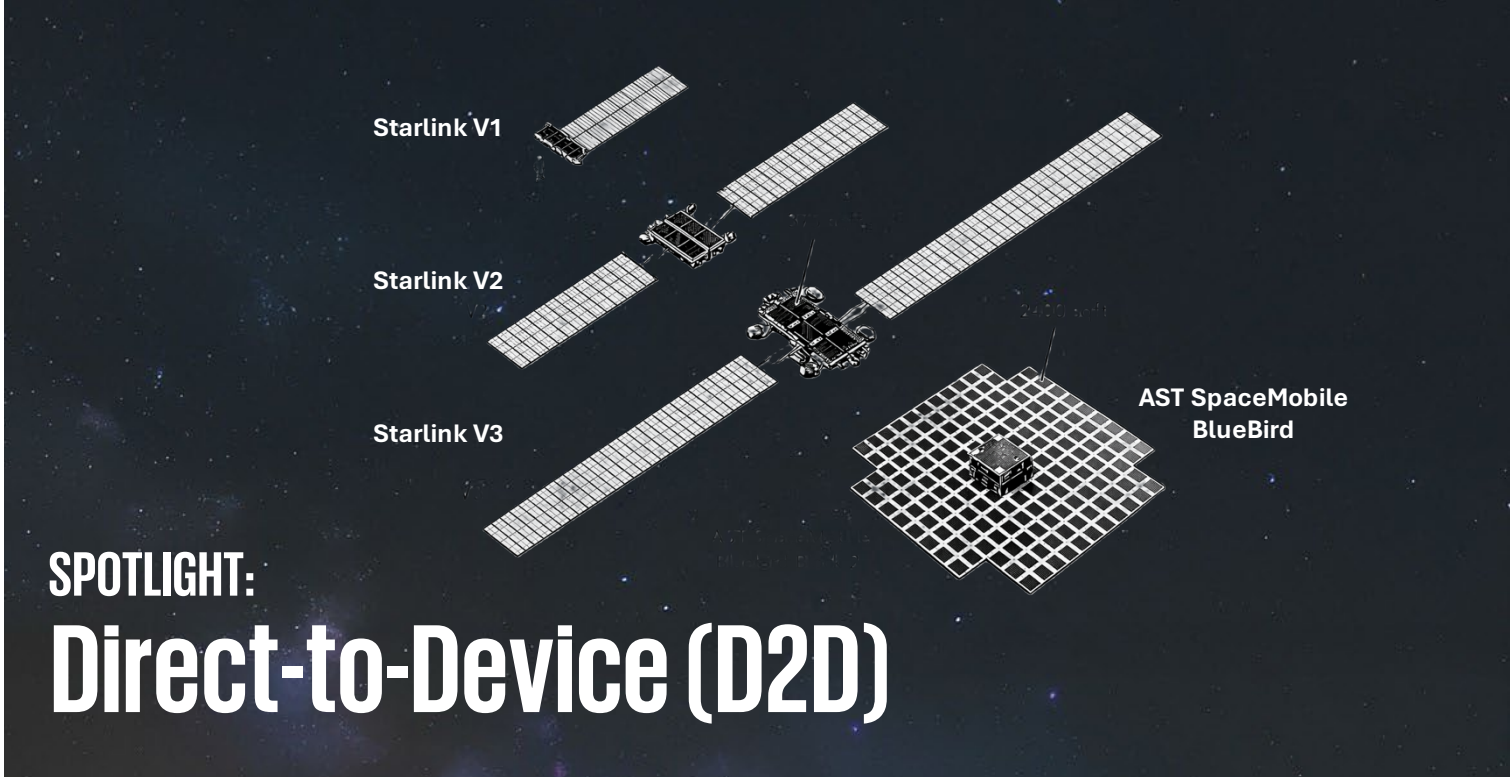
Amazon ended the year as the second largest launcher of satellites (180) after sending up 51 more in Q4. In November, it rebranded the network from its R&D name (Project Kuiper) into more consumer-sounding Amazon Leo in advance of rolling out commercial services in 2026.

Amazon is bringing to market enterprise offerings it is in a unique position to provide as the only operator of both a global connectivity constellation and hyperscale cloud infrastructure. Leo can function as an extension of a company's AWS infrastructure, with the network tightly integrated into AWS regions, edge sites, and networking services. It can behave like cloud-connected "flying fiber" and provide private networks for AWS workloads with "Direct to AWS" data flows. Leo + AWS enables hybrid cloud and edge patterns: private networks that extend an AWS environment to any site, secure movement of large datasets, and deployment of applications at or near the network edge. Customers seem interested: enterprises spanning sectors like energy, agriculture, and logistics announced adoption of Leo use cases in November.

Company	Amazon Leo Use Case(s) Announced
Connected Farms	Remote equipment monitoring & maintenance, real-time field sensor data collection, AI and automation, and secure data processing at the device, farm edge and cloud levels.
Hunt Energy Company	Private, secure connectivity across operations, remote asset data collection, and real-time monitoring and analytics.
Crane Worldwide Logistics	Warehouse management, transportation tracking, and emergency communications. First global logistics provider to implement Amazon Leo.

Both of China's megaconstellations surpassed 100 satellites in orbit

SatNet's Guowang constellation added 50 sats in Q4 to reach 136. Spacesail's Qianfan reached 108 (+18 in Q4). In October, Spacesail signed a cooperation agreement with Türksat (Turkey) to explore using Qianfan connectivity services for corporate data networks and in aviation, energy, mining, and maritime industries.[8] In December, Spacesail signed an MoU with Airbus to explore integrating Qianfan connectivity into Airbus' fleet of passenger and cargo airliners operated by Chinese Airlines.



SPOTLIGHT: Direct-to-Device (D2D)

With D2D, satellites stop connecting places and start connecting people

The D2D opportunity has always been clear: it frees satcom services from being tied to the maximum operating radius of specialized terminals and opens them up to population-scale smartphone ecosystems. But as 2025 began, D2D was still generally defined by promise rather than proof: services were still in early trials, there was still significant regulatory uncertainty, and telcos that still saw it as a niche coverage add-on relegated to emergency messaging and gap coverage in remote areas.

2025 marked the year D2D shifted from experimentation to execution

Throughout the year, Starlink and T-Mobile's T-Satellite service transformed from early beta to large-scale commercial rollout. SpaceX, which started 2025 with zero D2D-capable satellites, launched 650 of them throughout the year and expanded service offerings from basic messaging and emergency alerts (July) to powering data and video applications by October. Rogers (Canada) also beta launched Rogers Satellite D2D services with Starlink in July.[9] In November, Orange (UK) announced Message Satellite with Skylo, offering D2D services in France and 36 additional countries.[10] Meanwhile, regulators around the world updated and introduced policies intended to boost broader D2D development. Alongside this was a global wave of new satcom–telco partnerships and spectrum transactions. SpaceX alone acquired ~$20B[11] of spectrum from EchoStar and submitted a trademark application for Starlink Mobile.[12]

2026 is set to be a big year for D2D

For MNOs, scaled-up D2D capable constellations can create opportunities to expand customer bases to previously underserved markets and provide credible, frictionless global extensions to their terrestrial networks. New "global roaming" offerings become possible, as KDDI just enabled with T-Mobile and Starlink.[13] The activation of AST SpaceMobile's D2D services to millions through its MNO partnerships in 2026 is set to be another major inflection point. Should all this development play out as intended, expect D2D to become an essential layer for any future connectivity stack. To be prepared, operators will soon need to determine how new true "coverage everywhere" plans get delivered, priced, and positioned at scale.

AST SpaceMobile continues to secure sizable commercial agreements

In 2025, AST announced long-term D2D deals with many of the world's top telecoms, including Verizon and slc group and a joint venture with Vodafone. Those build on similar deals with AT&T, Orange, Telefonica, Telstra and more in 2024. AST now has agreements and/or MoUs with 50+ MNOs with a combined 3B subscribers. Commercial services with a subset of these partners are expected to go live in 2026 as AST builds out its constellation of Block 2 BlueBirds.

Notable D2D Initiatives Announced in 2025

JAN	➢ Telstra (Australia) x Starlink: D2D messaging at launch, followed by voice, data, and IoT[14] ➢ ESA x Viasat: agreement to explore development of D2D satellite system across Europe.[15] ESA has stated commitment to collaborate with Canadian space operations
MAR	➢ Vodafone (Europe) & AST SpaceMobile formed "SatCo" JV. Positioned as Europe-led D2D initiative to advance digital sovereignty and meet EU Digital Decade 2030 target. Interest from 21 EU markets. Vodafone & AST signed a 10-year commercial agreement in December 2024[16]
JUN	➢ Syniverse x Iridium: partnered to deliver D2D connectivity to global MNOs. Syniverse's relationship with 1,500 MNO's globally unlocks large D2D distribution opportunity[17]
SEP	➢ Space42 (UAE) x Viasat (US) + announced the formation of jointly held entity Equatys[18]: to provide global D2D connectivity by integrating satellite and terrestrial 5G infrastructure with access to the "world's largest coordinated spectrum block"[19] for global D2D services. Signed MoU with UAE telecoms arm of e& in October.
OCT	➢ Verizon (USA) & AST SpaceMobile signed commercial agreement.[20] Verizon to integrate AST's satellite network with its terrestrial infrastructure using Verizon's 850 MHz spectrum. [21] In Feb 2025, AST & Verizon successfully demonstrated D2D live video calling across their networks.[22] Verizon made $100M commitment to support AST's rollout in 2024. Commercial services are expected to be activated in 2026. ➢ stc group (Saudi Arabia) x AST SpaceMobile: 10-year commercial agreement for D2D connectivity across Saudi Arabia and key regional markets; stc group prepaid $175M for future services and long-term commercial revenue commitment. Services NET Q4 2026. [23] ➢ Virgin Media VMO2 (UK) x Starlink: deal to launch D2D coverage in rural UK in 2026[24]
NOV	➢ Proximus Global (Europe) x Starlink: BICS appointed as preferred IPX provider in Europe[25] ➢ Veon x Starlink: signed multi-country partnership to integrate Starlink D2D services into Veon networks: starting with Beeline (Kazakhstan) and Kyivstar (Ukraine). Veon also operates in Pakistan, Bangladesh and Uzbekistan. ~150 new potential customers.[26] ➢ SatCo (Vodafone x AST JV): announced plans for sovereign D2D constellation across Europe.[27]
DEC	➢ Airtel Africa (Africa) x Starlink: signed agreement to bring D2D services to 14 markets (~174M customers). Plans to launch 2026. [28]

Earth Observation

In 2025, the EO industry accelerated its shift from niche analytics market to foundational layer of the business intelligence stack.

Rising defense demand has injected new energy into EO constellations, driving the deployment of higher-resolution sensors, faster revisit rates, and new sensing modalities. Growing geopolitical pressure for sovereign data sources has also created markets for new dual-use entrants and national champions, bolstered by a broader capital markets pivot toward defense tech. Together, these forces are expanding the scale, quality, and accessibility of EO solutions and unlocking a new generation of geospatial services that enterprise customers can now treat as core inputs to optimize operations, anticipate risk, and model real-world systems in near real-time.

The Sensing Layer

Remote sensing satellites are evolving to see increasingly smaller things across a larger share of the Earth's surface. Planet already operates the largest constellation of imaging satellites, which it uses to map the Earth daily.[29] When it began launching its ~3m resolution Dove constellation in 2014, users could image objects roughly the size of large buildings, agricultural field plots, or semi-truck trailers. In October, Planet announced a new line of ~1m "Owl" satellites able to image much smaller objects such as individual cars, large shipping containers, and heavy machinery from orbit. Owls will also include NVIDIA GPUs to run onboard edge AI applications like image identification and anomaly detection, enabling them to deliver insights—not just images—directly to customers.

Observation capabilities are also expanding below the Earth's surface. In November, the Luxembourg Space Agency awarded a contract to Canadian Space Mining Corporation (CSMC) to develop QASM (Quantum Atomic Subsurface Mapper), a space-based quantum gravimetry sensor capable of detecting subsurface resources such as critical minerals and water from orbit.[30]

The Intelligence Layer

Individual streams of EO data are no longer remaining siloed. They're being API-connected into complementary applications, integrated with orbital and terrestrial data sets, and used to train increasingly powerful AI models. OroraTech tracks wildfires with satellites; TracPlus uses aircraft. In October, they announced a two-way integration to display both data sets across their platforms. UP42 (UAE) aggregates EO data from multiple providers into a unified platform that simplifies access, management, & multi-modal imagery processing at scale—making it easier for enterprise users to leverage. In December, it partnered with Pixxel (India) to integrate its hyperspectral data.

Further innovations show shifts from using EO data primarily for visualization toward treating it as a core input layer for general-purpose AI systems that can reason about the physical world. In October, Google integrated Gemini and Earth AI to enable "geospatial reasoning," where large language models can ingest and reason over satellite imagery, maps, and sensor data via natural language queries. Meanwhile, startups like OlmoEarth have been leveraging large volumes of historical multi-modal EO data to offer pre-trained AI foundation models that serve as generalized "world models" for the physical Earth, providing persistent spatial patterns for applications in climate forecasting, resource mapping, infrastructure monitoring, and risk modeling. In November, the ESA announced it was acquiring a hybrid quantum computing system to explore quantum algorithms that can accelerate the processing of complex EO data structures.

Enterprise use cases: how businesses are using Earth observation data today

Earth observation has moved well beyond experimental pilots and into production workflows across multiple sectors. What stands out across enterprise deployments is not just the diversity of use cases, but the way EO data is increasingly embedded directly into core operational systems—supporting real-time monitoring, regulatory compliance, asset optimization, and risk management at scale.

Remote Monitoring & Infrastructure

Infrastructure operators are using EO to gain persistent visibility over distributed physical assets that are otherwise costly or impossible to monitor continuously. In October, UK-based SatSense secured a multi-million-pound, multi-year contract with Network Rail for satellite-data powered remote monitoring services including ground deformation monitoring, flood mapping and change detection; replacing costly manual inspections with continuous geospatial risk monitoring.[31] Similarly, in December, Florida's Lee County renewed its partnership with ICEYE to support rapid response and damage assessment after extreme weather events, using SAR imagery to map flooding and infrastructure impacts in near-real-time.[32]

Energy, Assets & Activity Intelligence

EO is also being used to generate competitive intelligence about industrial activity and asset performance. In December, thermal imaging company SatVu announced plans to target the data center market with its HotSat-2 satellite, using thermal signatures to monitor energy efficiency and operational intensity across large computing facilities. That same month, SatVu imagery revealed significant heat leakage from one of the largest cryptocurrency mining centers in the US, highlighting how EO can expose real-world energy usage patterns that are otherwise opaque to investors, regulators, and competitors.

Critical Minerals & Resource Exploration

Another rapidly growing enterprise applications of EO sit at the intersection of geophysics, AI, and resource discovery. Fleet Space's ExoSphere platform applies AI inversion models to satellite-connected geophysical sensors to map *subsurface* mineral structures. It can help uncover locations with underground lithium, a process that traditionally takes years of core sample drilling and only three per 1,000 potential deposits end up becoming commercially viable. In December, Fleet Space announced its contribution to a major lithium deposit discovery in Quebec, including analysis used to pinpoint drilling locations. These capabilities position EO as a front-end for critical minerals exploration rather than a niche geoscience tool. Fleet's technologies are now being developed for future off-world resource mapping under Australia Space Agency's Moon-to-Mars program.[33]

Enterprise Adoption

Emissions Monitoring

For energy enterprises, economics can matter just as much as ESG when it comes to EO value. For example, methane leaks represent direct revenue loss for energy firms, not just compliance risk.

GHGSat satellites monitor methane and CO_2 emissions from orbit. In October, they signed a partnership with Petrobras,[34] Brazil's largest energy company, to monitor methane across its onshore & offshore operations. That followed a similar deal in September with ExxonMobil[35] to monitor/mitigate methane across onshore operations in America, Canada, and Asia. GHGSat also has deals with other global energy companies such as Saudi Aramco, Total and Chevron. To keep up with this growing demand, GHGSat is now adding additional satellites to its constellation.

In November, the California Air Resources Board announced that Planet's Tanager hyperspectral satellite had helped identify and resolve 10 major methane leaks across oil and gas facilities in the state since launching in May. The satellites find and track large plumes from methane leaks at facilities in the state. The CARB program has enabled the state and facility operators to take action and make repairs more rapidly, already helped stop emissions equivalent to the removal of ~18k cars from California's roads for a year.

Taken together, these examples illustrate a broader shift:

Earth observation is no longer primarily about producing images, but about delivering operational intelligence. Enterprises are increasingly treating EO as a persistent sensing layer for the physical economy—one that feeds directly into asset management systems, compliance workflows, and strategic decision-making tools. What was once a specialized analytics market is becoming a core component of how businesses perceive, model, and optimize real-world systems.

SPOTLIGHT:

Insurance + Earth Observation

Few industries illustrate the evolution of Earth observation's value to enterprises more clearly than insurance.

As 2025 ended, there were growing examples of EO getting embedded directly into underwriting, policy renewal decisions, and disaster response workflows, effectively turning satellite data into a powerful resource for insurers around the world.

Automated Underwriting & Risk Scoring

High-resolution imagery is increasingly being used for property underwriting and policy renewals. In 2025, insurers including Allstate and Travelers were reported to be using satellite imagery to assess roof conditions prior to renewing home insurance policies. In several high-profile cases, homeowners were notified that policies would be canceled or premiums increased unless satellite-detected roof defects were repaired. These proactive "unsolicited inspections" highlight how EO is now functioning as a front-line underwriting tool, enabling insurers to continuously reassess risk across millions of properties at marginal cost.

Disaster Response & Claims Triage

EO is also reshaping real-time catastrophe response. In December, ICEYE supported rapid disaster response during Hurricane Melissa by delivering near-real-time radar imagery to insurers and reinsurers, enabling immediate mapping of flooded areas and infrastructure damage even under heavy cloud cover. ICEYE's Flood Rapid Impact product, announced earlier in the year and expanded through Q4, uses SAR data combined with machine learning to automatically estimate property-level flood exposure within hours of an event. This allows insurers to triage claims, prioritize emergency payouts, and verify losses without waiting for field adjusters to access affected areas.

Dynamic Reinsurance & Exposure Modeling

At the reinsurance layer, EO is increasingly being integrated directly into core risk intelligence platforms. In December, ICEYE and Munich Re expanded their partnership to embed satellite-derived flood and wildfire data into Munich Re's Location Risk Intelligence platform, giving underwriters continuous access to high-frequency hazard monitoring at a global scale.[36] Rather than relying solely on historical catastrophe models, reinsurers are now incorporating live geospatial data streams to dynamically update exposure estimates and capital allocation decisions. ICEYE struck a similar data-sharing deal with Aon in 2024.[37]

Parametric Products & Automated Payouts

EO is also accelerating the growth of parametric insurance, where payouts are triggered automatically by measurable physical conditions rather than post-event loss assessments. Throughout 2025, insurers also highlighted Earth observation as a key enabler of parametric flood, wildfire, and drought products, using satellite data as the trusted, third-party source of truth for contract triggers. In this model, EO does not just inform insurance decisions; it directly governs financial transactions.

These developments are triggering a structural shift in how insurance leverage space assets. Earth observation is no longer just an external data source used for occasional analysis; it's becoming embedded infrastructure in the full insurance stack. From automated underwriting and continuous risk scoring to real-time disaster response and parametric payouts, EO is turning insurance from a backward-looking actuarial industry into a forward-looking, continuously sensing risk management system.

Orbital Data Centers

Spotlight:
Orbital Data Centers (ODC)

The next frontier of digital infrastructure

The ODC thesis is simple: outer space offers what could be an ideal environment for data centers—continuous access to solar energy, natural thermal dissipation, and the orbital real estate to ingest vast volumes of satellite data without being constrained by ground-station downlink bottlenecks. In a world of exponentially scaling AI, where terrestrial data centers will be constrained by power availability, land use, cooling needs, and regulatory friction, LEO can become not just a location for data collection, but a critical extension of Earth's digital infrastructure stack.

Q4 2025: Proof of Concept

In November, Starcloud launched what many consider the world's first orbital data center demo, a satellite equipped with a NVIDIA H100 GPU, a chip 100x more powerful than any GPU previously sent to space. [1] A month later, the company announced it had become the first to ever train a LLM in space (created by OpenAI co-founder Andrej Karpathy) and was also actively receiving responses from Google's Gemma LLM from orbit. It also began processing customer workloads, including inference on satellite imagery from Capella. Its next satellite, set for launch in October 2026, will fly with multiple H100's and integrate NVIDIA's Blackwell platform. It's also set to host a cloud platform from Crusoe, which could become the first public cloud setup in space.[2] Starcloud's ultimate vision is to build a 5 GW ODC that spans 4 kilometers in both width and height and could produce more power than the largest plant in the US. [3] Founded in 2024, Starcloud has been speedrunning its path to orbit from Y Combinator to the NVIDIA Inception program and Google for Startups Cloud AI Accelerator.

Hyperscaled Interest

In the same month, Google announced "Project Suncatcher," a research-paper powered moonshot to host Google TPU chips on small constellations of solar-powered satellites that will fly close together and communicate via free-space optics inter-satellite links to enable ultra-high bandwidth, low-latency data transfer. The paper suggested this setup could ultimately outperform Earth-based data centers on both cost and sustainability metrics over time as launch costs decline. Google partnered with Planet Labs to develop and deploy Suncatcher prototypes sometime in 2027. [4]

SpaceX said it "will be doing this"[5] by "simply scaling up Starlink V3 satellites".[6] Blue Origin founder Jeff Bezos also expressed interest to enter the orbital compute market as well. In December, there were reports OpenAI CEO Sam Altman tried to acquire rocket company Stoke Space for a future ODC play.

Can It Actually Work?

Advocates of ODCs see the cost of orbital compute becoming cheaper than Earth alternatives by 2030.[7] Detractors think there are significant, unsolved technical challenges and economic realities that suggest orbital data centers still don't make much sense. 2026 is set to be a critical year for separating ODC narrative from reality.

COSMOS QUARTERLY INTERVIEW: Sophia Space

From Edge Compute to Orbital Data Centers with Sophia Space CEO Robert DeMillo

Sophia Space's mission is to transform the future of computing by developing next-generation space-based infrastructure

What was the founding vision for Sophia Space? What was the trigger point?

The origin story starts with Leon Alkalai, a PhD and 33-year veteran at Jet Propulsion Laboratory (JPL), who founded Mandala Space Ventures as an accelerator focused on orbital technologies. In 2020, Mandala, JPL, and Caltech received roughly $100M in funding to study the feasibility of orbital solar power stations. The technical work and early patents showed that the physics closed, and the system could work, but the economics were extremely challenging.

As that effort was winding down, Leon posed a simple question: what if we put a server on this? That reframing was the real trigger. Instead of moving power back to Earth, what if we moved compute into orbit, where power, thermal, and latency constraints look very different.

From there, Mandala and Leon began developing the foundational technology and early IP that would eventually become Sophia. At the time, I was doing venture work with SparkLabs Global Ventures. Mandala reached out in the summer of 2024 about getting involved. After several months of deep technical and strategic discussions, I joined full-time as CEO in January to build Sophia as a standalone company.

Can you talk us through Sophia's technical differentiation in orbital compute, especially the tile architecture?

Originally, the idea was a full orbital data center. I shifted the plan to a stepwise approach that lets us prove capability, reduce risk, and scale deliberately. We started by developing a 1 m x 1 m x 1 cm compute Tile that contains the equivalent of four enterprise-class servers. Internally, we refer to those compute groupings as "blades." The initial flight configurations launch with NVIDIA-based hardware, and we have also built the Sophia Orbital Operating System, SOOS, to manage the system autonomously.

The core innovation is thermal. Space is cold, but there is no air, which means traditional cooling methods fail outright. Most orbital compute proposals simply replicate terrestrial liquid-cooled architectures, and that introduces unacceptable complexity and catastrophic failure modes in orbit. We redesigned compute around a flat plane rather than a volumetric enclosure. Heat sources are distributed across that plane and coupled to a proprietary heat spreader and radiator alloy designed to efficiently radiate heat into deep space, effectively at 4 kelvin. The system is entirely passive. As a result, roughly 92 percent of collected energy goes directly to compute, compared to about 70 percent in terrestrial data centers.

The architecture is also inherently resilient. Orbital debris may destroy a single Tile or blade, but SOOS is designed to detect failures and dynamically route workloads around damaged components, allowing the larger system to continue operating.

COSMOS QUARTERLY INTERVIEW: Sophia Space

What's the step-by-step evolution from today's Tile technology to full orbital data centers?

Instead of jumping to orbital data centers, Phase 1 focuses on selling tiles as OEM devices to LEO operators; satellite manufacturers, station developers, and infrastructure companies. Tiles serve as edge compute for assets already in orbit.

We offer two products:

- Rack: a configurable tile array customers mount on their own structures.
- Companion Satellite: a standalone satellite carrying the tile array, for clients whose main spacecraft cannot host additional hardware.

This model shifts launch and insurance costs to customers and generates revenue earlier. Our orbital data centers will arrive in the mid-2030s.

How do use cases evolve—from edge compute to orbital data centers?

The biggest need is real-time orbital compute.

Today, satellites generate enormous data volumes but discard most of it due to bandwidth limits. That prevents valuable use cases like real-time missile tracking, air-traffic coordination, maritime oversight, environmental disaster response, and weather modeling. Other major edge use cases include space debris tracking and avoidance, satellite-to-satellite coordination, and wildfire detection and response management.

In the long term, orbital compute resembles terrestrial cloud economics: some organizations buy local compute (Tiles) while others use cloud-scale orbital data centers. One doesn't cannibalize the other.

What does the business model look like—do it yourself or subscription?

It's not DIY versus subscription. It's:

- Phase 1: OEM tile sales. Customers buy tiles (like servers) and pay monthly recurring revenue for updates, security, and support.
- Phase 2: Orbital data centers offering cloud compute—charged per instance, similar to AWS/Azure, priced competitively with terrestrial cloud.

What about sustainability? Are there long-term environmental benefits of orbital compute?

Over a 30-year lifecycle for a 1-megawatt data center, terrestrial sites incur constant carbon costs—land, construction, cooling, water, and continuous power use.

Orbital centers incur emissions only during manufacturing and launch. We expect 5–6 replacement launches over 30 years (due to debris impacts and hardware refresh cycles). Tiles burn up on re-entry and don't create orbital debris. The result is dramatically lower lifetime carbon impact compared to terrestrial data centers.

How does this tie into emerging commercial space stations?

Most space station companies think about orbital computing as synonymous with terrestrial computing, essentially placing conventional IT infrastructure inside pressurized modules with tight power and thermal constraints. That model does not scale.

Our approach enables external compute structures, wings, or appendages built from radiation-cooled Tiles that sit outside the station hull. Compute capacity scales modularly by adding Tiles, rather than redesigning internal station systems. For near-term stations, human servicing provides a practical path for installation, inspection, and replacement, while the underlying architecture is designed to operate autonomously over time.

When is your first launch planned?

Between late '27 and early '28 , depending on several variables.

Anything else you'd like readers to take away?

The broader context: this is the beginning of off-planet commerce and infrastructure. The next 50 years will look more like The Expanse than Star Trek. There will be orbital manufacturing, mining, pharmaceuticals, habitats, and transportation networks.

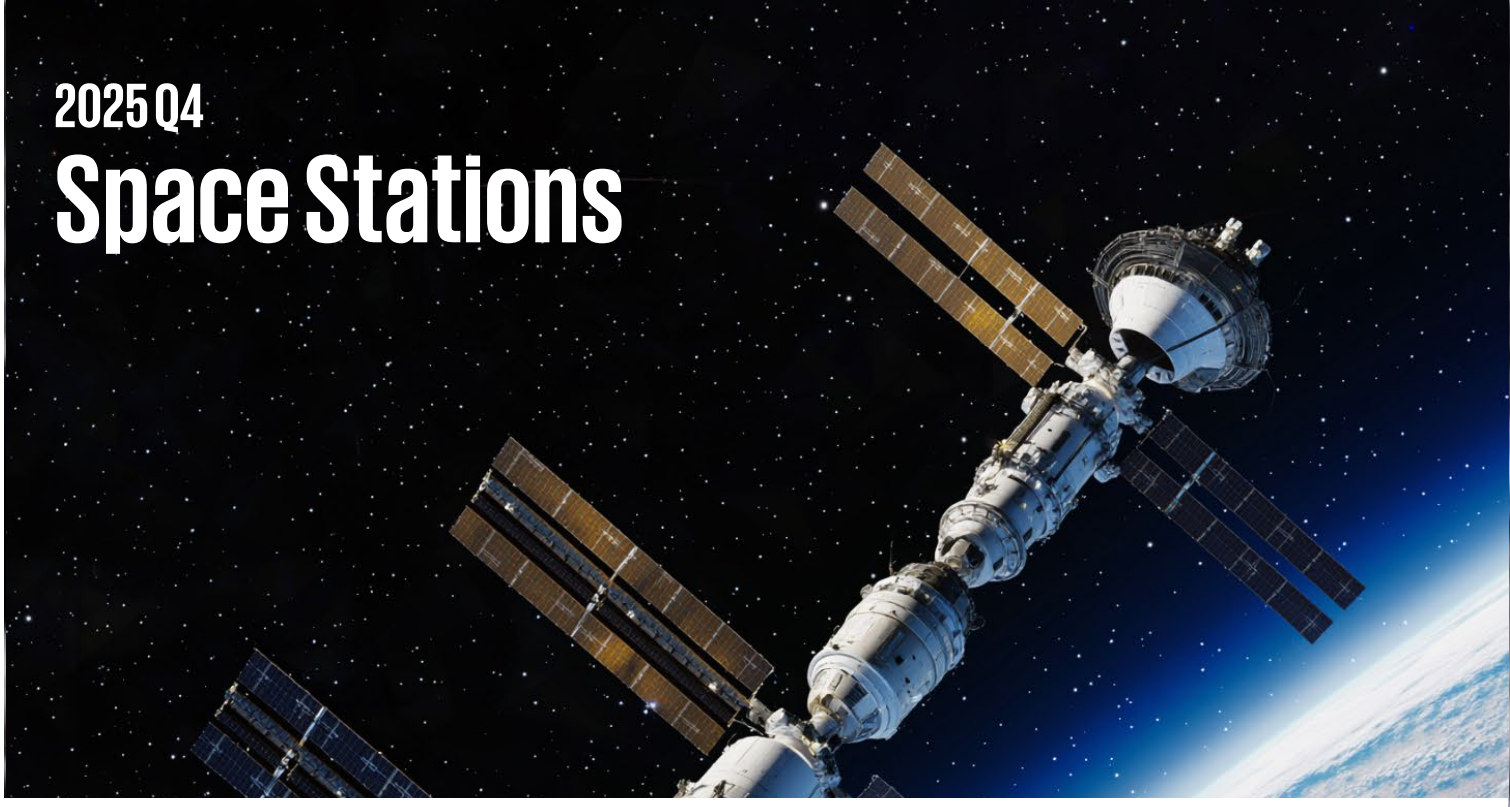
Just like the evolution from horses to trains to highways, dropping launch costs—from ~$55,000/kg to under $3,000 today and heading toward $1,000—makes space economically inevitable. Orbital compute is a foundational part of that future.

AI and space computing will not fatigue public or investor interest—they're the next enduring infrastructure waves.

Destinations

2025 Q4

Space Stations



Government Space Stations

In Q4 2025, the International Space Station celebrated its 25th year of continuous human habitation since the first full-time residents opened its hatch on November 2nd, 2000. Since then, the ISS has hosted visits from 290 people representing 26 countries as well as thousands of scientific investigations.

750+ experiments were conducted aboard the ISS across 2025, including on-demand production of vital nutrients, determining DNA's ability to store data, space debris removal demos, and advancing next-gen medicines.[1]

A major milestone for space science was announced in September when the FDA approved Qlex a subcutaneous formulation for Merck's cancer-drug Keytruda, for essentially all solid tumor indications where IV pembrolizumab was already approved. Merck has been conducting micro-gravity research aboard the ISS since 2014. It's protein crystal growth experiments yielded early insights that led directly to the new and approved formulation, which significantly improves patient quality of life for by turning treatment timelines from 30 min to 2-hr infusions into a "one-minute every three weeks" injection.

In November, China's Tiangong station faced the same challenge that the ISS faced at the start of 2025 - stranded astronauts - when its Shenzhou-20 crew was left without a viable return vehicle following a suspected debris strike. A rescue spacecraft reached Tiangong 20 days later,[2] far faster than the 286 days[3] it took to send one to the ISS. Roughly two weeks later, CMSA doubled down on safety with the appointment of the first set of quality supervision representatives for China's human spaceflight program.[4] There are plans to double the size of the station in the coming years.

In December, the ISRO announced finalized configurations for India's future Bharatiya Antariksh station. The first of its 5 planned modules is targeted for orbit in 2028 before the station becomes operational in 2035.[5]

In the same month, Russia announced plans to separate its modules from the ISS once decommissioned in ~2030 and use them to form the core of a new Russian Orbital Station (ROS).

Space Stations

Commercial Space Stations

In ~2031, NASA will pay SpaceX ~$1B to send a spacecraft to dock with the ISS, then steer in back down to Earth over the Pacific, completing its decommissioning. [6] Rather than developing another fully government-funded and operated station, NASA has turned to nurturing the development of commercial space stations to help ensure an American presence in orbit.

This initiative has been orchestrated through NASA's Commercial Low Earth Orbit Destinations (CLD) program. Axiom Space was the first to be awarded a CLD contract. In 2020, the startup was allocated ~$140M to build commercial modules that could attach to ISS, then detach as a free-flying station before ISS retirement. Axiom's first major module (Hab-1) is targeted to connect with the ISS in 2026, with subsequent modules following ~annually. In Q4, Axiom struck deals to develop station capabilities for semiconductor production and orbital data centers.

In 2021, the CLD program provided awards to 3 teams for free-flying commercial stations: $160M to Starlab (Voyager, Lockheed, Nanoracks), $130M for Orbital Reef (Blue Origin, Sierra Space, Boeing, Redwire), and ~$126M to Northrop Grumman (who later exited the contract to join Starlab).[7] In October, Starlab unveiled a full-scale mockup of its planned station, which aims to supply the research capacity equivalent to the ISS. In November, it said 55% of that space has already been pre-purchased.[8]

But it was a non-CLD funded commercial station company that became the first to test its capabilities in orbit. Vast Space has been privately funded $1B to date directly from crypto billionaire Jed McCaleb.[9] In November, the startup successfully completed its Haven Demo mission. It's first, single-module station is targeted to launch in 2027. Vast has been working towards scoring contracts for Phase 2 of the CLD program, and recent changes to its structure may work in their favor.

This August, NASA put the original CLD Destinations Contract on hold and announced it would fund Phase 2 via multiple funded Space Act Agreements instead of a single firm-fixed-price contract. It also reduced the prior plans "full-time continuous crew" requirement to include concepts that could support as little as 4 crew in one-month increments. The new approach aims to accelerate the deployment of smaller station concepts so the US can establish a commercial presence in orbit earlier than it would waiting for larger stations. It also opens the door for additional station developers like Max Space, which unveiled plans for its Thunderbird Station, designed to launch on a single Falcon 9 rocket, in December.

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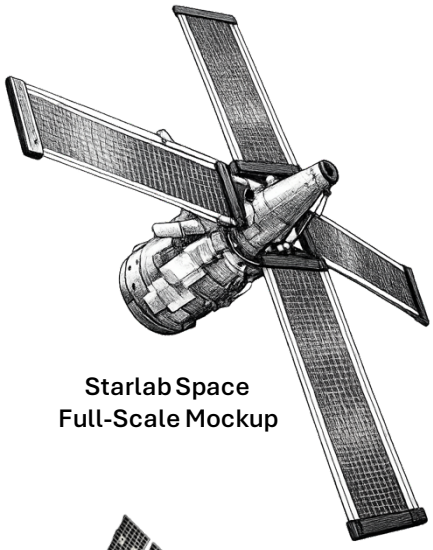
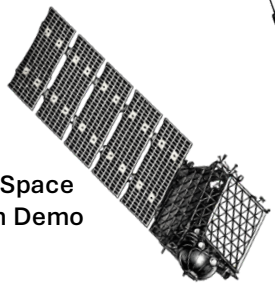


Starlab Space Full-Scale Mockup



Vast Space Haven Demo

Space Stations

OCT	➢ Axiom Space signed multiple strategic partnerships, including agreements for re-entry services[10], in-space manufacturing[11], solar array construction[12], and collaboration with the Slovak space sector[13] ➢ The International Space Station (ISS) celebrated 25 years of continuous human presence - launch of a new commemorative website archiving its history released[14] ➢ The Starlab project gained momentum by announcing partnerships with Space Applications[15] and Saber Astronautics[16] while unveiling a full-scale mockup of its future commercial space station[17] ➢ Japan's new and more capable HTV-X cargo freighter successfully completed its first resupply mission to the International Space Station[18] ➢ China's Shenzhou-21 mission successfully docked with the Tiangong space station to deliver a new crew[19]
NOV	➢ Axiom Space completed a critical uncrewed test of the AxEMU spacesuit, a major milestone for NASA's upcoming Artemis III lunar mission[20] ➢ Vast Space launched its Haven Demo testbed[21] and signed new international agreements with Uzbekistan and Colombia[22] for future collaboration on its space habitats ➢ China responded to an emergency on its Tiangong space station by launching the Shenzhou-22 spacecraft[23] after the original crew's return vehicle was damaged by suspected space debris[24] ➢ Starlab announced strong market demand with over half its research capacity claimed[25] and added defense contractor Leidos[26] to its development team ➢ India's space program celebrated the launch of its heaviest communication satellite, CMS-03[27]
DEC	➢ A damaged Russian Soyuz launch pad threatened future International Space Station operations. [28] Russia announces it will be fixed by February.[29] ➢ The Axiom Mission 4 crew docked at the ISS to begin a 14-day mission focused on scientific research[30] ➢ India's space agency, ISRO, finalized the design for its indigenous Bharatiya Antariksh Station, which is targeting a 2035 operational date[31] ➢ Max Space unveiled plans for its Thunderbird Station, a new commercial space station concept designed to launch on a single Falcon 9 rocket[32]


Capital Markets
+ Space

Capital Markets + Space

Another Record Year for Space Economy Capital Markets

The space sector saw another milestone year of capital markets activity in 2025, with record levels of venture capital invested, extremely active M&A markets, and strong stock performance for many of its public companies. As we've seen throughout the year and reinforced in Q4, national security and sovereignty continued to be a catalyst across all forms of allocations.

Space infrastructure is now viewed as strategic infrastructure, with countries investing to fill gaps and address sovereign objectives. Launch companies in China received record levels of VC and are preparing to IPO as the countries requires more payload capacity to achieve its megaconstellation objectives.[1] US and European investors directed billions to satellite manufacturers to accelerate the volume of sovereign payload mass-to-orbit. The space sector is set to truly break through as a mainstream asset class in 2026 alongside the (likely) largest listing the sector has ever seen: SpaceX.

Venture Capital

Space Capital tracked ~$17B in VC invested across 135 rounds in Q4 to eclipse $55B in 2025.[2] Space startups received robust funding across all rounds in 2025. But it was Stoke Space ($870M), Apex Space ($400M), and K2 Space ($375M) that each raised more capital than ~99.5% of *all* VC-backed startups worldwide, with multiple mega-rounds throughout the year. This is "platform-scale" capital, with these startups being priced as new industrial primitives.

The continued convergence of space, defense, tech, and industrial-scale energy showed up in VC too. Space-focused VCs invested in nuclear-gen startups and space startups raised capital from both top tech (ex: a16z, Founders Fund) and national security funds (Washington Harbour, In-Q-Tel). Funding towards satellite manufacturers surged, especially in the US & Europe.

M&A

Strategic autonomy fueled deal-making in 2025. A major M&A wave was driven by geopolitical needs and the scale-up of sovereign capabilities. Defense demands drove vertical integration and the formation of "new space" primes (ex: Firefly x SciTec). Mid-tier manufacturers combined to form scaled suppliers to support large "programs of record."

But the ramp-up in defense spending also caused a "supply chain crunch," leading to acquisitions of component suppliers and to secure access to critical minerals (Voyager x ExoTerra & Estes Energetics).

Without a strong foundation in these markets, legacy players (Airbus-Leonardo-Thales) and not-yet-at-scale startups (Lynk-Omnispace) merged to create the scale and synergies required for survival.

Public Markets

The geopolitical environment also forced a "return to fundamentals" in the public equities, with defense procurement as a significant driver of revenue for space companies. Capital intensity also forced partnerships between GEO & LEO operators. Top performers like Planet & Sidus capitalized on both sovereign & global defense contracts & bottom-line milestones.

But defense-centricity was also a double-edged sword in Q4. The 43-day gap in operations during the longest ever shutdown of the US government led to contract & funding delays, forcing contractors like Redwire to cut revenue guidance.[3]

EchoStar's ~$43B in spectrum sales to SpaceX[4] & AT&T[5] is seen to have led to share price gains & revaluations of other satellite operators with valuable spectrum they could sell (Globalstar). SpaceX could IPO in 2026 at a $1.5T valuation.[6]

2025 Q4

Investments: Venture Capital

Launch

- **Space Pioneer (China)** raised ¥2.5B (~$350M) Series D[7] - largely from government sources[8] - to support Tianlong-3 rocket and next-gen launch vehicle development
- **HyImpulse (Germany)** secured €45M (~$53M) to accelerate commercialization SL1 rocket. €15M in funding via Series A equity round and €30M from public funding[9]
- **LEAP (US)** announced $44M seed round strategic investment from ONE Bow River National Defense Fund to accelerate development of next-gen launch systems[10]
- **HyPrSpace (France)** raised €21M ($24M) Series A to fund development of Baguette One suborbital launch vehicle. Inaugural launch NET late 2026[11]
- **Agnikul (India)** raised ~₹150 crore ($17M) Series C to scale manufacturing of its custom launch vehicles powered by 3D-printed engines[12]
- **Moonshot Space (Israel)** raised $12M ($11M Series A + $1M Grant from Israel Innovation Authority) to develop ground-based electromagnetic kinetic launch system[13]
- **Mjolnir Spaceworks (Japan)** raised ¥400M ($2.7M) Series A for mass production of rocket engine systems similar to automobile manufacturing[14]

Satellites + Spacecraft

- **K2 Space (US)** raised $250M Series C to scale up manufacturing capability of its ultra-powerful, large-scale satellite buses designed for next-generation heavy-lift launch vehicles such as Starship and New Glenn. K2 now has ~$3B valuation launching their first satellite[15]
- **ICEYE (Finland)** secured €150M ($174M) Series E to accelerate the company's manufacturing of sovereign EO (SAR) satellite systems and data intelligence services
- **HawkEye 360 (US)** raised $150M Series E to expand its end-to-end RF intelligence stack
- **EnduroSat (Bulgaria)** raised a $104M Series B round to ramp up satellites manufacturing. Round investors included the European Innovation Council, Google Ventures & Lux Capital[16]
- **Reflex Aerospace (Germany)** raised €50M (~$58M) Series A to accelerate its manufacturing operations for sovereign SAR, SDA, and SIGINT satellites. The funding was the largest Series A in the European New Space sector to date[17]
- **ReOrbit (Finland)** secured €45M (~$52.5M) Series A to scale its software-first smallsat platforms
- **Infinite Orbits (France)** raised €40M (~$46M) to finalize development of its in-orbit servicing tech targeting GEO (where ~20% of satellites in orbit have end-of-life needs). Round investors included the European Innovation Council Fund[18]
- **U-Space (France)** raised €24M (~$28M) Series A to boost its satellite manufacturing capacity and expand its global reach. Investors included French Armed Forces' Definvest fund.[19]
- **Orbion Space [US]** raised $27M to further development of high-performance Hall-effect thrusters for small satellites and large constellations

2025 Q4

Investments: Venture Capital

Defense

- **Castelion (US)** raised $350M Series B to accelerate high-volume production of hypersonic missiles for the Pentagon. The team is led by former SpaceX engineers and recently unveiled plans for a new 1k acre campus to support solid rocket motor production.[20]
- **Vast Space (US)** raised a $150M Series A to further development of Haven space stations.[21] New investors included In-Q-Tel[22]
- **Ursa Major (US)** closed $100M Series E (+ additional $50M in debt) [23] to scale manufacturing and production and deliver hypersonic systems and advanced propulsion at industrial scale. Customers include US DoW[24] and Air Force Research Laboratory[25]
- **Digantara (India)** raised $50M Series B[26] to further development of its space-based missile[27] technologies
- **Quindar (US)** raised $18M Series A to establish a classified mission operations center that speeds time it takes for government and commercial customers to achieve operational control of space-based assets[28]
- **Lockheed Martin Ventures (US)** announced an equity stake in **Venus Aerospace (US)**, a developer of rotating detonation rocket engines with potential applications in hypersonic missiles and space launch vehicles.[29] The amount invested was not disclosed

Other

- **Hadrian (US)** raised $131M Series D to build AI-powered automated factories that manufacture precision parts for defense, aerospace, and space industries
- **Antares (US)** raised $96M Series B to land, sea, & space-based nuclear power reactors[30]
- **Overstory (Netherlands)** raised $43M Series B to scale wildfire prevention and grid resilience solutions for the utility industry using satellite data + AI.[31]
- **StarDetect (China)** raised ¥100M (~$14M) Series A to expand on-orbit computing and space domain awareness (SDA) services[32]
- **Leanspace (France)** secured €10M Series A to further development of cloud platform for satellite and ground-segment operations
- **Catalyx Space (US)** raised $5.4M Seed to "build the next era of orbital logistics" and turn "the return leg into a bookable service for microgravity-manufactured products, time-sensitive research, component returns, and sample logistics" [33]
- **Odin Space (UK)** raised $3M Seed to begin commercialization of its tiny sensors that map and analyze sub-centimeter orbital debris[34]
- **Nxgsat (Belgium)** raised €1.2M (~$1.4M) Seed to develop virtual 5G modem designed for multi-orbit compatibility[35]

2025 Q4
Strategic Investments

October

- **Sichuan Provincial Science and Technology Innovation Investment Co (China)** acquired majority stake in launch startups **ExPace (China)**[36]
- **ispace (Japan)** announced third-party allotments to **Kurita Water (Japan)**[37] & **Takasago Thermal (Japan)**[38] to develop solutions for water on the lunar surface to help fund missions associated with ispace's HAKUTO-R private lunar exploration program

November

- **ICEYE (Finland)** & **Rheinmetall (Germany)** officially established Joint Venture **ICEYE Space Solutions GmbH** to build sovereign SAR satellites in Germany.[39] Sits inside Rheinmetall's emerging Space Cluster. Anchored by €1.7B (~$2B) German Ministry of Defense SAR constellation contract[40]
- **MDA Space (Canada)** made $10M strategic investment in spaceport developer **Maritime Launch (Canada)**, currently building Canada's 1st commercial orbital launch complex Spaceport Nova Scotia. Objective to advance Canada's sovereign launch capability[41]
- **Pythom Space (Switzerland)** received $10M strategic investment from **Saab (Sweden).** Pythom develops reusable rockets, landers, and space transportation systems. Saab has stated ambition to contribute to emerging global space-related defense requirements[42]
- **Rohde & Schwarz (Germany)** acquired stake in **Orbint (Germany)** to expand its broad portfolio of electromagnetic spectrum reconnaissance solutions to include space[43]

December

- **Feiwo (China)** acquired a 60% majority stake in liquid rocket engine component company **Xinshan Aerospace (China)**[44]
- **Gogo (US)** made strategic investment in **Farcast (US)** to support new user terminal tech to enhance inflight connectivity for business, military, and government aviation. Investors in Farcast include Telesat, Lockheed Martin, and Y Combinator (YC) [45]
- **Intellistake (Canada)** strengthens AI Infrastructure platform with entry into space-based data centers via strategic investment in **Orbit AI (Singapore)** [46]
- Commercial space station Joint Venture **Starlab Space (US)** announced strategic investments from **Janus Henderson (US)** in November[47] and **Sumitomo Mitsui Trust Bank (Japan)** in December.[48] Starlab is JV between of Voyager (US), Mitsuibishi (Japan), Space Applications Services (Belgium), Airbus (Netherlands), MDA Space (Canada) and Palantir (US)
- **4iG Space and Defence (Hungary)** signed[49] $100M agreement to become anchor investor in **Axiom Space (US),** designed to provide 4iG direct access to microgravity R&D programs, provide Axiom with European partner to secure EU sovereign contracts, and support Axiom's space station development and orbital data communication solutions

2025 Q4

Exits: M&A

Date Announced	Buyer → Target	Financial Details	Notes
Oct 1 Closed	**Intuitive Machines (US) → KinetX (US)**	~$31.1M (~$16.1M cash + ~$15M stock)	Enhances deep space navigation and constellation mission design capabilities for lunar and interplanetary missions
Oct 5	**Firefly Aerospace (US) → SciTec (US)**	~$855M (~$300M cash + ~$555M stock); ~5.2x TTM Revenue	Adds mission-proven defense software analytics and data expertise to launch services for end-to-end space solutions
Oct 15 Closed	**Keysight Technologies (US) → Spirent Comms (UK)**	£1.16B (~$1.56B)	Strategic pivot into defense payloads, adding EO/IR sensors for missile warning and SDA to create an end-to-end national security offering
Oct 22	**Lynk Global (US) x Omnispace (US) merger**	Undisclosed	Merges spectrum and technology to deliver a comprehensive global Direct-to-Device (D2D) connectivity solution. SES becomes strategic shareholder
Oct 23	**Airbus x Thales x Leonardo (space divisions) merger**	Airbus to own ~35%. Thales & Leonardo to each own 32.5%	Aims to create a unified European space player to strengthen strategic autonomy and compete globally. Combined entity expected to have a €10B valuation on €6.5B of annual revenue.
Oct 24	**Voyager Technologies (US) → ExoTerra (US)**	~$100M ($69M cash + $11M stock + $20M contingent)	Adds solar electric propulsion systems and maneuvering capabilities to support the space market
Nov 3	**Intuitive Machines (US) → Lanteris Space Systems (US)**	$800M ($450M cash + $350M stock)	Positions company as a vertically integrated space prime with flight-proven spacecraft manufacturing at scale
Nov 20	**Voyager Technologies (US) → Estes Energetics (US)**	Undisclosed	Secures critical U.S.-based solid rocket motor and energetics production capacity to support defense supply chains
Dec 18	**HawkEye 360 (US) → Innovative Signal Analysis (US)**	Undisclosed	Expands signal-processing capabilities and engineering expertise to enhance RF intelligence offerings
Dec 22	**CACI (US) → ARKA Group (US)**	$2.6B all-cash (~16x NTM EBITDA net of tax benefit)	Expands space-based sensing and actionable intelligence capabilities for national security missions

2025 Q4

Exits: IPO / SPAC

Space Company IPOs / SPACs Q4 2025

Listing Date	Company	Category	Exchange: Ticker	IPO Raised @ Day 1 Valuation
DEC 18	**Starfighters Space [US]**	Launch / Defense	NYSE: FJET	$40M @ $110M

Space Company IPOs/ SPAC Pipeline

Company	Category	Pipeline Details
ICEYE (Finland)	EO Satellites (SAR)	Reported to be exploring potential 2026 IPO in June[50]
iRocket (US)	Launch	SPAC Merger with BPGC Acquisition Corp: Definitive merger agreement signed in July[51]
CAS Space (China)	Launch	Filed IPO listing guidance in August[52]
Yixin Aerospace (China)	Satellite Components	Filed IPO listing guidance in August[53]
Space Pioneer (China)	Launch	Officially submitted application for listing guidance in October[54]
Galactic Energy (China)	Launch	Officially launched listing guidance in October[55]
Minospace (China)	Satellite Manufacturing	Began IPO process in November[56]
York Space (US)	Satellite Manufacturing	Filed to go public in November[57]
WISeSAT.Space (Switzerland)	Nanosatellite IoT Constellation	WISeKey + COLA SPAC executed agreement in November to publicly list subsidiary WISeSat.Space[58]
SpaceX (US)	Launch, SatCom, Etc	Confirmed IPO rumors in December[59]
Landspace (China)	Launch	IPO application accepted by STAR Market in December.[60] Planned raise of about ¥7.5B (~$1B) @ ¥20B (~$2.8B) valuation, targeting a 2026 listing

2025 Q4

Public Company Performance

Space Economy Stocks: Top 10 Q4 2025 (% Increase)[61]

Company	Q1	Q2	Q3	Q4	2025	Drivers
Sidus Space	-51%x	17%	-40%	202%	3%	Selected as prime contractor $151B SHIELD IDIQ to support the Golden Dome
Comtech	-61%	53%	5%	105%	29%	$130M multi-year contract win with Tier 1 US wireless carrier
Starfighters Space				74%	74%	Successful IPO on NYSE American raised $40M to fund StarLaunch program
Globalstar	-34%	13%	55%	68%	92%	Expanded Apple partnership, building out new constellation. SpaceX / D2D spectrum acquisition rumors.
Intuitive Machines	-61%	46%	-3%	54%	-16%	Lanteris acquisition repositioned LUNR as diversified space prime
Planet Labs	-15%	80%	113%	52%	397%	Defense & Intelligence revenue grew 70% year-over-year. New NGA contract wins and AI-driven data demand
AST SpaceMobile	5%	105%	5%	48%	236%	Commercial agreements with top MNOs and successful launch of Bluebird 6 satellite
Rocket Lab	-28%	100%	34%	46%	179%	Record $816M prime contract from the SDA validated expansion into a full-service space prime
EchoStar	12%	8%	176%	42%	378%	Sales of spectrum assets to SpaceX and AT&T unlocked billions in capital to address debt and fund operations and indirect investor exposure to SpaceX stock
Viasat	9%	40%	101%	18%	262%	Successful launch of ViaSat-3 F2 satellite. Record $1.2B backlog in Defense segment

Space Economy ETFs[61]

Ticker	Q1	Q2	Q3	Q4	2025	ETF Name
ROKT	-7%	21%	18%	12%	49%	SPDR S&P Kensho Final Frontiers ETF
UFO	-5%	30%	25%	8%	66%	Procure Space ETF
BATS:ARKX	-9%	36%	18%	2%	49%	ARK Space & Defense Innovation ETF

Capital Markets + Space 2025 Leaderboard

2025 Leaderboard
Venture Capital

Top 10 Startups by Total Venture Capital Raised in 2025 (All Rounds)[1]

Total	Company	Category	Details (Series)	Notable Investors (Any Round)
$870M	**Stoke Space (US)**	Launch Services (Reusable Rocket)	• Q1: $260M (C) • Q3: $510M (D) +$100M Debt	Bill Gates, YC, In-Q-Tel, Point72 Ventures, NFX, Balerion Space, Beyond Earth, Toyota Ventures, US National Science Foundation
$400M	**Apex Space (US)**	Satellite Manufacturing	• Q2: $200M (C) • Q3 :$200M (D)	A16z, 8VC, Washington Harbour, Point72, Lux, Balerion, SpaceWERX
$375M	**K2 Space (US)**	Satellite Manufacturing	• Q1: $110M (B) Q3: $15M (B – II) Q4: $250M C	Lightspeed, Altimeter, Alpine Space Ventures, T.Rowe Price, NewSpace Capital, SpaceWERX
$350M	**Space Pioneer (China)**	Launch Services (Tianlong-3)	• Q4: $350M D	
$337M	**Galactic Energy (China)**	Launch Services	• Q3: $337M D	
$300M	**Impulse Space (US)**	In-space Mobility Services	• Q2: $300M C	Founders Fund, Airbus Ventures, Lux, Valor, RTX Ventures, Balerion, Space Capital, SpaceWERX, Beyond Earth
$281M	**Geespace (China)**	SatCom – IoT Constellation	• Q3: $281M	
$223M	**ICEYE (Finland)**	EO – SAR satellites	• Q2: $41M loan, $6.5M grant • Q3: $11M Corp Majority (VINCI) • Q4: $175M (E)	Seraphim, Space Capital, General Catalyst, BlackRock, Bpifrance, BAE Systems, Bessemer, NVIDIA Inception Program, EU Horizon 2020
$187M	**Varda Space (US)**	Microgravity research	• Q3: $187M (C)	Founders Fund, Khosla, Lux, Space Capital, General Catalyst, NASA, SpaceWERX, Balerion
$173M	**EnduroSat [Bulgaria]**	Satellite services + software	• Q2: $49M (B) • Q4: $104M (B-II), $21M PE	Founders Fund, European Innovation Challenge, Google Ventures, Lux, European Investment Bank

2025 Leaderboard
VC by Round

Top 10 Seed Rounds 2025[1]

($) Total (Q)	Company	Category	Notable Investors (Any Round)
$44M (Q4)	**LEAP (US)**	Launch	ONE Bow River National Defense Fund
$20M (Q1)	**Karman+ (US)**	Asteroid Mining	
$17.5M (Q2)	**Portal Systems (US)**	In-Space Maneuverability	
$14.8M (Q2)	**OKAPI:Orbits (Germany)**	SSA + STM	Ventech, Munich Re Ventures, Dolby Family Ventures
$10.5M (Q1)	**Magdrive (UK)**	Spacecraft Propulsion	Founders Fund, Balerion, UK Space Agency National Space Innovation Programme, AWS Space Accelerator
$10M (Q1)	**Starcloud (US)**	Space-based data centers	a16z, YC, In-Q-Tel, NFX, Sequoia, Plug and Play, NVIDIA Inception Program
$10M (Q4)	**SpaceComputer (Singapore)**	Space-based blockchain	Maven 11 Capital, Lattice, Bitscale, Moonrock, Offchain Labs, Arbitrum Foundation, imToken
$9M (Q3)	**LGND (US)**	AI for satellite data	Space Capital
$8.8M (Q3)	**Orbital Operations (US)**	Space Logistics + Cryo Management	YC
$7.7M (Q3)	**Xinghuo Space (China)**	Launch Vehicles	

Top 10 Series A Rounds 2025[1]

($) Total (Q)	Company	Category	Notable Investors (Any Round)
$58M (Q4)	**Reflex Aerospace (Germany)**	Custom Satellite Manufacturing	Alpine Space, Mynaric
$53M (Q3)	**ReOrbit (Finland)**	Satellite Manufacturing	Seraphim
$50M (Q2)	**Logos Space (US)**	Satellite-based Connectivity for Enterprises	US Innovative Technologies Fund
$50M (Q2)	**Aetherflux (US)**	Space-based Solar	A16z, NEA, US DoD, Interlagos, Index Ventures
$41M (Q1)	**Hongding Technology (China)**	Satellite Manufacturing	
$40M (Q2)	**Quantum Space (US)**	Spacecraft Manufacturing	US Department of Commerce, Beyond Earth
$30M (Q2)	**Space Forge (UK)**	In-Space Semiconductor Manufacturing	NATO Innovation Fund, UK National Security Strategic Investment Fund, Space VC, SpaceFund, Intel Ignite, UK Space Agency, European Space Agency, Helium-3
$30M (Q2)	**Northwood (US)**	Ground stations	a16z, Founders Fund, Alpine Space, Balerion Space
$25M (Q3)	**Xoople (Spain)**	AI x Geospatial	
$18M (Q4)	**HyImpulse (Germany)**	Hybrid Propulsion Launch Vehicles	UK Space Agency, European Innovation Challenge

2025 Leaderboard
VC by Round

Top 10 Series B Rounds 2025[1]

($) Total (Q)	Company	Category	Notable Investors (Any Round)
$152M (Q4)	**EnduroSat (Bulgaria)**	Satellite Services / Software	Founders Fund, EIC, Google Ventures, Lux
$125M (Q3)	**K2 Space (US)**	Satellite Manufacturing	Altimeter, Lightspeed, Alpine, NewSpace
$100M (Q2)	**Mach Industries (US)**	Satellites for Defense	Khosla, Sequoia, Thiel Fellowship
$92M (Q2)	**Xona Space Systems (US)**	Alternative GPS	Seraphim, Toyota Ventures, SpaceWERX, AWS Space Accelerator, Plug and Play, Beyond Earth, Space VC, Space Angels
$71M (Q3)	**Antares (US)**	Space x Nuclear	Balerion Space Ventures
$70M (Q3)	**Hubble Network (US)**	Bluetooth Satellite Network	Seraphim, YC, MassChallenge, Space VC
$52M (Q1)	**ArkEdge Space (Japan)**	Satellite Manufacturing	SKY Perfect JSAT, JAXA Ventures
$50M (Q4)	**Digantara (India)**	SSA	ISRO, Eutelsat OneWeb
$50M (Q2)	**Zeno Power (US)**	Space x Nuclear	Seraphim, NASA, Thiel Fellowship, Balerion, Beyond Earth, US Air Force, TechStars
$46M (Q4)	**Infinite Orbits (France)**	In-Orbit Services	EIC, SpaceFounders, bpifrance

Top 10 Series C Rounds 2025[1]

($) Total (Q)	Company	Category	Notable Investors (Any Round)
$300M (Q2)	**Impulse Space (US)**	In-Space Mobility Services	Airbus Ventures, Founders Fund, Balerion, Lux, RTX Ventures
$260M (Q1)	**Stoke Space (US)**	Reusable Rockets	Bill Gates, Point72, YC, Toyota, In-Q-Tel
$250M (Q4)	**K2 Space (US)**	Satellite Manufacturing	Altimeter, Lightspeed, Alpine, NewSpace
$200M (Q2)	**Apex Space (US)**	Satellite Manufacturing	A16z, Point72, 8VC, Washington Harbour, Balerion, Toyota Ventures, SpaceWERX
$187M (Q3)	**Varda Space (US)**	Microgravity Research	Founders Fund, Khosla, Lux, SpaceWERX, NASA, Balerion, Bessemer, Space Capital
$170M (Q1)	**Loft Orbital (US)**	Satellite Manufacturing	BlackRock, Space VC, bpifrance
$67M (Q3)	**Aerospacelab (Belgium)**	Satellite Manufacturing	Airbus Ventures, European Investment Bank
$60M (Q3)	**Firehawk Aerospace (US)**	Hybrid Rocket Engines	Hanwha Defense USA (Corporate Minority), Raytheon,
$60M (Q3)	**Emposat (China)**	Satellite Design / Operations	
$30M (Q2)	**Skylo (US)**	Satellite NTN network	Seraphim, BMW, Intel, Samsung

2025 Leaderboard
VC by Round

Top 10 Series D/E/F Rounds 2025[1]

($) Total (Q)	Company	Category	Notable Investors (Any Round)
$510M D (Q3)	**Stoke Space (US)**	Reusable Rockets	Bill Gates, Point72, YC, Toyota, In-Q-Tel
$350M D (Q3)	**Space Pioneer (China)**	Launch Services	
$336M D (Q3)	**Galactic Energy (China)**	Launch Services	
$200M D (Q3)	**Apex Space (US)**	Satellite Manufacturing	A16z, Point72, 8VC, Washington Harbour, Balerion, Toyota Ventures, SpaceWERX
$175M E (Q3)	**ICEYE (Finland)**	EO – SAR Constellation	VINCI (Corporate Minority), Seraphim, Space Capital, General Catalyst, BlackRock, Bpifrance, BAE Systems, Bessemer, NVIDIA Inception Program, EU Horizon 2020
$150M E (Q4)	**HawkEye 360 (US)**	RF Intelligence	Serpahim, NRO, BlackRock, AWS Space Accelerator, Airbus, Leidos, Insight Partners, Raytheon, Space Capital, Space VC, SVB, Airbus Ventures
$99M D (Q3)	**iSpace (China)**	Launch Services	
$89M F (Q3)	**Interstellar Technologies (Japan)**	Launch Services	Woven by Toyota, Japan Ministry of Education, Culture, Sports, Science and Technology
$50M E (Q3)	**Swift Navigation (US)**	GNSS Services	NEA, First Round, TELUS, Qualcomm
$24M D (Q1)	**Orbex (UK)**	Launch Services	Government of UK, European Space Agency, European Commission, UK Space Agency, Denmark's Export and Investment Fund, Elecnor Deimos Space, Horizon 2020

2025 Leaderboard

Public Company Performance

Space Economy Stocks: Top 10 2025 (% increase)[2]

Company	Q1	Q2	Q3	Q4	2025	Drivers
Planet Labs	-15%	80%	113%	52%	397%	Defense revenue grew 70% YoY. Landmark contracts with allied governments. First adjusted EBITDA positive quarter (Q4). AI-driven data demand[3]
EchoStar	12%	8%	176%	42%	378%	$2.6B sale of non-core spectrum assets to SpaceX & ATT.[4] Strategic debt restructuring extended its liquidity runway
Viasat	9%	40%	101%	18%	262%	ViaSat-3 Flight 2 satellite. Return to positive FCF
AST SpaceMobile	5%	105%	5%	48%	236%	Definitive commercial agreements with MNOs including Verizon and stc Group.[5] Deployment of BlueBird satellites
Kratos Defense	13%	56%	97%	-17%	188%	Record backlog + key contracts via accelerating defense budgets for hypersonic testing and unmanned systems[6]
Rocket Lab	-28%	100%	34%	46%	179%	Elevated status as a diversified space prime
Karman	4%	51%	43%	1%	129%	Significant backlog growth + strategic acquisitions[7]
Globalstar	-34%	13%	55%	68%	92%	Sector-wide revaluation of spectrum assets
BlackSky	-28%	166%	-2%	-7%	75%	$60M in new contracts driven by international demand for Gen-3 intelligence services[8]
RTX	14%	10%	15%	10%	58%	Geopolitical tensions drove backlog growth

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