Imagining Forward

U.S. SPACE ECONOMY ANNUAL REPORT

EXECUTIVE SUMMARY

In 2026, frontier technology will test product-market fit, soaring from labs to orbital risk testing. The Presidential executive order 'Ensuring American Space Superiority' ensconces Space as critical infrastructure. Economy 2.0 is orbital. Earth observation underpins precision agriculture and maritime logistics. Hyperspectral data reduces defense latency and informs wildfire threat management. Microgravity platforms unlock pharmaceutical and optical fiber innovation. Space extends Earth's economy, society, and scientific agency.

Artificial intelligence and reliable launch cadence lead second order effects that were science fiction three years ago. Value accrues to actors that treat space as an interconnected lifecycle of launch, orbital operations, deorbit, and end of life. These actors balance dual-use designs, modular architecture, and an operating model that assumes contested orbits from day one. Capital flows reflect this maturation. Today, funding is concentrated in actors building the infrastructure layer.

This report translates the forces that define 2025 into decision-grade signals for 2026. It surfaces the bottlenecks and new value pools salient for founders, operators, investors, and government enabling next-gen innovation.

While our analysis reflects the asymmetric role of the United States, the underlying dynamics are global. Sustained investment in defense, reindustrialization, and New Space R&D make the U.S. space industry the quintessential leading indicator for global inflection points.

Imagining Forward tracks 3,000+ companies across the space value chain. We maintain direct engagement with key players managing capital allocation into the sector. Our network includes NASA JPL, U.S. Air Force, The Defense Innovation Unit, J.P. Morgan, Deloitte, and Techstars Space. This report synthesizes proprietary notes, founder interviews, press releases and regulatory filings with behavioral signals from our intelligence platform. In 2025, the community grew 163% to 5,000+ participants positioning Imagining Forward as the primary intelligence platform for space capital.

"Sometimes the impossible just needs the right systems and enough duct tape."
- Project Hail Mary

METHODOLODY

This report is written for decision-makers allocating capital, talent, and policy across the commercial space economy. It organizes 2025's inflection points into six structural themes.

Each theme traces bottlenecks, market shifts, value creation, trends and breakout winners. Each theme pairs narrative analysis with visuals as heuristics for the reader.

Image from SpaceX

SIX THEMES OF 2025

1. LAUNCH ECONOMICS
2. GROUND SYSTEMS
3. MANEUVERABILITY
4. ORBITAL SAFETY
5. INDUSTRIAL CAPACITY
6. SPACE DATA CENTER

ASSUMPTIONS

Our methodology synthesizes quantitative transaction data with qualitative market intelligence. Capital deployment figures are derived from disclosed funding rounds, government contract awards, merger and acquisition activity, and industry whitepapers. Operational scale is measured by launch manifests, satellite deployments, and mission heritage. Market sentiment is captured through search behavior on our intelligence platform, newsletter engagement metrics, and attendance at industry events. Strategic relevance weighs second order effects: whether a shift in one segment enables or constrains adjacent markets.

Themes are weighed by aggregate impact rather than isolated metrics. Data is normalized so outliers don't skew. A technology with capital inflow and manifest presence is prioritized higher than systems with significant venture funding but limited operational deployment. This approach filters hype from execution and ensures analysis reflects deployable infrastructure, not speculative roadmaps.

High conviction conclusions are derived by cross-referencing capital flows with operational and behavioral intelligence. Convergence validates patterns. Anomalies flag emerging opportunities or unsustainable hype.

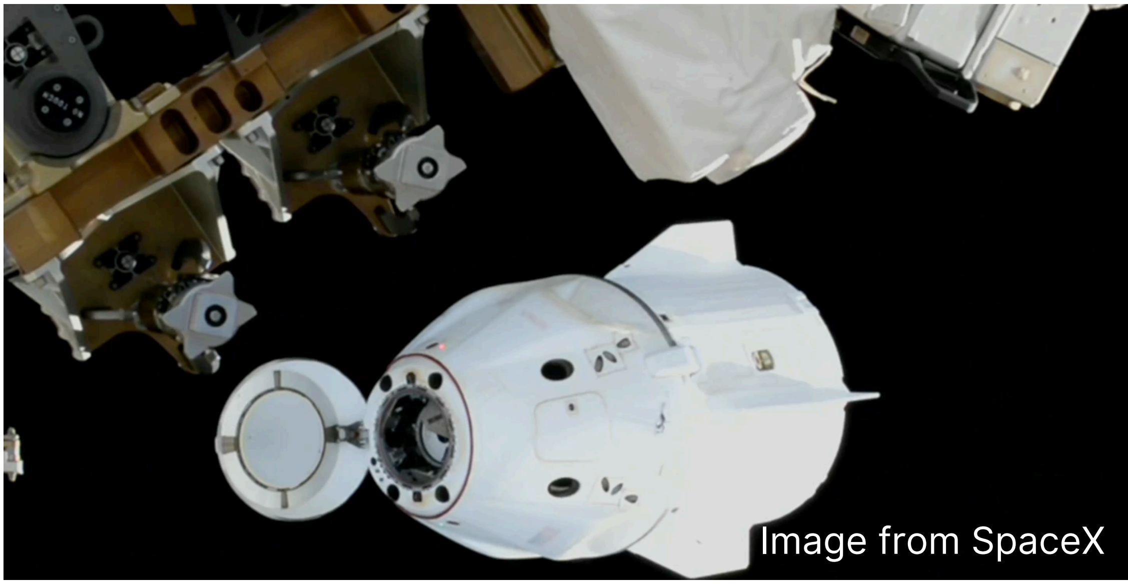


Image from SpaceX

2025 SIGNALS

Our analysis draws on tracked behavioral sentiment from 1,800 weekly newsletter readers and 400 monthly active intelligence platform users.

Actively Tracked Participants

5,000+

Most Searched

PROMPTS	COMPANIES	TECHNOLOGIES
Startups in ISR	True Anomaly	Antenna suppliers
Companies in SoCal	Varda Space	Hypersonics
Startups with SBIR	Katalyst Space	Astro robotics

EVENT TYPES	SEARCH ORIGIN
Happy hour in LA	Ashburn, Virginia
Breakfast in NY	Los Angeles, California
Meetups in SF	Zagreb, Croatia

Most Clicked

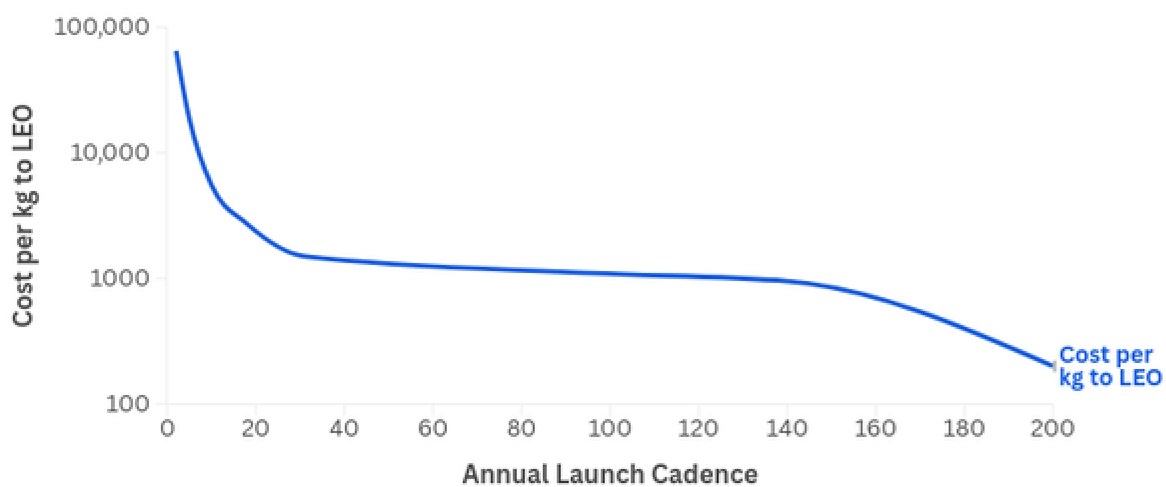
COMPANIES	NEWSLETTER TOPICS	EVENT TOPICS
Archer Aviation	Physical AI	Space defense
Planet Labs	Advanced materials	Space habitats
Axiom Space	Semiconductors	AI and power

LAUNCH ECONOMICS: THE SPACEX EFFECT

Costs Collapse, Access Expands

Launch shifted from a structural constraint to a utility in 2025. Historically, capex intensive launches suppressed derivative downstream innovations. SpaceX precipitously cut cost per kilogram by 95 percent through vertical integration and frequent heavy launch service [1]. Risk concentration across launch sites, vehicles, thermal management, and radiation hardening inverted into a dependable LSP for a myriad of payloads. Starship positions 2026 capacity for further cost compression.

Figure A : Launch cadence by Cost per kg to LEO



Falcon 9 operates at $2,720 per kilogram based on $62 million to $67 million per launch and 22,800 kilogram capacity [22]. Starship targets sub-$200 per kilogram against a Space Shuttle benchmark of $65,000 per kilogram [16]. SpaceX anchored Wright's Law with consistent cadence, amortizing fixed costs of recovery vessels and refurbishment infrastructure.

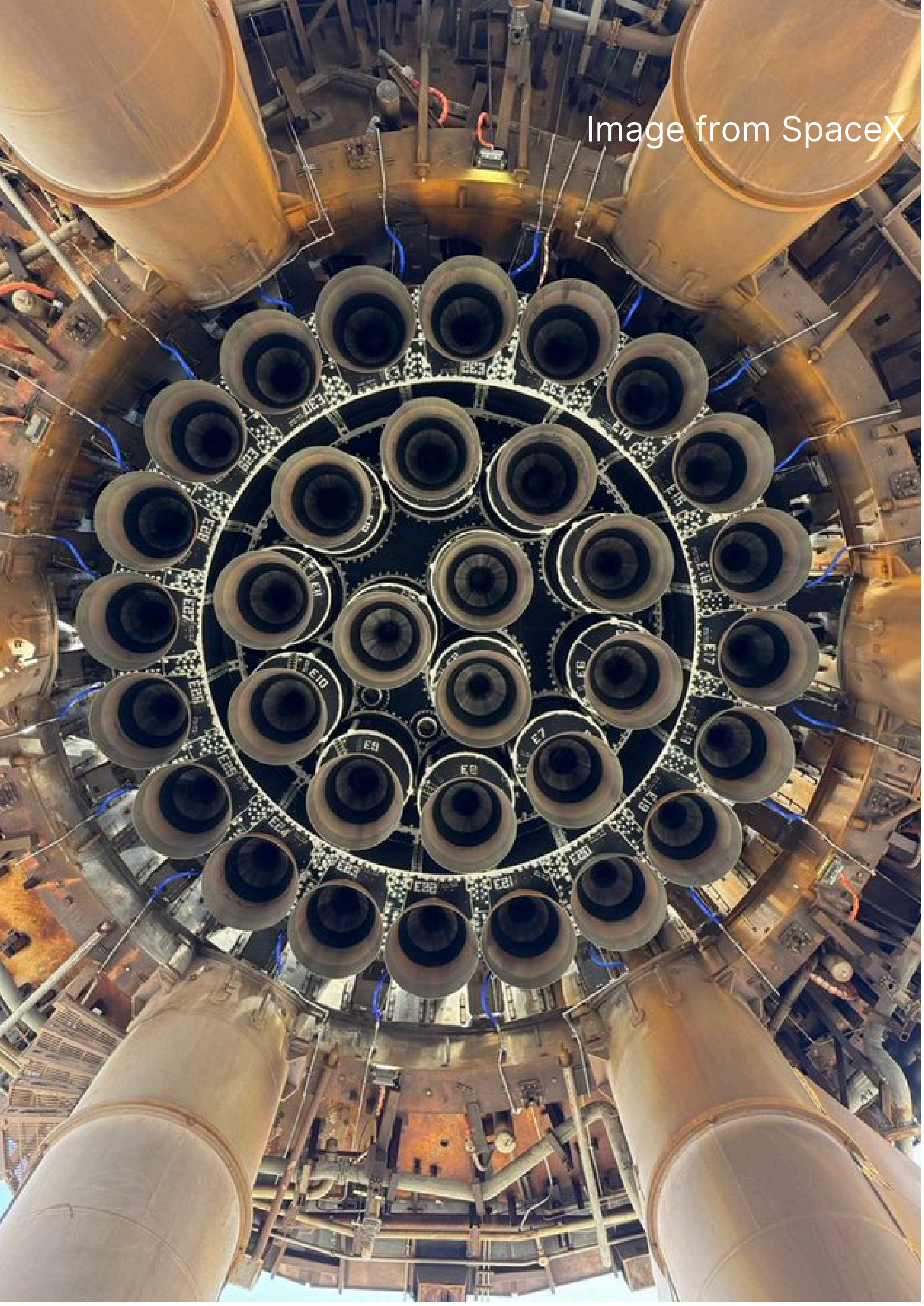
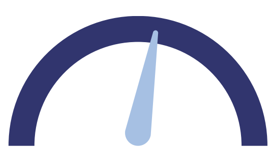


Image from SpaceX

So what?

Launch re-pricing catalyzed novel payloads and extended missions. Increased rideshare density unlocked smallsat access at nominal economics. In parallel, global competition heightens as industries hew to sovereign launch policies.

2025 allocation



Trending

SSA / SDA
RPOD
Conjunction Alerts

Market leaders

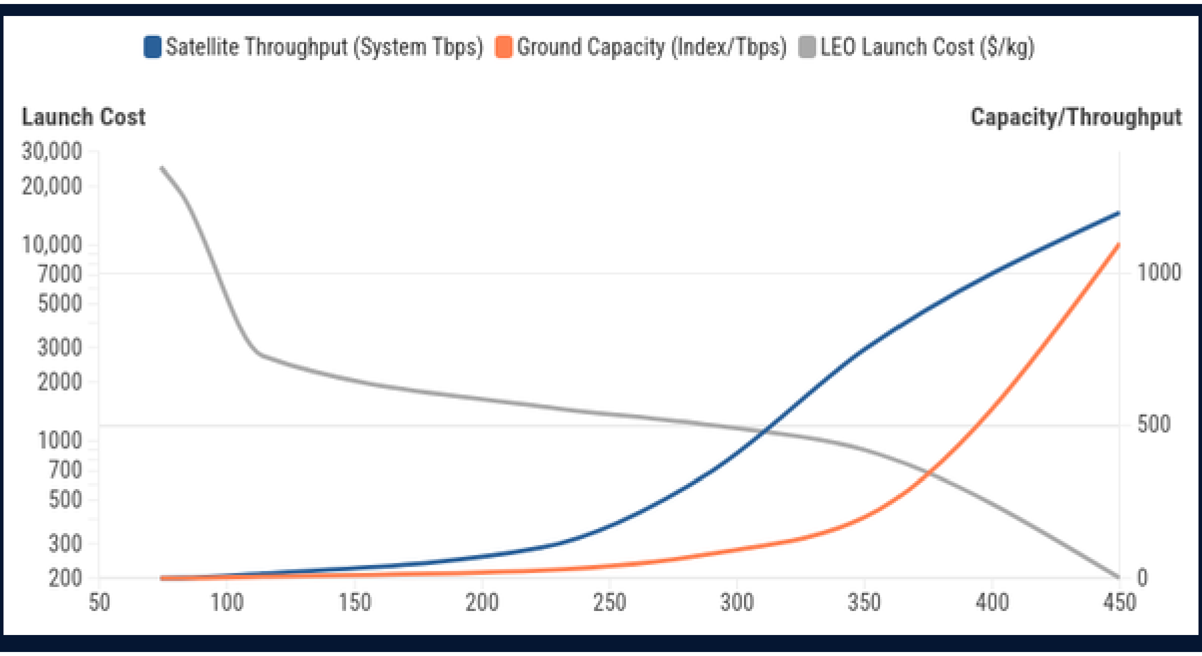
SPACEX
ROCKETLAB
CASC

GROUND TERMINAL: GSAAS MODERNIZATION

Capex Invested, Capacity Expands

Ground infrastructure is the new chokepoint. Legacy terminals indiscriminately downlink data with poor signal to noise classification. In parallel, perpetual overhead and capex-dense upgrades encumber secure operations. Historically, satellite throughput has outpaced ground capacity creating a bottleneck.

Figure B : Annual launch by Launch cost and Capacity/Throughput

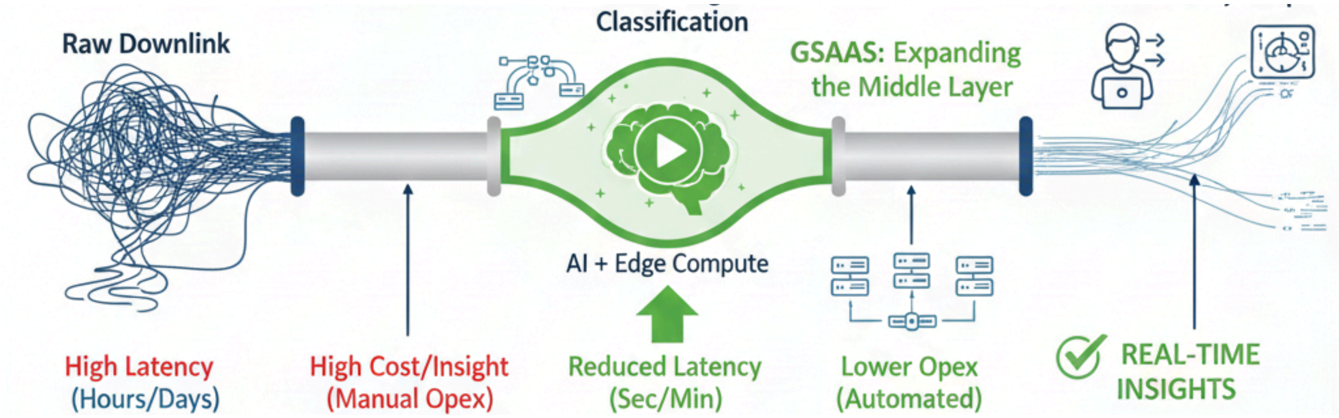


This stalemate is breaking. Starlink's scale across disaster environments catalyzed mass adoption. Defense, accounting for 65 percent of Earth observation transactions, concentrated investment into terminal modernization [7]. Satcom and Milsatcom exhibitions recorded the highest deal velocity of 2025 trade conferences.

In 2026, bipartisan policies addressing aging infrastructure, redirect federal and state funds to ground system rebuilds. Hardware-software integration cycles compress to support AI workloads, real-time classification, and autonomous decisions. Ka-/Q-/V-band deployments scale in 2026 to accommodate higher throughput and reduced latency for Non-Terrestrial Networks.

Image from EutelSat

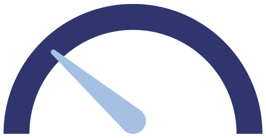
Figure C : Data Friction in Old versus New Paradigm



So what?

GSaaS scales ground capacity with LEO smallsat proliferation. Lower latency advances secure comms, EO, and AI-native applications. Novaspace projects a $106B ground segment market through 2034 [7].

2025 allocation



Trending

Multi Orbit Antennas
Optical Ground Terminal
GSaaS

Market leaders

AZORA

AALYRIA

ECHOSTAR

MANEUVERABILITY: SPACE LOGISTICS

Prototypes Prove, Mobility Compounds

Satellites reached orbit but stayed static. Power and propulsion stymied mobility. Operators could access LEO and GEO, but accepted fixed positions as inevitable.

Solar electric, solar thermal, chemical, hydrogen, nuclear propulsion now extend mission range and payload optionality. Private capital is circumspect to underwrite experimentation, pausing for 2026 launch manifests to confirm propulsion viability.

Successful demonstrations derisk repositioning unmanned cargo ships, space elevators, payload buses, and physical AI. Orbital systems evolve from single-task, five-year missions to multi-objective, one-year operations due to better engines.

"We have enough stuff on orbit now that it's worth the gas money to go get it." - Jeff Thornburg, Founder of Portal Space Systems. They're risk testing breakthrough solar thermal engines on 2026 space bus missions.

Chemical propulsion delivers high-thrust and speed yet poor range. Solar Electric prioritizes efficiency over speed. This is suitable for long-haul, static infrastructure not rapid maneuvers. Solar Thermal and nuclear balance delta-V, thrust-to-weight, and responsiveness. Across orbital regimes, they can revolutionize mission turnaround from months and years to weeks and hours.

"One of these days we're going to have a roster of names of people who made it back to their families because of our system." - Julie Newman, VP Engineering at Outpost Space. Their space cargo ships land payloads within 25m of any helipad globally.

Image from Portal Space Systems

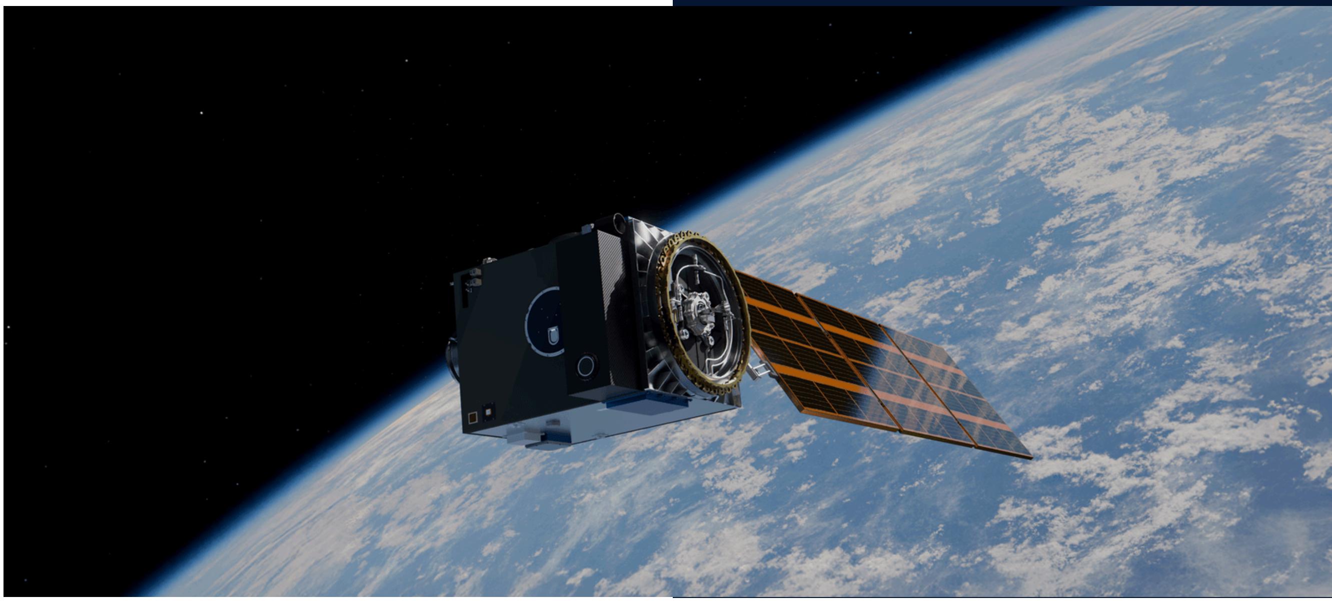
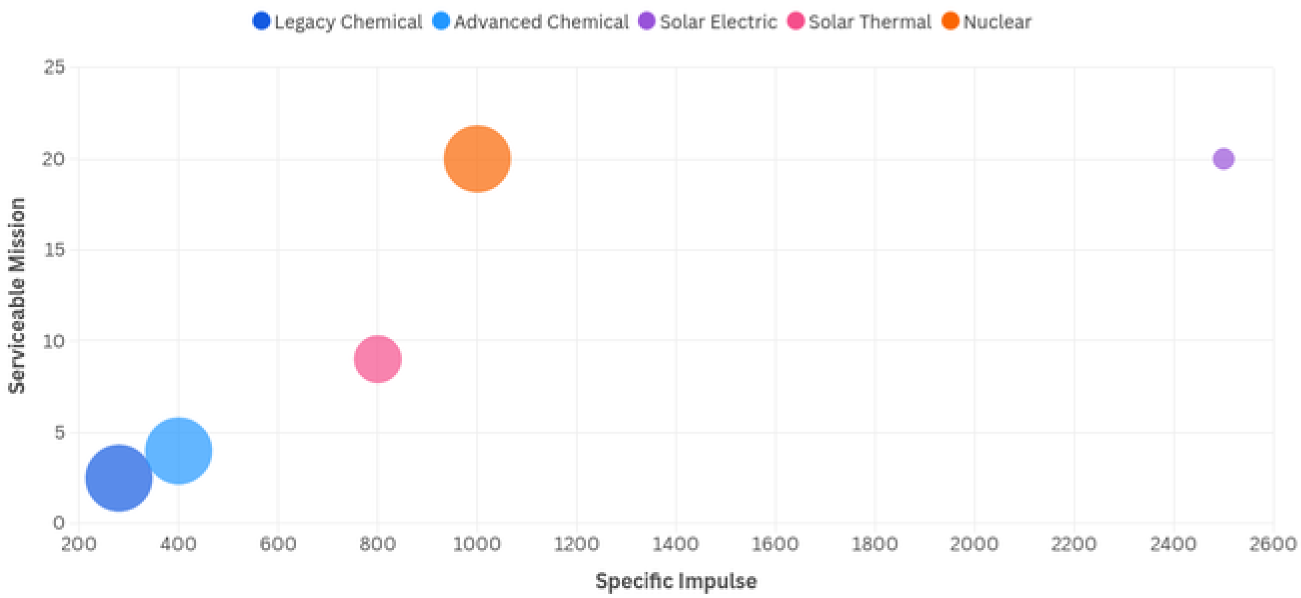


Figure D : Propulsion technology versus Market Expansion



So what?

SMR and Solar Thermal enable rapid orbit serviceability. In 2026, orbital logistics decouples from launch services as a novel economy, rebalancing from placement to circulation.

2025 allocation

Trending

Ablative Heat Shield
Ballistic Coefficient
Green Propellants

Market leaders

PORTAL
OUTPOST
IMPULSE

SPACE TRAFFIC: ORBITAL SAFETY

Systemic Risk to Managed Infrastructure

Orbital congestion escalated from operational nuisance to balance-sheet risk. Outpost Space VP Julie Newman ranks orbital traffic as the dominant threat to scale in 2026. Active traffic management and debris mitigation will force capitulation in mission pricing, insurance underwriting, and sustainable space GDP growth. Inconsistent SSA data obscures collision models. Fragmented visibility inflates both opex and failure risks. Presently, less than 5 percent of collision relevant debris is captured, leaving material risk invisible to operators [51]. This is priced into current operating costs.

Capital flows to commercial and defense SSA is an economic and fiscal impetus. Enhanced tracking and conjunction analysis lower opex for legacy assets and capex for new payload hardening. Space waste remediation precipitously reduces collision probability. Solving orbital safety unlocks inter-orbit mobility and secures the agency of the LEO economy.

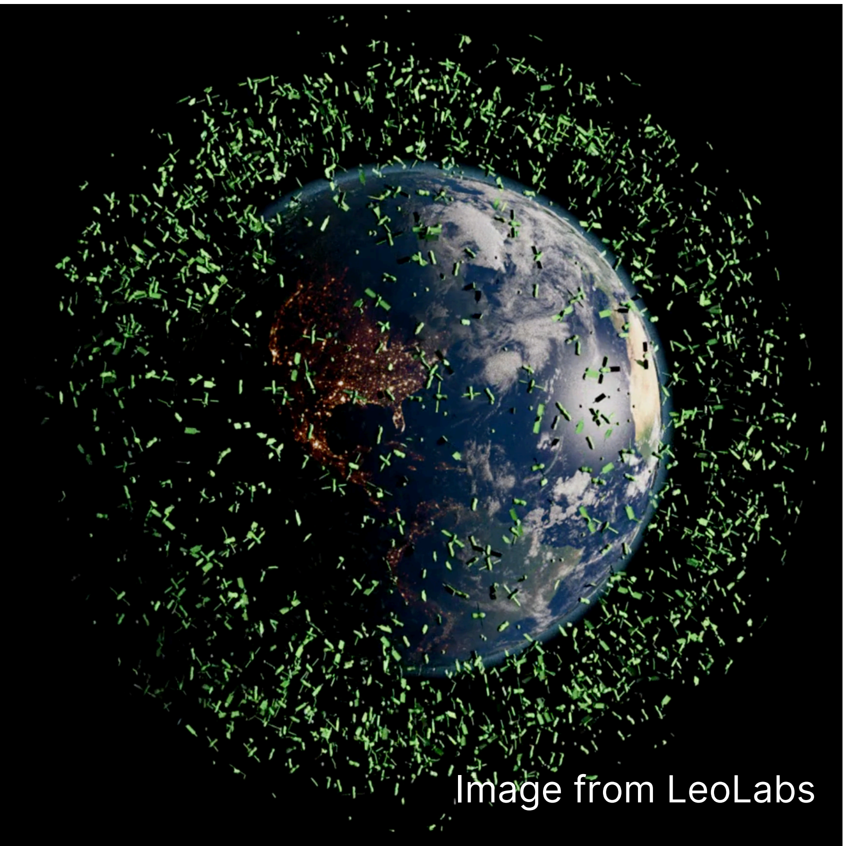
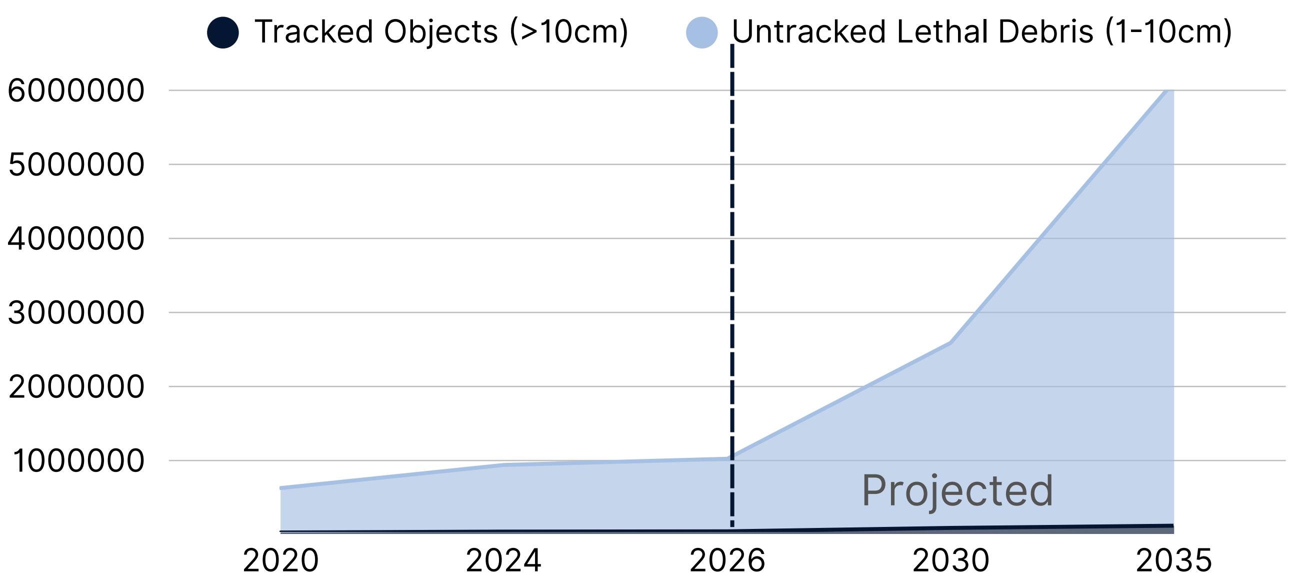


Image from LeoLabs

Table A : Orbital Object Tracker

CATEGORY	ESTIMATED COUNT	STATUS
Tracked Objects (>10cm)	~40,200	Active Tracking
Lethal Debris (1 - 10cm)	~900,000	Untracked
Small Debris (<1cm)	~130,000,000	Untracked

Figure E : Tracked Versus Untracked Orbital Debris



So what?

Space junk besieges revenue-generating assets. Untracked fragments post a systemic threat to space commercialization. Resolving this bottleneck is a prerequisite to a multi-trillion-dollar space economy.

2025 allocation

Trending

SSA / SDA
RPOD
Conjunction Alerts

Market leaders

TRL11
LEOLABS
Astroscale

INDUSTRIAL CAPACITY: THE THROTTLE

Capacity Builds, Velocity Wins

Manufacturing lagged demand, gating a restless space economy. Scarce low nanometer fabrication plants and fragile supply chains compress supply velocity. Sanctions on critical nodes and sparse talent pools exacerbate this chokepoint. Concentration risk in East Asia amplified lead times to 18 to 24 months and spiked cost volatility.

In response, domestic policy bastioned vertical integration and greenfield factories. The DOW committed $1 billion to L3Harris for U.S. SRM supply chain [65]. Regional innovation hubs sprouted from Denver to Zurich and Berlin. New facilities cut lead times through automation and workforce upskilling. SpaceX deployed $147 million into Starbase-adjacent supply chains to drive M2 velocity [67]. Portal Space scaled footprint from 8,000 to 35,000 square feet [43]. Outpost Space vertically integrated paraglide production to sequester geopolitical risk.

Price capitulated to velocity, validating K-shape recoveries against single-point failures. In 2026, manufacturing is a competitive moat, not a cost center. Additive manufacturing gains momentum in precision contract manufacturing. This lowers opex for maintenance and on-demand parts.

"You won't build a space economy until you can build things in space." - Dennis Wingo, Founder of SpaceBilt. They support active ISAM missions in 2026.

Price yields to throughput. The sea change from legacy to New Space pushes the supply curve rightward, catalyzing elastic capacity. Manufacturing location and control confer pricing power. Actors that secure real assets achieve margin expansion. Velocity scales.

Figure F : Satellite Throughput Versus Cost Per Unit

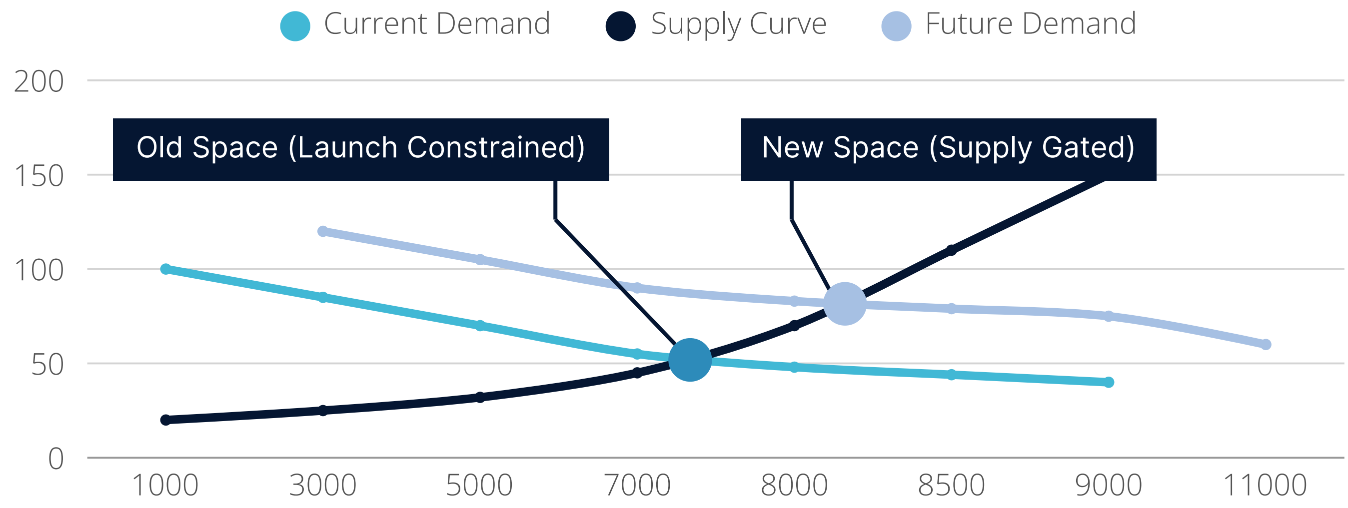
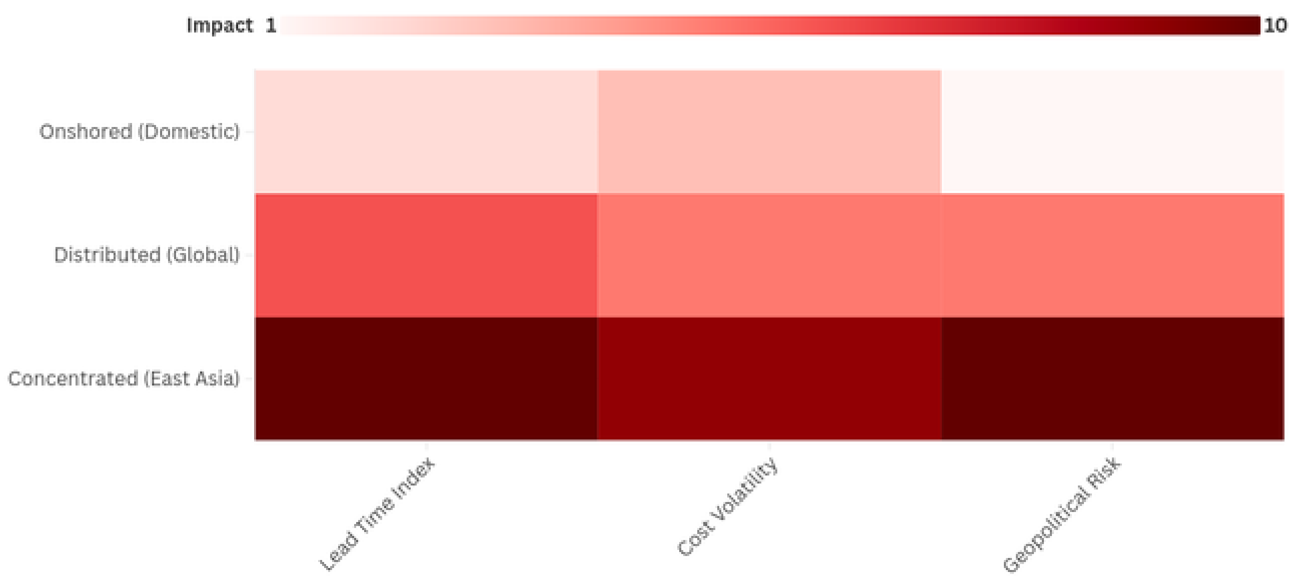


Figure G : Industrial Supply Versus Operational Risk



So what?

Unmanned physical AI enables autonomous ISAM and closes the deployment gap. Microgravity platforms assemble ZBLAN and exotic fibers impossible to produce on Earth.

2025 allocation

Trending

Rad-Hard Foundries
Metal 3D Printing
VLA Models

Market leaders

CREATIVE 3D TECHNOLOGIES

Relativity

REDWIRE

SPACE DATA CENTER: AN OPPORTUNITY

Heat Dissipates, Compute Scales

Ground data centers hit a structural wall. Electricity and cooling costs escalated as AI workloads burgeoned. Terrestrial facilities burn $0.05 to $0.15 per kilowatt-hour of energy [60]. Hardware refresh cycles every three years compound capex burn.

Space inverts these energy constraints. Solar energy is ubiquitous. However, orbital compute is kiboshed by thermal wall. Space data centers need expansive radiators to dissipate heat per the Stefan-Boltzmann law. Sovereigns view the lunar surface as contestable real estate for large-scale radiators, solar fields, phased arrays, and antenna farms. In 2026, the bottleneck shifts from electricity unit economics to thermal expulsion design and physical footprint.

"Space is the best place in the solar system to dump heat."
- Dennis Wingo, Founder of SpaceBilt.

Image from Starcloud and SpaceX

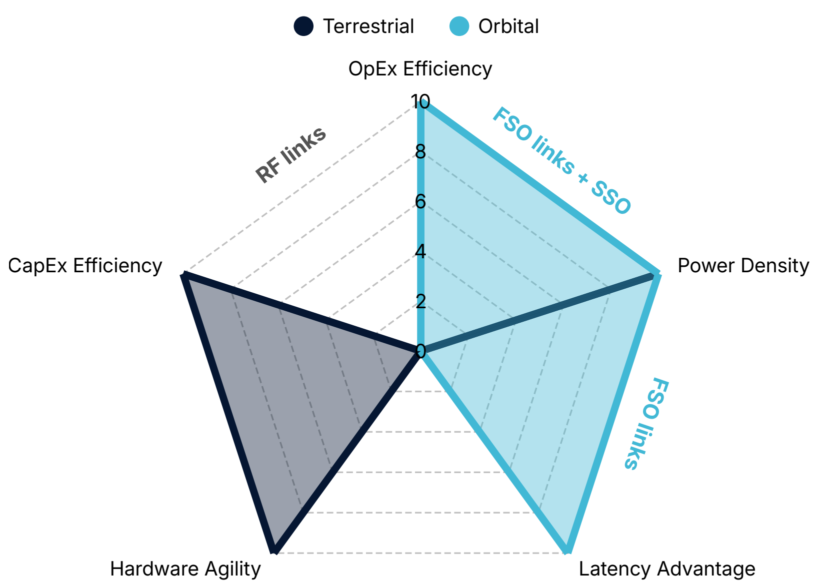
Orbital data centers target OpEx of $0.001 to $0.01 per kilowatt-hour [63]. This represents a 90 percent drop from terrestrial contemporaries. Modern GEO satellites use ASICs for in-situ data triage and low-latency decisions.

Ground links complement a novel value chain of autonomous ISAM and edge data management. These seminal upgrades catalyze cislunar expansion.

Table B : Terrestrial Versus Orbital Data Centers

METRIC	TERRESTRIAL	ORBITAL
CAPEX ($M/MV)	$10M - $15M	$30M - $75M via SSO
OPEX ($/kWh)	$0.05 - $0.15	$0.001 - $0.01
Power Density (kW/rack)	30 - 100	10 - 20
Bandwidth	100 Mpbs - 10 Gbps	100+ Gbps
Latency	Fiber Benchmark	1.2-3.4x Faster via Optical Links
Cooling	Water / Air Intensive	Passive Radiative
Refresh Cycle	2 - 3 Years	5 - 7 Years via Trillium TPU

Figure H : Data Centers By Performance And Economics



So what?

Orbital compute decouples from terrestrial energy and cooling constraints. Google and Planet mission in 2027 moves theory to operational. Sovereign race to the moon is the next strategic priority for the DOW.

2025 allocation

Trending

Edge Compute
NVIDIA H100
Orbital Servers

Market leaders

Starcloud

Google

AETHERFLUX

2026 OUTLOOK

"...America is committed to returning to the Moon, building the infrastructure to stay, and making the investments required for the next giant leap to Mars and beyond..." - Jared Isaacman, NASA Administrator [65].

In 2026, four fronts define capital rotation.

1. **NASA 2.0.** Jared Isaacman's appointment heralds a bullish Space era. Bureaucracy acquiesces as NASA pivots from science explorer to infrastructure enabler. Isaacman hardwires a 2028 moon landing into policy. DOE and NASA codify lunar surface fission reactor by 2030. Heliophysics goes operational. Energy and radiation breakthroughs secure lunar permanence. Sovereigns race to rearmament.

2. **Physical AI Scales.** Space autonomy shifts from teleoperation to self-directed agency. The AI models driving terrestrial robotics will pilot spacecraft and assemble satellites. The first fully autonomous missions will execute sans human intervention.

3. **Quantum Internet Backbone.** Quantum communication pilots in 2026 will test secure, high-bandwidth data transfer across cislunar distances. The hardware is already in the fairing. Telecom unit economics will follow in the succeeding period.

4. **Computational Life Sciences.** Exotic fibers, protein crystallization, and tissue engineering transition from lab curiosities to commercial pipelines. Varda and Axiom de-risked flight heritage. Pharmaceutical capital will enter orbit at scale.

Risks concentrate in three links. Materials supply chains are brittle. Industrial throughput lags demand. The "Debris Tax" remains underinvested relative to systemic risk. Without sustained M2 to these nodes, the LEO economy hits a ceiling. In 2026, the space economy levels up from emerging technology to the primary driver of global industrial growth.

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INTERVIEWS WITH INDUSTRY EXPERTS

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- Shreyansh Daftry, Group Leader at NASA JPL
- Julie Newman , VP Engineering of Outpost Space
- Bryan Mazor, CTO of Source Space
- Yuk Chi Chan, CEO of Charter Space
- Ben Schleuniger, CEO of Orbital Operations
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- Shyan Royaie, BD Manager at NordSpace
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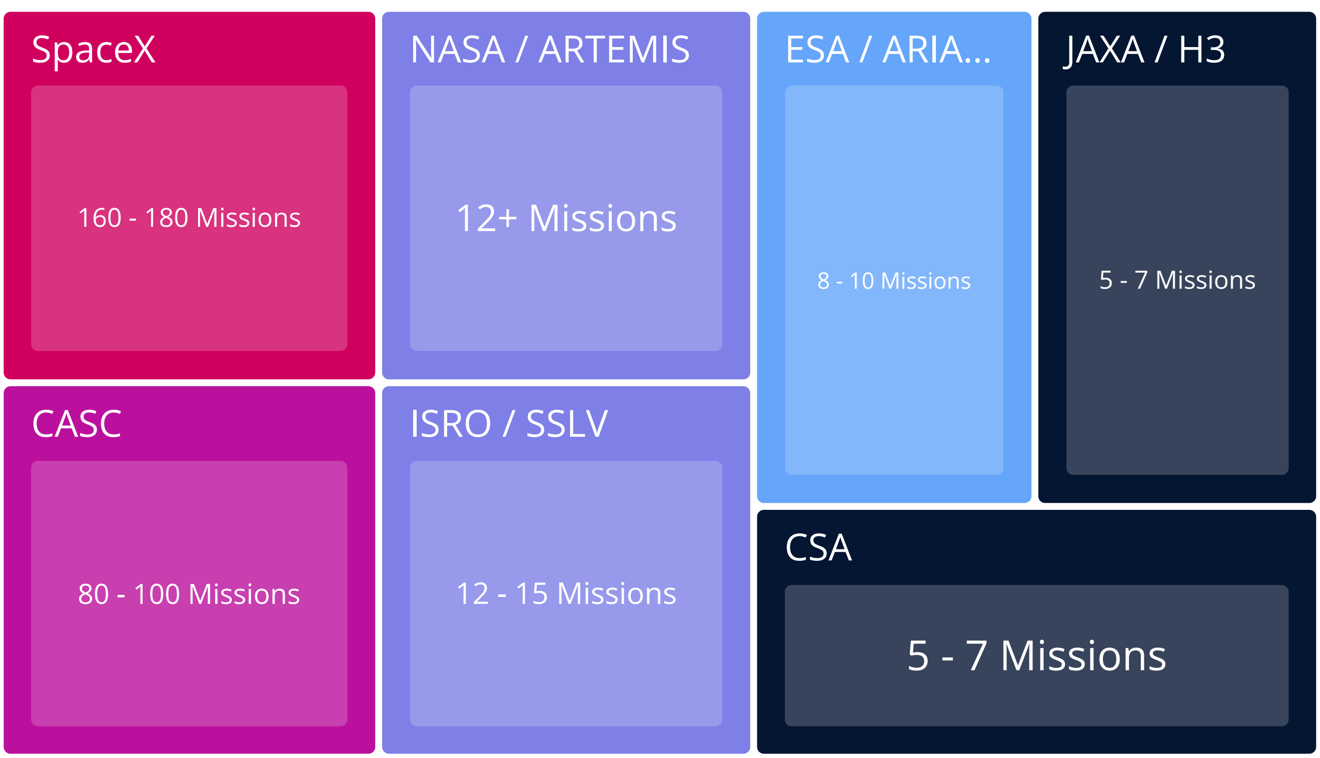
PROGRAM	LAUNCH MANIFEST	VALUE PROPOSITIONS
SpaceX	160 - 180 Missions	Launch Monopoly
CASC	80 - 100 Missions	Full-Stack Sovereign Integration
NASA / ARTEMIS	12+ Missions	Deep Space Heavy Lift
ISRO / SSLV	12 - 15 Missions	Price and Speed
ESA / ARIANE 6	8 - 10 Missions	Quality Sovereign Access
JAXA / H3	5 - 7 Missions	High Mass Precision
CSA	5 - 7 Missions	Arctic ISR

GLOBAL SOVEREIGN LAUNCH RACE



GLOSSARY

INDUSTRY JARGON

- DOW : U.S. Department of War
- DOE : U.S. Department of Energy
- EO : Earth Observation
- LSP : Launch Service Provider
- GEO : Geostationary Earth Orbit
- GSaaS : Ground Systems as a Service
- ISAM : In Orbit Servicing Assembly and Manufacturing
- ISR : Intelligence, Surveillance, Reconnaissance
- LEO : Low Earth Orbit
- NTN : Non-Terrestrial Network
- RPOD : Rendezvous Proximity Operations and Docking
- SAR : Synthetic Aperture Radar
- SBIR : Small Business Innovation Research
- SDA : Space Domain Awareness
- SMR : Small Modular Reactor
- VLA models : Vision Language Action models
- SSA : Space Situational Awareness
- ACA : Autonomous Collision Avoidance
- CDM : Conjunction Data Messages
- FSO : Free Space Optical Links
- SSO : Sun Synchronized Orbit
- TPU : Tensor Processing Unit

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