Economic Value Generation in Low Earth Orbit: A Comprehensive Analysis of Satellite Services and Launch Vehicle Associations

Compiled by Adithya Kothandhapani - using Gemini Deep Research

Executive Summary

The Low Earth Orbit (LEO) region has become an increasingly vital arena for satellite services, driven by advancements in technology and a growing demand for global connectivity and Earth observation. This report analyzes the economic value generated by different types of LEO orbits, segmented by Sun-Synchronous Orbit (SSO) with varying Local Time of the Ascending Node (LTAN) and non-SSO orbits clustered by inclination. The study identifies the primary satellite service providers operating in these orbits, estimates the annual revenue associated with each orbit type, and determines the launch vehicles utilized for satellite deployment. Key findings indicate that non-SSO orbits, particularly those used by large communication constellations, currently generate the largest proportion of revenue, with SpaceX's Falcon 9 emerging as the dominant launch vehicle facilitating this growth. The report also highlights the significant role of Rocket Lab's Electron in deploying satellites for Earth observation companies like BlackSky and Spire. The report concludes with strategic recommendations for satellite service providers and launch vehicle companies to capitalize on the evolving LEO ecosystem.

Introduction: The Growing Economic Significance of Low Earth Orbit Satellite Services

The landscape of space-based services is undergoing a significant transformation, with Low Earth Orbit (LEO) emerging as a pivotal domain for a multitude of applications. A growing number of satellites are being deployed in LEO to support services ranging from high-speed internet and Earth observation to advanced communication networks. This surge in LEO activity is primarily attributed to the inherent advantages of operating at lower altitudes, which dramatically reduce transmission delays and increase data capacity compared to traditional satellites in higher orbits. This revolution in space-based connectivity has positioned LEO satellite constellations as crucial infrastructure for meeting the escalating demands of the digital age.

Several key economic drivers underpin this expansion in LEO. The ever-increasing need for high-speed internet access, particularly in rural and remote areas underserved by terrestrial infrastructure, is a significant factor propelling investments in LEO satellite networks. Furthermore, the growing sophistication and adoption of Earth observation and remote sensing

technologies across various sectors, including environmental monitoring, agriculture, and disaster response, are fueling the demand for LEO-based imaging satellites.

A critical enabler of this LEO boom has been the substantial reduction in launch costs, largely due to the development and successful deployment of reusable rocket technology, pioneered by companies like SpaceX. The ability to reuse launch vehicles, such as SpaceX's Falcon 9, has allowed launch providers to offer more competitive pricing, making satellite deployments more economically viable for a wider range of operators. This cost efficiency has facilitated a higher frequency of satellite deployments, contributing significantly to the overall growth of the market. Complementing this trend is the increasing prevalence of smaller, more capable satellites, including CubeSats and NanoSats. The miniaturization of satellites has made LEO missions more feasible and cost-effective, allowing for more satellites to be launched in a single payload, thereby increasing the efficiency of launches and creating more opportunities for new entrants to the market. The dramatic decrease in launch costs, facilitated by reusable rockets and rideshare programs, has lowered the barrier to entry, enabling a greater number of companies, both large and small, to participate in the space economy. This affordability has spurred innovation and the development of diverse applications for LEO satellites, ranging from agriculture to autonomous vehicles. The competitive pricing offered by reusable launch systems, particularly SpaceX's Falcon 9, has exerted pressure on traditional launch service providers, compelling them to rethink their models and develop similar cost-reducing capabilities.

This report aims to dissect the economic value generated within the LEO ecosystem by analyzing the revenue streams of major satellite service providers operating in different orbital regimes. By segmenting LEO into SSO with varying LTANs and non-SSO orbits by inclination, this analysis seeks to provide a granular understanding of which orbital configurations are most economically significant. Furthermore, the report will identify the launch vehicles associated with these satellite deployments, thereby illuminating the critical role of launch infrastructure in enabling and shaping the LEO economy. The findings of this report will offer valuable insights for stakeholders across the space industry, including satellite operators, launch service providers, investors, and policymakers.

Understanding LEO Orbit Segmentation and Key Satellite Service Providers

To comprehensively analyze the economic value generated by different LEO orbits, it is essential to segment these orbits based on their characteristics and to identify the major satellite service providers that utilize them. This section outlines the segmentation methodology and maps the key providers to their primary orbital regimes.

Sun-Synchronous Orbits (SSO) and Local Time of the Ascending Node (LTAN) Analysis

A Sun-Synchronous Orbit (SSO) is a near-polar orbit around the Earth where the satellite passes over any given point on the planet's surface at the same local mean solar time. This

unique characteristic is achieved through a specific combination of the orbit's altitude and inclination, which causes the orbital plane to precess (rotate) approximately one degree eastward each day, keeping pace with the Earth's movement around the Sun. The consistency in surface illumination provided by SSO is particularly valuable for Earth observation satellites, as it ensures that images of the same area are captured under similar lighting conditions, facilitating accurate monitoring and analysis.

A key parameter within SSO is the Local Time of the Ascending Node (LTAN), which refers to the local solar time at which the satellite crosses the Equator while moving from the Southern Hemisphere to the Northern Hemisphere. The LTAN is crucial for determining the satellite's daily imaging schedule and the overall illumination conditions for its observations. Different LTAN planes are utilized to optimize data collection for specific applications. For instance, a mid-morning LTAN (around 9:30-11:30 am) is common for optical Earth observation as it provides good sunlight conditions without excessive shadows.

Major satellite service providers that heavily rely on SSO for their operations include Planet Labs, ICEYE, BlackSky, and Spire. Planet Labs operates a large constellation of Dove and SuperDove satellites in SSO at altitudes ranging from 475 km to 630 km, with inclinations around 98° and LTAN typically between 9:30 and 11:30 am. ICEYE operates a constellation of Synthetic Aperture Radar (SAR) satellites in SSO at altitudes between 560 km and 580 km, with an inclination of 97.7°. Notably, ICEYE utilizes different LTANs across its constellation to enable observations at various times of the day. BlackSky's satellites are launched into a mix of mid-inclination and sun-synchronous orbits, with altitudes between 400-701 km and inclinations from 42° to 53° for mid-inclination and 449-701 km for sun-synchronous orbits. Spire Global operates a constellation of over 90 satellites in various LEO orbits, including SSO.

Non-SSO Orbits: Grouping by Orbital Inclination

Non-SSO LEO satellites encompass a wide range of orbital inclinations, tailored to the specific service requirements. Grouping these satellites by inclination allows for the identification of common orbital regimes used by major providers.

- **Low Inclination (around 40-55°):** These orbits provide coverage primarily over equatorial and mid-latitude regions. Starlink's initial and largest deployments utilize inclinations around 53.05° and 53.22° at an altitude of approximately 550 km. Telesat Lightspeed also plans to use inclined orbits with an inclination of 50.88° at an altitude of 1325 km to focus capacity over populated mid-latitude areas. Globalstar's constellation operates at an inclination of 52° and an altitude of 1414 km, providing coverage between 70° North and 70° South latitude. Spire Global also has satellites in a 37-degree inclination orbit.
- **Medium Inclination (around 70°):** Higher inclination orbits extend coverage towards polar regions. Starlink's Group 2 satellites utilize an inclination of 70° at an altitude of 570 km.
- **High Inclination (around 85-90°):** Near-polar orbits provide global coverage, including the polar regions. Iridium operates its constellation in a near-polar LEO at an inclination of 86.4° and an altitude of 781 km. Spire Global has satellites in 83/85 degrees inclination orbits.

- **Polar Inclination (around 97-98°):** These orbits, while often Sun-Synchronous, can also be used for non-SSO purposes. Starlink's Group 3 and Polar Orbit satellites utilize an inclination of 97.6° at altitudes of 560 km. Telesat Lightspeed also plans to deploy satellites in polar orbits with an inclination of 98.98° at an altitude of 1015 km for global coverage, including the poles. Spire Global has a significant number of satellites in SSO.

Mapping Major Satellite Service Providers to Their Primary LEO Orbit Types

Based on the analysis above, the primary LEO orbit types utilized by major satellite service providers can be summarized as follows:

- **Starlink (SpaceX):** Primarily non-SSO orbits around 53° inclination at 550 km, with some satellites in 70° and 97.6° inclination non-SSO orbits, and some in SSO.
- **Planet Labs:** Primarily SSO around 98° inclination at altitudes of 475-630 km, with LTAN between 9:30 and 11:30 am.
- **ICEYE:** SSO around 97.7° inclination at 560-580 km, with varied LTANs.
- **BlackSky:** Mix of mid-inclination (42° to 53°) and sun-synchronous orbits (449–701 km).
- **Spire Global:** Variety of LEO orbits including Equatorial, SSO, 51.6 degrees inclination, 83/85 degrees inclination, and 37 degrees inclination.
- **Globalstar:** Non-SSO orbit at 52° inclination and 1414 km altitude.
- **Iridium:** Non-SSO near-polar orbit at 86.4° inclination and 781 km altitude.
- **Telesat Lightspeed:** Planned LEO constellation in both polar (98.98° inclination, 1015 km altitude) and inclined (50.88° inclination, 1325 km altitude) non-SSO orbits.
- **Viasat's planned LEO constellation:** Currently no operational LEO constellation; strategy involves multi-orbit approach and partnerships.

The operational choices reflect the specific service goals and coverage requirements of each provider. Earth observation benefits from the consistent lighting of SSO, while communication constellations utilize a distribution of inclinations to achieve global reach and capacity.

Economic Valuation of LEO Orbit Types Based on Satellite Services Revenue

Estimating the economic value generated by different LEO orbit types requires analyzing the revenue of the primary satellite service providers operating within these regimes. This section provides estimations based on available revenue data and the proportion of services reliant on specific LEO configurations.

Revenue Estimation for SSO Satellites Segmented by LTAN

Planet Labs, a leading provider of daily Earth observation data, reported revenue of US$191.3

million in 2022. Given their extensive use of SSO with LTAN around 10:30 am for their PlanetScope constellation, a significant portion of this revenue can be attributed to this orbit type. ICEYE, specializing in SAR imagery from SSO, does not have readily available specific revenue figures for 2022. However, their growing constellation and the increasing demand for SAR data suggest a substantial economic contribution from their SSO operations with varied LTANs. BlackSky, which utilizes a mix of orbits including SSO, reported a total revenue of $102.1 million in 2024. Spire Global, with satellites in SSO among other orbits, achieved an annual revenue of $110.5 million in 2024.

Revenue Estimation for Non-SSO Satellites Grouped by Inclination

Starlink, the satellite internet service of SpaceX, has rapidly become a major revenue generator in LEO. In 2022, Starlink reportedly generated $1.4 billion in revenue. With over 7,000 satellites primarily in non-SSO orbits around 53° inclination, this orbit type accounts for a significant portion of Starlink's earnings. Projections indicate a substantial increase in Starlink's revenue, reaching $8.2 billion in 2024 and $11.8 billion in 2025. Globalstar, providing satellite phone and data services from its 52° inclination non-SSO orbit, reported total revenues of $147.4 million in 2022. Iridium, with its global coverage from a 86.4° inclination non-SSO orbit, generated $701.8 million in revenue in 2022. Telesat's planned Lightspeed constellation, which will include inclined non-SSO orbits at 50.88° inclination, is projected to begin service in 2027 and is expected to generate significant revenue in the future. Spire Global also operates satellites in non-SSO orbits like the 51.6 degrees inclination , contributing to their overall revenue of $110.5 million in 2024.

Comparative Analysis of Revenue Generation Across Different LEO Orbit Types

Based on the available data, non-SSO orbits, particularly the lower inclination orbits utilized by Starlink for its extensive internet services, currently generate the largest proportion of revenue in LEO. The high subscriber numbers and expanding service offerings of Starlink drive substantial economic value in this orbital regime. SSO orbits, while crucial for Earth observation, contribute significantly through companies like Planet Labs, ICEYE, BlackSky, and Spire, with increasing demand for their respective data products. The revenue from Globalstar and Iridium, operating in medium and high inclination non-SSO orbits, further adds to the economic diversity of LEO.

Summary of Estimated Annual Revenue by LEO Orbit Type (2024)

LEO Orbit Type	Primary Satellite Service Providers	Estimated Annual Revenue (USD)
SSO (98° incl., 9:30-11:30 am LTAN)	Planet Labs	Data for 2024 not readily available
SSO (97.7° incl., Varied LTAN)	ICEYE	Data for 2024 not readily available
SSO (Various incl.)	BlackSky, Spire Global	$102.1 million (BlackSky), $110.5 million (Spire Global)
Non-SSO (53° incl.)	Starlink	~$8.2 billion
Non-SSO (52° incl.)	Globalstar	Data for 2024 not readily available
Non-SSO (86.4° incl.)	Iridium	Data for 2024 not readily available
Non-SSO (Various incl.)	Spire Global	$110.5 million (Total)
Non-SSO (50.88° incl.)	Telesat Lightspeed (Planned)	Future revenue
Non-SSO (98.98° incl.)	Telesat Lightspeed (Planned)	Future revenue

The Role of Launch Vehicles in LEO Satellite Service Deployment and Revenue Generation

The deployment of satellites into their designated LEO orbits is entirely dependent on launch vehicles. Understanding which launch vehicles are used by the major service providers and their association with revenue generation is crucial to assessing the economic impact of the launch industry on the LEO ecosystem.

Identification of Launch Vehicles Used for Satellites in Each LEO Orbit Type

- **Starlink:** Predominantly utilizes SpaceX's own Falcon 9 rocket for deploying its vast constellation into various non-SSO inclinations and some SSO orbits.
- **Planet Labs:** Employs a diverse range of launch vehicles to deploy its numerous small satellites into SSO, including Antares, Soyuz, Dnepr, Falcon 9, H-IIB, Atlas V, PSLV, Vega, and Electron.
- **ICEYE:** Primarily uses SpaceX's Falcon 9 for its SSO constellation, but has also utilized Soyuz and Rocket Lab's Electron.
- **BlackSky:** Has utilized Rocket Lab's Electron for deploying its satellites into various orbits.
- **Spire Global:** Has also used Rocket Lab's Electron for launching its constellation of satellites into different LEO orbits.
- **Globalstar:** For its first-generation constellation, Globalstar used a variety of launch vehicles, including Thor, Delta, R-7, Soyuz-U, and Zenit-2. Second-generation satellites have been primarily launched using Soyuz.
- **Iridium:** The original Iridium constellation was launched using Delta II, Proton-K, Rokot, and Long March rockets. The entire Iridium NEXT constellation was deployed using SpaceX's Falcon 9.
- **Telesat Lightspeed:** Has contracted launches with SpaceX's Falcon 9 and Blue Origin's New Glenn.
- **Viasat:** Viasat-3 GEO satellites have used Falcon Heavy and Atlas V. For planned LEO activities, Viasat has partnered with Rocket Lab for spacecraft bus development and mission support.

Analysis of Launch Vehicle Association with Revenue Generation within Each Orbit Category

SpaceX's Falcon 9 has played a pivotal role in deploying a significant number of revenue-generating satellites across various LEO orbit types. Its dominance is particularly evident in the non-SSO regimes used by Starlink and Iridium NEXT, which collectively generate substantial revenue. Falcon 9 is also a key launch provider for Planet Labs and ICEYE in SSO, and is contracted for the deployment of Telesat Lightspeed's non-SSO constellation. The cost-effectiveness and high launch cadence of Falcon 9 have made it an attractive option for deploying large constellations and individual satellites alike.

Rocket Lab's Electron has become a significant launch provider, particularly for Earth observation companies deploying smaller satellites. BlackSky has used Electron for multiple launches to build its constellation , and Spire Global also relies on Electron for deploying its satellites. This highlights the increasing role of small-lift launch vehicles in facilitating the growth of the LEO economy, especially for companies in the Earth observation and IoT sectors. Soyuz has been a significant launch vehicle for Globalstar's non-SSO constellation and for some of ICEYE's SSO deployments. Delta II was crucial for the initial Iridium constellation.

Determining Launch Vehicles Facilitating the Largest Proportion of Total LEO Satellite Services Revenue

Aggregating the estimated revenues and considering the launch vehicle utilization, SpaceX's Falcon 9 has facilitated the deployment of satellites that collectively generate the largest proportion of the total revenue from LEO-based satellite services. The massive Starlink constellation, launched almost entirely by Falcon 9, is the primary driver of this dominance. Additionally, the use of Falcon 9 by other high-revenue-generating companies like Iridium and its significant role in deploying Earth observation satellites further solidify its position.
However, Rocket Lab's Electron is playing an increasingly important role in enabling revenue generation for companies like BlackSky and Spire in the Earth observation sector. While their individual revenues might be smaller compared to Starlink, the collective economic value facilitated by Electron is substantial and growing.

Rideshare missions, often facilitated by launch vehicles like Falcon 9 and Electron, have become increasingly important for enabling smaller satellite operators to access LEO cost-effectively. This has allowed companies like Planet Labs and ICEYE to deploy and expand their constellations, contributing significantly to the overall economic value generated in LEO.

Launch Vehicles and Their Deployed Revenue-Generating Satellites by LEO Orbit Type (Estimates for Satellites Launched by End of 2024)

LEO Orbit Type	Launch Vehicle(s)	Estimated Number of Deployed Satellites	Total Estimated Revenue Generated by These Satellites (USD)
SSO (98° incl., 9:30-11:30 am LTAN)	Antares, Soyuz, Dnepr, Falcon 9, PSLV, Vega, H-IIB, Atlas V, Electron	~200+	Data for 2024 not readily available (Planet Labs)
SSO (97.7° incl., Varied LTAN)	Falcon 9, Soyuz, Electron	~20+	Data for 2024 not readily available (ICEYE)
SSO (Various incl.)	Rocket Lab Electron, Falcon 9, others	~20+ (BlackSky), ~90+ (Spire Global)	$102.1 million (BlackSky), $110.5 million (Spire Global)
Non-SSO (53° incl.)	Falcon 9	~7000+	~$8.2 billion (Starlink)
Non-SSO (52° incl.)	Soyuz, Delta, Thor, Zenit	~40+	Data for 2024 not readily available (Globalstar)
Non-SSO (86.4° incl.)	Falcon 9, Delta II, Proton-K, Rokot, Long March	~80+	Data for 2024 not readily available (Iridium)
Non-SSO (Various incl.)	Rocket Lab Electron, others	~90+ (Spire Global)	$110.5 million (Total Spire Global)

Conclusion: Key Findings on LEO Economic Value and the Influence of Launch Vehicles

The analysis reveals a dynamic and rapidly growing LEO economy, with significant economic value being generated across various orbit types. Non-SSO orbits, particularly those utilized by large communication constellations like Starlink, currently lead in terms of revenue generation. However, SSO orbits are crucial for the burgeoning Earth observation sector, with companies like Planet Labs, ICEYE, BlackSky, and Spire making substantial contributions.

SpaceX's Falcon 9 has emerged as the dominant launch vehicle facilitating the deployment of revenue-generating satellites in LEO. Its cost-effectiveness, reliability, and high launch cadence have made it the preferred choice for major players like Starlink and Iridium NEXT, and a significant enabler for smaller operators through rideshare programs. Rocket Lab's Electron is also playing a vital role, particularly for Earth observation companies, providing dedicated and rideshare launch options to SSO and other LEO orbits. Other launch vehicles, such as Soyuz, Delta II, and Electron, have also played important roles in deploying satellites for various services.

The long-term sustainability of the LEO economy necessitates addressing the increasing concerns about orbital debris. Responsible practices in satellite design, operation, and deorbiting are crucial for ensuring the continued accessibility and safety of this vital orbital region.

Recommendations

For Satellite Service Providers:

- Thoroughly evaluate the specific requirements of their services to determine the most economically viable LEO orbit type, considering factors such as coverage, latency, and data needs.
- Carefully assess the cost and reliability of different launch vehicle options, taking into account the scale of deployment and replenishment needs.
- Explore opportunities for strategic partnerships and collaborations to optimize orbit selection and launch strategies, potentially leveraging the cost benefits of rideshare programs.

For Launch Vehicle Companies:

- Continue to invest in and refine reusable launch technologies to maintain a competitive edge in terms of cost and frequency of launches, which are critical for the LEO market.
- Further develop and expand flexible and cost-effective rideshare programs to cater to the growing demand from small and medium-sized satellite operators.
- Maintain and enhance capabilities for launching to diverse orbit types, including SSO and various inclinations, to serve the broad spectrum of customer requirements in the LEO ecosystem.

Broader Implications:

The LEO economy is poised for continued growth, driven by technological advancements and increasing demand for a wide range of satellite-based services. This growth will have a significant impact on various sectors, including telecommunications, Earth observation, transportation, and national security. As LEO becomes more congested, sustainable practices, particularly regarding the mitigation of orbital debris, will be paramount to ensuring the long-term viability and safety of space operations for all stakeholders.

Comprehensive Table: Major Satellite Service Providers - Fleet, Deployment, and Revenue

Company	Primary Service Area	Key Satellite Constellations (Orbit Type)	Primary Launch Providers	Most Recent Annual Revenue (Year)
Intelsat	Communication	GEO Fleet	Delta, Atlas, Ariane, SpaceX, others	$1.99 Billion (2024)
Viasat	Communication	GEO Fleet, ViaSat-3 (GEO), Inmarsat (GEO)	SpaceX, ULA, Arianespace	$4.3 Billion (FY24)
Telesat	Communication	GEO Fleet, Lightspeed (LEO - Planned)	SpaceX, Proton, Ariane, others	$571 Million (2024)
Starlink (SpaceX)	Communication	Starlink (LEO)	SpaceX	~$8.2 Billion (2024 - Estimated)
Globalstar	Communication, Navigation	Globalstar (LEO)	Soyuz, Delta	Data for 2024 not readily available
Planet Labs	Earth Observation	PlanetScope, SkySat (LEO - SSO)	Various small satellite launchers, Rocket Lab Electron	Data for 2024 not readily available
Maxar Intelligence	Earth Observation	GEO Fleet, WorldView, GeoEye (LEO)	ULA, SpaceX, Ariane, others	Data for 2024 not readily available
ICEYE	Earth Observation	ICEYE Constellation (LEO - SSO)	Various small satellite launchers, Rocket Lab Electron	Data for 2024 not readily available
BlackSky	Earth Observation	BlackSky Constellation (LEO - Various)	Rocket Lab Electron, SpaceX	$102.1 Million (2024)
Spire Global	Earth Observation, Maritime, Aviation	Spire Constellation (LEO - Various)	Rocket Lab Electron, SpaceX, others	$110.5 Million (2024)
Inmarsat	Communication, Navigation	GEO Fleet	Ariane, Proton, Soyuz, others	(Acquired by Viasat)

Company	Primary Service Area	Key Satellite Constellations (Orbit Type)	Primary Launch Providers	Most Recent Annual Revenue (Year)
Iridium	Communication, Navigation	Iridium NEXT (LEO)	SpaceX, others	Data for 2024 not readily available

Works cited

[1] Starlink Faces New Rivals in Satellite Internet Market | Technology Magazine, https://technologymagazine.com/articles/starlink-faces-new-rivals-in-satellite-internet-market

[2] Commercial Satellite Launch Service Market Size & Share Report - 2032, https://www.gminsights.com/industry-analysis/commercial-satellite-launch-service-market

[3] Starlink - Wikipedia, https://en.wikipedia.org/wiki/Starlink

[4] Starlink satellites: Facts, tracking and impact on astronomy - Space, https://www.space.com/spacex-starlink-satellites.html

[5] Satellite Launch Market Growth: How Many Satellites Are Being Launched? - PatentPC, https://patentpc.com/blog/satellite-launch-market-growth-how-many-satellites-are-being-launched

[6] The Recent Large Reduction in Space Launch Cost - NASA Technical Reports Server, https://ntrs.nasa.gov/api/citations/20200001093/downloads/20200001093.pdf

[7] The Future Impact of Much Lower Launch Cost - NASA Technical Reports Server, https://ntrs.nasa.gov/api/citations/20200001091/downloads/20200001091.pdf

[8] The Economics of SpaceX Satellite Launches - TelecomWorld101.com, https://telecomworld101.com/economics-spacex-launches/

[9] Space launch market competition - Wikipedia, https://en.wikipedia.org/wiki/Space_launch_market_competition

[10] Space launch: Are we heading for oversupply or a shortfall? - McKinsey, https://www.mckinsey.com/industries/aerospace-and-defense/our-insights/space-launch-are-we-heading-for-oversupply-or-a-shortfall

[11] The Parameters Comparison of the “Starlink” LEO Satellites Constellation for Different Orbital Shells - Frontiers, https://www.frontiersin.org/journals/communications-and-networks/articles/10.3389/frcmn.2021.643095/full

[12] Planet - Flock Imaging Constellation - eoPortal, https://www.eoportal.org/satellite-missions/planet

[13] PlanetScope - ESA Earth Online, https://earth.esa.int/eogateway/missions/planetscope

[14] PlanetScope Product Specification - Planet Labs, https://assets.planet.com/docs/Planet_PSScene_Imagery_Product_Spec_June_2021.pdf

[15] Types of orbits - Sternula, https://www.sternula.com/types-of-orbits/

[16] Sun-synchronous orbit - Wikipedia, https://en.wikipedia.org/wiki/Sun-synchronous_orbit

[17] Planet | Insights - Our Constellations, https://www.planet.com/our-constellations/

[18] SkySat - Earth Online, https://earth.esa.int/eogateway/missions/skysat
[19] Planet Labs - Wikipedia, https://en.wikipedia.org/wiki/Planet_Labs
[20] PlanetScope Overview - Planet Developer Center, https://developers.planet.com/docs/data/planetscope/
[21] Introduction to the Planet Constellation of Satellites and Imagery - NASA Earthdata, https://www.earthdata.nasa.gov/s3fs-public/imported/PlanetNASABrownBag.pdf
[22] Introduction to the Planet Constellations of Satellites and Imagery, https://assets.planet.com/docs/Planet101-NASA_Goddard_Brown_Bag_Presentation.pdf
[23] PLANET IMAGERY PRODUCT SPECIFICATION - Netherlands Space Office, https://www.spaceoffice.nl/blobs/Dataportaal/Planet_Imagery_Product_Specs.pdf
[24] Combined Imagery Product Spec FINAL | December 2023 - Planet Labs, https://assets.planet.com/docs/Planet_Combined_Imagery_Product_Specs_letter_screen.pdf
[25] PLANET IMAGERY PRODUCT SPECIFICATIONS, https://assets.planet.com/docs/combined-imagery-product-spec-final-may-2019.pdf
[26] PLANET IMAGERY PRODUCT SPECIFICATIONS - ESA Earth Online, https://earth.esa.int/eogateway/documents/20142/37627/Planet-combined-imagery-product-specs-2020.pdf
[27] Flock 3s and 2 SkySats successfully Launch on Falcon 9 SSO-A - Planet Labs, https://www.planet.com/pulse/five-satellites-launch-on-falcon-9-sso-a/
[28] Overview of the Planet Labs Constellation of Earth Imaging Satellites - ITU, https://www.itu.int/en/ITU-R/space/workshops/2015-prague-small-sat/Presentations/Planet-Labs-Safyan.pdf
[29] Results from the Planet Labs Flock Constellation - DigitalCommons@USU, https://digitalcommons.usu.edu/cgi/viewcontent.cgi?article=3016&context=smallsat
[30] Commissioning the World's Largest Satellite Constellation - S3VI, https://s3vi.ndc.nasa.gov/ssri-kb/static/resources/Commissioning%20the%20World_s%20Largest%20Satellite%20Constellation.pdf
[31] System Characterization Report on Planet SkySat - USGS Publications Warehouse, https://pubs.usgs.gov/of/2021/1030/e/ofr20211030e.pdf
[32] List of orbital launch systems - Wikipedia, https://en.wikipedia.org/wiki/List_of_orbital_launch_systems
[33] Automated Fleet Commissioning Workflows at Planet - S3VI, https://s3vi.ndc.nasa.gov/ssri-kb/static/resources/Automated%20Fleet%20Commissioning%20Workflows%20at%20Planet.pdf
[34] Planet Launches First Tanager-1 Hyperspectral Satellite and 36 SuperDoves with SpaceX, https://www.planet.com/pulse/planet-launches-first-tanager-1-hyperspectral-satellite-and-36-superdoves-with-spacex/
[35] New Year, New Launches: 48 SuperDoves to Launch with SpaceX - Planet Labs, https://www.planet.com/pulse/new-year-new-launches-48-superdoves-to-launch-with-spacex/
[36] Planet Labs adds 10 imagery satellites to its flock - Federal Times, https://www.federaltimes.com/intel-geoint/2017/11/01/orbital-atk-rocket-launches-10-earth-imaging-satellites-into-space/?contentFeatureId=f0fmoahPVC2AbfL-2-1-8&amp=true&contentQuery=%7B%22includeSections%22%3A%22%2Fhome%22%2C%22excludeSections%22%3A%22%22%2C%22feedSize%22%3A10%2C%22feedOffset%22%3A575

%7D
[37] Successful Launch of Flock 4e' on Rocket Lab's Electron - Planet Labs, https://www.planet.com/pulse/successful-launch-of-flock-4e-on-rocket-labs-electron/
[38] Planet Labs - Satellite Constellation - NewSpace Index, https://www.newspace.im/constellations/planet-labs
[39] Rocket Lab and Planet Sign Launch Services Agreement, https://www.rocketlabusa.com/updates/rocket-lab-and-planet-sign-launch-services-agreement/
[40] The ICEYE Fleet - ICEYE Product Documentation, https://sar.iceye.com/5.0/productguide/fleet/
[41] ICEYE - Earth Online, https://earth.esa.int/eogateway/missions/iceye
[42] ICEYE Microsatellites Constellation - eoPortal, https://www.eoportal.org/satellite-missions/iceye-constellation
[43] ICEYE Satellite Mission Summary | CEOS Database, https://database.eohandbook.com/database/missionsummary.aspx?missionID=991
[44] ICEYE constellation - Belgian Platform on Earth Observation, https://eo.belspo.be/en/satellites-and-sensors/iceye-constellation
[45] ICEYE expands its Earth Observation capabilities with launch of two SAR satellites for mid-inclination orbit on the Bandwagon-2 mission with SpaceX, https://www.iceye.com/newsroom/press-releases/iceye-expands-its-earth-observation-capabilities-with-launch-of-two-sar-satellites-for-mid-inclination-orbit-on-the-bandwagon-2-mission-with-spacex
[46] iceye microsatellite sar constellation status update - arXiv, https://arxiv.org/pdf/2102.04545
[47] 1. Introduction - ICEYE Product Documentation, https://sar.iceye.com/6.0.0/productspecification/introduction/
[48] Actionable intelligence through Earth Observation - Iceye, https://www.iceye.com/hubfs/ICEYE_PressKit.pdf
[49] Satellite: ICEYE - WMO OSCAR, https://space.oscar.wmo.int/satellites/view/iceye
[50] LEVEL 1 PRODUCT FORMAT SPECIFICATION DOCUMENT - ESA Earth Online, https://earth.esa.int/eogateway/documents/20142/37627/ICEYE-Level-1-Product-Specifications.pdf
[51] Satellite data | ICEYE, https://www.iceye.com/satellite-data
[52] ICEYE-X2 SAR Satellite to Be Launched on Upcoming Spaceflight SSO-A, https://www.iceye.com/newsroom/press-releases/iceye-x2-sar-satellite-to-be-launched-on-spaceflight-sso-a
[53] Synthetic Aperture Radars (SAR) at ESA – Status and Future Plans - Caltech, https://www.workshop.caltech.edu/SpaceborneSAR/presentations/Borgeaud.pdf
[54] Global Surface Intelligence • ICEYE • Mission Microwave • Momentus - SatMagazine, http://www.satmagazine.com/story.php?number=2121109321
[55] Synchronous high revisit mixed sen- sor constellation: architectural de- sign optimisation and trade-offs for emergency response - POLITesi - Politecnico di Milano, https://www.politesi.polimi.it/retrieve/be4857ba-0f3b-4261-9dd3-fa32c75eddcd/2023_05_Catalano_Thesis_01.pdf
[56] Precision Farming and Sustainability: Optimisation of a Radar Microsatellites Constellation for Italian Agriculture - POLITesi - Politecnico di Milano, https://www.politesi.polimi.it/retrieve/9d547c7a-d113-4b56-aa69-d83fbe106976/ThesisSartorettoV.pdf

[57] ICEYE-X1 (SAR Microsatellite-X1) - eoPortal, https://www.eoportal.org/satellite-missions/iceye-x1
[58] EXHIBIT B: TECHNICAL ANNEX I. Introduction and Background Please see Section I of the Narrative Statement. II. System Faciliti - FCC Report, https://fcc.report/IBFS/SAT-LOA-20210212-00021/3872375.pdf
[59] DA-23-797A1.txt - Federal Communications Commission, https://docs.fcc.gov/public/attachments/DA-23-797A1.txt
[60] ICEYE launches four new satellites into orbit, expanding its own constellation and serving customer missions - PR Newswire, https://www.prnewswire.com/news-releases/iceye-launches-four-new-satellites-into-orbit-expanding-its-own-constellation-and-serving-customer-missions-302224708.html
[61] ICEYE X4, X6 and X7 Quality Assessment Summary, https://earth.esa.int/eogateway/documents/20142/37627/Technical%20Note%20on%20Quality%20Assessment%20for%20ICEYE%20X4%2C%20X6%20%26%20X7.pdf
[62] Globalstar Satellite Network, https://satellitephonestore.com/globalstar-satellite-network
[63] Globalstar Communication Satellite - Airport Technology, https://www.airport-technology.com/projects/globalstar/
[64] ICEYE - Wikipedia, https://en.wikipedia.org/wiki/ICEYE
[65] BlackSky - UP42 API, https://docs.up42.com/data/datasets/blacksky
[66] Details for Satellite Programme: BlackSky - WMO OSCAR, https://space.oscar.wmo.int/satelliteprogrammes/view/blacksky
[67] System Characterization Report on the BlackSky Global Multispectral Sensor - USGS Publications Warehouse, https://pubs.usgs.gov/of/2021/1030/o/ofr20211030o.pdf
[68] Spire Satellites & Orbits - FAQ, https://faq.spire.com/spire-satellites-orbits
[69] satellite technology - Starlink |, https://www.starlink.com/satellites/
[70] Technology - Starlink, https://www.starlink.com/technology
[71] Starlink Protocol Performance - IETF, https://www.ietf.org/slides/slides-iepg-starlink-protocol-performance-00.pdf
[72] Signal Structure of the Starlink Ku-Band Downlink - University of Texas at Austin, https://radionavlab.ae.utexas.edu/wp-content/uploads/starlink_structure.pdf
[73] Telesat Lightspeed LEO Network | Telesat, https://www.telesat.com/leo-satellites/
[74] D1. Coexistence with existing systems To provide reassurance that the quality of service of existing UK services will not be adv - Ofcom, https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-3-4-weeks/239369-telesat-ngso-application/associated-documents/secondary-documents/telsat-net-1-annex.pdf?v=328116
[75] Telesat Lightspeed: enabling mesh network solutions for managed data service flexibility across the globe - Journal of Medical Imaging - SPIE Digital Library, https://medicalimaging.spiedigitallibrary.org/conference-proceedings-of-spie/12413/1241307/Telesat-Lightspeed--enabling-mesh-network-solutions-for-managed-data/10.1117/12.2646211.full
[76] Telesat Lightspeed Constellation, https://www.nist.gov/document/erwin-hudson-telesat-lightspeed
[77] Telesat-Lightspeed - eoPortal, https://www.eoportal.org/satellite-missions/telesat-lightspeed
[78] telesat low earth orbit non-geostationary satellite system - FCC Report, https://fcc.report/IBFS/SAT-PPL-20211104-00138/13337277.pdf

[79] Telesat Lightspeed Technology Infographic, https://www.telesat.com/wp-content/uploads/2021/04/Telesat-Lightspeed-Technology-Infographic.pdf
[80] Telesat looks to augment its Lightspeed constellation with an additional 1373 satellites, https://spaceq.ca/telesat-looks-to-augment-its-lightspeed-constellation-with-an-additional-1373-satellites/
[81] Telesat Taps SpaceX for Launches of its Next-Gen Lightspeed Constellation, https://www.bcsatellite.net/blog/telesat-taps-spacex-for-launches-of-its-next-gen-lightspeed-constellation/
[82] Before the FEDERAL COMMUNICATIONS COMMISSION Washington, D.C. 20554 In the Matter of Telesat Canada Application to Modify Peti - FCC Report, https://fcc.report/IBFS/SAT-MPL-20200526-00053/2378318.pdf
[83] An Updated Comparison of Four Low Earth Orbit Satellite Constellation Systems to Provide Global Broadband, http://systemarchitect.mit.edu/docs/pachler21a.pdf
[84] PUBLIC NOTICE - Federal Communications Commission, https://docs.fcc.gov/public/attachments/DOC-383276A1.pdf
[85] Telesat - Wikipedia, https://en.wikipedia.org/wiki/Telesat
[86] Can Telesat's new LEO fleet muscle in on the Edge? - DCD - Data Center Dynamics, https://www.datacenterdynamics.com/en/analysis/can-telesats-new-leo-fleet-muscle-in-on-the-edge/
[87] Doing global good: LEO satellites bring speed & capacity to human welfare initiatives, https://www.telesat.com/blog/doing-global-good-leo-satellites-bring-speed-capacity-to-human-welfare-initiatives/
[88] Telesat Lightspeed Satellite Specifications Sheet - NASA Spaceflight Forum, https://forum.nasaspaceflight.com/index.php?action=dlattach;topic=44033.0;attach=2011504;sess=0
[89] Our Technology | Globalstar | US, https://www.globalstar.com/en-us/about/our-technology
[90] Globalstar - Wikipedia, https://en.wikipedia.org/wiki/Globalstar
[91] Program: Globalstar, http://weebau.com/satellite/G/globalstar.htm
[92] Parsons and Globalstar Announce Partnership, Demonstrate First Software Defined Satellite Communication Solutions in Low Earth Orbit - Business Wire, https://www.businesswire.com/news/home/20241203082409/en/Parsons-and-Globalstar-Announce-Partnership-Demonstrate-First-Software-Defined-Satellite-Communication-Solutions-in-Low-Earth-Orbit
[93] Attitude and Orbit Control System Design for the Globalstar Telecommunications Satellite, https://www.researchgate.net/publication/318286556_Attitude_and_Orbit_Control_System_Design_for_the_Globalstar_Telecommunications_Satellite
[94] 17256 EFFICIENT MISSION CONTROL FOR THE 48-SATELLITE GLOBALSTAR CONSTELLATION - NASA Technical Reports Server, https://ntrs.nasa.gov/api/citations/19950010841/downloads/19950010841.pdf
[95] Globalstar satellites - N2YO.com, https://www.n2yo.com/satellites/?c=17
[96] TSAT Globalstar ELaNa-5 Extremely Low-Earth Orbit (ELEO) Satellite - DigitalCommons@USU, https://digitalcommons.usu.edu/cgi/viewcontent.cgi?article=3005&context=smallsat

[97] The Globalstar mobile satellite system for worldwide personal communications - NASA Technical Reports Server (NTRS), https://ntrs.nasa.gov/citations/19940018313
[98] Globalstar Spectrum Holdings, https://www.globalstar.com/getmedia/2074cb2d-9b19-430c-b16f-50467cbd3309/globalstaroverviewpresentation.pdf
[99] Network | Iridium Satellite Communications, https://www.iridium.com/network/
[100] The Iridium Satellite Network | Telsoc, https://telsoc.org/journal/jtde-v10-n1/a557
[101] Iridium satellite constellation - Wikipedia, https://en.wikipedia.org/wiki/Iridium_satellite_constellation
[102] Iridium Satellite Services and Coverage Map - AST Networks, https://ast-networks.com/services/iridium/
[103] surveys - an operational and performance overview of the iridium low earth orbit satellite system, https://tele.agh.edu.pl/~kulakowski/satelity/Iridium-Leo.pdf
[104] Iridium Satellite Network - Sat Constellation & Service Plans, https://satellitephonestore.com/iridium-satellite-network
[105] The IRIDIUM® System - CLS Telemetry, https://telemetry.groupcls.com/iridium-solutions/the-iridium-system/
[106] Iridium NEXT - eoPortal, https://www.eoportal.org/satellite-missions/iridium-next
[107] Iridium Satellite System Operation, https://apollosat.com/iridium-satellite-frequency-bands/
[108] Iridium NEXT SensorPODs: Global Access for Your Scientific Payloads - DigitalCommons@USU, https://digitalcommons.usu.edu/cgi/viewcontent.cgi?article=1130&context=smallsat
[109] Parameters of iridium satellite constellation [24]. | Download Table - ResearchGate, https://www.researchgate.net/figure/Parameters-of-iridium-satellite-constellation-24_tbl1_220099408
[110] Draft ICAO TECHNICAL SPECIFICATION FOR AERONAUTICAL MOBILE SATELLITE (ROUTE) SERVICE (AMS(R)S, https://www.icao.int/safety/acp/inactive%20working%20groups%20library/acp-wg-m-iridium-1/ird-swg01-wp05-draft%20iridium%20ams(r)s%20tech%20manual%20092005.pdf
[111] ICAO TECHNICAL MANUAL FOR IRIDIUM AERONAUTICAL MOBILE SATELLITE (ROUTE) SERVICE DRAFT v1.1 19 May, https://www.icao.int/safety/acp/ACPWGF/ACP-WG-M-11/ACP-WGM11-WP04-Draft%20Iridium%20Technical%20Specification%20Version%201.1%20-%20051906.pdf
[112] Earnings call transcript: BlackSky Technology Q4 2024 sees stock fall amid revenue growth, https://www.investing.com/news/transcripts/earnings-call-transcript-blacksky-technology-q4-2024-sees-stock-fall-amid-revenue-growth-93CH-3912636
[113] BlackSky Technology Inc. Annual report [Section 13 and 15(d), not S-K Item 405], https://ir.blacksky.com/sec-filings/all-sec-filings/xbrl_doc_only/2191
[114] Earnings call transcript: Spire Global's Q4 2024 revenue climbs 13% YoY - Investing.com, https://www.investing.com/news/transcripts/earnings-call-transcript-spire-globals-q4-2024-revenue-climbs-13-yoy-93CH-3958865
[115] Spire Global (SPIR) - Revenue - Companies Market Cap, https://companiesmarketcap.com/spire-global/revenue/
[116] It's Official. Starlink Is SpaceX's Biggest Money-Maker Now. | The Motley Fool, https://www.fool.com/investing/2025/02/10/its-official-starlink-is-spacexs-biggest-money-

mak/
[117] Estimating SpaceX's 2024 Revenue - Payload, https://payloadspace.com/estimating-spacexs-2024-revenue/
[118] SpaceX's 2024 revenue was $13.1B with Starlink providing $8.2B of that, per the Payload newsletter. Includes multiple breakdowns of launch numbers and revenues, etc. : r/SpaceXLounge - Reddit, https://www.reddit.com/r/SpaceXLounge/comments/1idwvic/spacexs_2024_revenue_was_131b_with_starlink/
[119] SpaceX revenue, valuation & growth rate - Sacra, https://sacra.com/c/spacex/
[120] Top Companies in Satellite Communication Industry - Intelsat (US) and Viasat Inc, (US) - MarketsandMarkets, https://www.marketsandmarkets.com/ResearchInsight/satellite-communication-market.asp
[121] List of Starlink and Starshield launches - Wikipedia, https://en.wikipedia.org/wiki/List_of_Starlink_and_Starshield_launches
[122] Launch Schedule [Series: SpaceX Starlink] - RocketLaunch.Live, https://www.rocketlaunch.live/?tag=series-spacex-starlink
[123] ICEYE LEO satellite constellation - Skybrokers, https://sky-brokers.com/satellite/iceye-leo-satellite-constellation/
[124] ICEYE launches four new satellites and introduces its new Generation 4 satellite, https://www.iceye.com/newsroom/press-releases/iceye-launches-four-new-satellites-and-introduces-its-new-generation-4-satellite
[125] ICEYE Launches First 4th Generation Satellite - Militarnyi, https://mil.in.ua/en/news/iceye-launches-first-4th-generation-satellite/
[126] ICEYE (ICEYE) - FutureSpaceFlight, https://www.futurespaceflight.com/satellites/iceye.html
[127] Track ICEYE-X14 (NORAD ID: 51070) live with Satcat, https://www.satcat.com/sats/51070
[128] ICEYE Establishes World's Top-Performing Persistent Monitoring Satellite Capabilities with Three New SAR Spacecraft Successfully Launched, https://www.iceye.com/newsroom/press-releases/iceye-establishes-worlds-top-performing-persistent-monitoring-satellite-capabilities-with-three-new-sar-spacecraft-successfully-launched
[129] ICEYE launches four New SAR satellites, expanding world's largest constellation, https://defence-industry.eu/iceye-launches-four-new-sar-satellites-expanding-worlds-largest-constellation/
[130] Rocket Lab Successfully Launches 60th Electron, First of Multiple ..., https://www.rocketlabusa.com/updates/rocket-lab-successfully-launches-60th-electron-first-of-multiple-missions-for-blacksky/
[131] 60th Electron Rocket Launch More Good News for Rocket Lab - SPACE & DEFENSE, https://spaceanddefense.io/60th-electron-rocket-launch-more-good-news-for-rocket-lab/
[132] Rocket Lab Launches Latest Electron Rocket - Los Angeles Business Journal, https://labusinessjournal.com/manufacturing/rocket-lab-launches-latest-electron-rocket/
[133] List of Electron launches - Wikipedia, https://en.wikipedia.org/wiki/List_of_Electron_launches
[134] www.astronautix.com, http://www.astronautix.com/g/globalstar.html#:~:text=Spacecraft%3A%20Globalstar.,LC3

1%2C%20Baikonur%20LC45%2F1.
[135] Launch Vehicles - National Reconnaissance Office, https://www.nro.gov/Launches/Launch-Vehicles/
[136] Globalstar, http://www.astronautix.com/g/globalstar.html
[137] Globalstar-2 missions - RussianSpaceWeb.com, https://www.russianspaceweb.com/globalstar2.html
[138] Globalstar Announces Successful Third Launch of Six New Second-Generation Satellites, https://globalcomsatphone.com/globalststar-announces-successfull-third-launch/
[139] Globalstar Announces Launch Schedule for New Satellites, https://globalcomsatphone.com/globalstar-announces-launch-schedule/
[140] SOYUZ TO LAUNCH GLOBALSTAR - starsem, https://www.starsem.com/news/images/Globalstar_launch_kit.pdf
[141] en.wikipedia.org, https://en.wikipedia.org/wiki/Iridium_satellite_constellation#:~:text=SpaceX%20was%20contracted%20to%20launch,first%20ten%20Iridium%20NEXT%20satellites.
[142] Timeline | Iridium Museum, https://www.iridiummuseum.com/timeline/
[143] Iridium Communications - Wikipedia, https://en.wikipedia.org/wiki/Iridium_Communications
[144] Iridium Adds to Constellation Resilience with Launch of Spare Satellites - May 20, 2023, https://investor.iridium.com/2023-05-20-Iridium-Adds-to-Constellation-Resilience-with-Launch-of-Spare-Satellites
[145] Iridium Announces Ninth SpaceX Launch - Sep 8, 2022, https://investor.iridium.com/2022-09-08-Iridium-Announces-Ninth-SpaceX-Launch
[146] Relativity books up to six launches for Iridium, reveals plans for Vandenberg pad, https://spaceflightnow.com/2020/06/24/relativity-books-up-to-six-launches-for-iridium-announces-plans-for-vandenberg-pad/
[147] Iridium 153 - Spacecraft - the NSSDCA, https://nssdc.gsfc.nasa.gov/nmc/spacecraft/display.action?id=2017-083J
[148] T-Minus 10 Years To First Launch | Iridium Museum, https://www.iridiummuseum.com/exhibits/t-minus-10-years-to-first-launch/
[149] Telesat and SpaceX Announce 14-Launch Agreement for Advanced Telesat Lightspeed LEO Satellites, https://www.telesat.com/press/press-releases/telesat-and-spacex-announce-14-launch-agreement-for-advanced-telesat-lightspeed-leo-satellites/
[150] Telesat inks deal to use SpaceX rockets for Lightspeed launch - Ottawa Business Journal, https://obj.ca/telesat-to-use-space-x-rockets-for-lightspeed-launch/
[151] Space Flight Laboratory Selects Rocket Lab to Launch Telesat Broadband Satellite, https://www.rocketlabusa.com/updates/space-flight-laboratory-selects-rocket-lab-to-launch-telesat-broadband-satellite/
[152] What is Telesat's Lightspeed Constellation? | HighSpeedInternet.com, https://www.highspeedinternet.com/resources/telesat-lightspeed
[153] Telesat fully funds Lightspeed, eyes 2027 for global service - Runway Girl, https://runwaygirlnetwork.com/2024/09/telesat-fully-funds-lightspeed-eyes-2027-for-global-service/
[154] Telesat Begins Deploying Its Global Low Earth Orbit (LEO) Constellation with Successful Launch of Phase 1 Satellite,

https://www.telesat.com/press/press-releases/telesat-begins-deploying-its-global-low-earth-orbit-leo-constellation-with-successful-launch-of-phase-1-satellite/
[155] ViaSat-3 - Wikipedia, https://en.wikipedia.org/wiki/ViaSat-3
[156] Viasat and Rocket Lab Partner to Showcase On-Demand, Low-Latency Data Relay Services for LEO Satellites, https://www.viasat.com/news/latest-news/government/2023/viasat-and-rocket-lab-partner-to-showcase-on-demand-low-latency-data-relay-services-for-leo-satellites/
[157] Viasat and Rocket Lab Partner to Showcase On-Demand, Low-Latency Data Relay Services for LEO Satellites - PR Newswire, https://www.prnewswire.com/news-releases/viasat-and-rocket-lab-partner-to-showcase-on-demand-low-latency-data-relay-services-for-leo-satellites-302082257.html
[158] Viasat and Rocket Lab Team Up on NASA Comms Demo - Payload Space, https://payloadspace.com/viasat-and-rocket-lab-team-up-on-nasa-comms-demo/