ESPI
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ESPI Insights

Space Sector Watch

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THIS MONTH IN THE SPACE SECTOR...

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Director's Perspective

ESPI European Space Policy Institute

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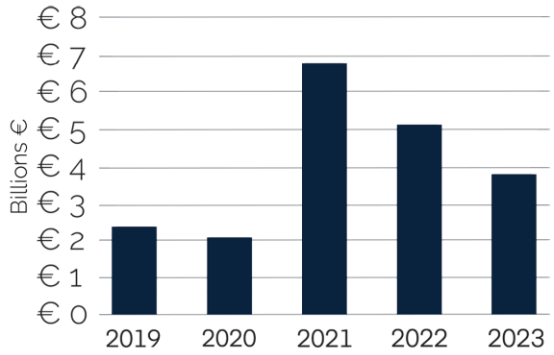
VENTURE CAPITAL FINANCING GAP: TOWARDS A EUROPEAN SPACE INVESTMENT FUND?

In the transformative landscape of the space sector, venture capital has been a fundamental part of the fundraising ecosystem across the start-up's investment cycle. Accordingly, VC has been the largest source of private financing for the development of the European NewSpace ecosystem, accounting for roughly 76% of the total private financing for the development of Europe's NewSpace ecosystem since 2019.



VC Global Investment in NewSpace

Yet, by 2022, shifts in the macroeconomic landscape have concluded the period of low interest rates. The European Central Bank significantly raised the central borrowing rate from an initial 0.5% in July 2022 to a peak of 4.5% by February 2024. This surge in interest rates has led to a preference for safer investments, causing the venture capital and private equity sectors to face capital withdrawals and adopt a more conservative investment stance. Globally, according to **ESPI's Space Venture report, to be released in April**, the impact of interest rate shifts is evident with a 25% year-on-year decrease in investment and a 44% fall from its peak in 2021. While Europe may not have experienced this impact just yet, the number of deals indicating the space sector's activity, has reverted to pre-2021 levels. This transition indicates a period of introspection and recalibration for investors, who increasingly scrutinise the sustainability and long-term viability of their portfolios amid growing market volatilities and geopolitical uncertainties.

Venture capital, while a catalyst for breakthroughs and rapid scale-ups, inherently gravitates towards ventures with clear exit strategies within 5 to 7 years, often sidelining long-term or uncertain projects. Space projects, with their extended timelines, substantial initial capital requirements, and complex regulatory landscapes, frequently fall into this latter category. The gap between venture capitalists' profit goals and the long-term nature of space projects, compounded by less available high-risk capital in a **high-interest environment, threatens to slow the space sector's progress, at a time when scale-up is needed.**

Facing these challenges, it is essential to diversify and strengthen the funding landscape and develop new policy measures. Space financing should include various models to align innovative projects with the evolving preference for debt over equity in the capital market. As concluded in our latest report, **Bridging the Financing Gap in the European Space Sector: Alternative Funding Pathways in Tightening Markets, set key actions for Space Agencies and public actors in the European Space Sector:**

Diversify Financial Instruments: The introduction of Strategic Investment Funds (SIFs) and the leverage of Public-Private Partnership (PPP) models stand out as some of the most adequate ways to attract funding. These instruments, with their capacity for 'patient' capital, offer a lifeline to projects of strategic significance, allowing them the runway to mature and prove their market resilience.

Engage Strategic Corporate Investors: The inclusion of corporate venture arms in the investment mix introduces a layer of industry-specific insight and strategic alignment, enriching the ecosystem with partnerships that transcend mere financial transactions. These collaborations could unlock synergies between space technology developers and established industry players in different sectors of the economy, fostering innovation that resonates with market needs.

Standardise Investment Pathways: Integrating a model akin to the pharmaceutical industry's clinical trials, the space sector could standardise the evaluation of technological maturity against investment milestones, or example through the use of the Technology Readiness Level (TRL) scale. TRL-6 could mark an important milestone as a public partner within a PPP may pivot from its role of early-stage technology risk absorption to first anchor tenant. This method would not only streamline the investment process but also align stakeholder expectations, signaling commercial viability and thus facilitating sharper funding strategies.

PPP Unified Effort: The role of government sponsorship and procurement in providing 'patient' capital against clear policy goals is crucial. **A joint European Space Investment Fund**, inspired by models such as the U.S. Department of Defence's Office of Strategic Capital (OSC), could serve as a cornerstone for policy-guided strategic investments, marrying public objectives with private dynamism.

On our part, **ESPI commits to** advancing the space sector's financial ecosystem through **detailed policy and finance studies on mechanisms** like Public-Private Partnerships and Public Infrastructure Funds, **facilitating community building among space and financial stakeholders**, and **aligning investor ESG goals with space services' objectives and capabilities.** As the space sector enters a new phase, matching investment strategies with current market conditions and investor expectations is crucial. Budget constraints have intensified, with global military spending on space rising from $42.6 billion to $52.8 billion due to the Russian invasion of Ukraine, whereas civilian space budgets saw a modest increase from $60.3 billion to $64.8 billion between 2021 and 2022. This scenario underscores the need for a united and strategic approach to overcome the challenges posed by shifting capital market dynamics. By adopting these strategies, the European space sector can successfully tackle the current financial complexities, securing a dynamic and forward-looking future for space endeavours in response to European space policy objectives.

Yours sincerely,

Hermann Ludwig Moeller
Director of ESPI

POLICY & PROGRAMMES

Recent developments at SatCen

On March 14, 2024, **SatCen and the European Defence Agency signed a bilateral agreement to enhance the Maritime Surveillance (MARSUR) project**, aiming to strengthen EU maritime security through improved data exchange and satellite imagery analysis.

Following this, on March 18th, the **EU Commission announced plans to enhance the SatCen amid increasing global security concerns**. Following strategic directives outlined in August 2023's Strategic Compass, a board meeting in Madrid set SatCen's development trajectory, emphasising the EU's commitment to boosting its independent geospatial intelligence. This initiative may involve additional funding from member states, building on past voluntary contributions.

Credit: SatCen

In related news, the SatCen Board announced on March 15th, the appointment of Captain (Navy) **Louis Tillier as the new Director** effective June 1, 2024, succeeding the centre's current director Sorin Ducaru.

ESA initiates innovative navigation solutions: Genesis and LEO-PNT

On March 18, 2024, **ESA launched the Genesis and LEO-PNT projects under the FutureNAV programme with a €233M investment**, aiming to elevate satellite navigation precision. Genesis, managed by OHB Italia S.p.A. with a €76.6 million budget, targets a 2028 launch to enhance Earth measurement accuracy to 1 mm. LEO-PNT, a demonstration project involving over 50 entities and budgeted at €156.8 million, plans its first satellite launch within 20 months to improve positioning, navigation and timing via assets in low Earth orbit, with full operational capability of the demonstration expected by 2027. These missions hope to reinforce Europe's leading role in global satellite PNT advancements.

EDF 2024 Work Programme targets innovation in space

The European Defence Fund has unveiled its 2024 work programme, dedicating a part of its €1.1 B annual budget to spearhead advancements in space technologies. Set to commence in June with submissions closing on November 5, 2024, the programme highlights the EU's commitment to enhancing its strategic autonomy and defence capabilities through cutting-edge space initiatives. Among the various focus areas, the EDF earmarks over €40 million for disruptive technologies and €67 million to support Small and Medium Enterprises (SMEs), demonstrating its dedication to fostering innovation across the European defence industry.

EU and US reach agreement for Gallileo satellite launches

The **EU has agreed with the U.S. to launch four Galileo satellites using SpaceX's Falcon 9.** This deal gives EU and ESA staff access to the launch site and prioritises them for debris recovery. The satellites will launch from the U.S., a first for Galileo missions. Due to challenges with Ariane 6 and ending launches with Russia, the **EU chose SpaceX, paying €180M for the service**. This move aims to ensure continuous satellite navigation services and prepare for Ariane 6's future launches.

UK unveils Space Industrial Plan to "become a science and tech superpower by 2030"

The **UK government has introduced a Space Industrial Plan** aiming to elevate its space technology sector as part of a broader ambition to become a science and tech superpower by 2030. The plan, leveraging the National Space Strategy, targets enhancing investment and innovation in the space industry. Key initiatives include **encouraging private investments with a focus on making London a global finance hub for space,** regulatory reforms to streamline processes and promote sustainable growth, and increasing the space sector workforce through skills training and diversity initiatives. Additionally, public funding has been allocated to six space tech projects, with notable support for the SaxaVord Spaceport in Shetland.

The strategy outlines **five critical areas for leadership**: Space Domain Awareness, in-orbit services, space data applications, navigation and timing, and satellite communication technology. By focusing on these strategic capabilities, the plan aims to drive innovation, ensure operational independence, and guide efficient resource allocation, marking a significant step towards the UK's 2030 space and technology goals.

EUMETSAT and China Meteorological Administration extend cooperation

EUMETSAT and the China Meteorological Administration (CMA) have renewed their cooperation agreement for another five years in Beijing on 25 March 2024. This extension, signed by CMA Administrator Zhenlin Chen and EUMETSAT Director-General Phil Evans, continues the partnership that began in 1998, focusing on data application, exchange, and redistribution. The agreement allows EUMETSAT data users access to CMA's geostationary and polar-orbiting satellite observations, following EUMETSAT Council's approval in July 2023.

Credit: Eumetsat

France leads multinational space defence military exercise

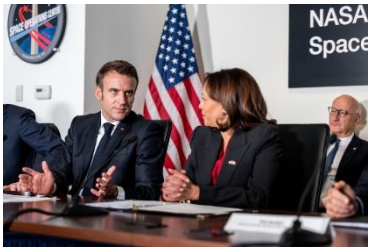
Credit: Armée de l'air et de l'espace

From March 4th to 15th, the French Space Command took the lead, **alongside 15 other nations, in conducting the AsterX 2024 military exercise aimed at countering space threats**. This initiative underscored a collective effort to enhance space defence readiness and improve operational capabilities amidst evolving challenges. The essence of AsterX 2024 was to provide the CDE (Commandement de l'Espace) with intensive training within a realistic, simulated space environment, aimed at confronting a variety of emerging threats. The exercise was characterised by a hypothetical geopolitical narrative that spanned multiple threats associated with space warfare, incorporating simulated space conditions and ground-based surveillance systems. The countries participating included Australia, Austria, Belgium, Canada, Germany, Italy, Japan, South Korea, Spain, Poland, Portugal, Romania, the United Arab Emirates, the United Kingdom, the U.S., along with representatives from the NATO Cooperative Cyber Defence Centre of Excellence. Hosted in Toulouse, the event brought together 140 participants and 30 international observers.

French government invests €400M in launch start-ups

At the end of March, the French government anticipated **the investment in the maiden flights of rockets developed by four of the nation's launch startups**. The selected startups, including HyPrSpace, Latitude, Sirius Space Services, and MaiaSpace (an ArianeGroup subsidiary), are set to receive a total of €400M in through the France 2030 initiative in return for future launch services. HyPrSpace and Latitude are developing smaller launchers capable of carrying 100 to 200 kilograms to LEO, Sirius Space Services is developing launchers with a payload capacity ranging from 175 to 1,100 kilograms. Lastly, MaiaSpace's Maia rocket, will have a potential payload of up to three tonnes in its configuration. Under the agreement, each company will receive an initial payment to secure flights, with the bulk of the funding contingent on successful maiden flights between 2026 and 2028.

U.S.-France Comprehensive Dialogue on Space



Credit: NASA

On March 20th and 21st, the Governments of the U.S. and France jointly released a statement following the **second meeting of the U.S.-France Comprehensive Dialogue on Space**, convened in Washington, D.C. Co-chaired by representatives from both nations, including executive offices and ministries, the dialogue is a testament to their mutual commitment to advancing bilateral space cooperation, initiated by U.S. Vice President Kamala Harris and French President Emmanuel Macron in November 2021. Both parties affirmed:

- Dedication to strengthening cooperation in tackling climate change.
- Bilateral collaboration on national security space capabilities.
- Joint endeavours in space exploration and scientific research.
- Efforts to establish a secure and transparent environment for commercial space ventures.
- Multilateral cooperation through the United Nations.
- Commitments to space debris mitigation and long-term sustainability.

The next meeting is scheduled to take place in Paris, reflecting a continued commitment to nurturing cooperative relations across governmental entities in both nations.

Italy's Fucino Space Centre to host EU's IRIS² control hub


Credit: Telespazio

On March 4th, Italy's Enterprises and Made in Italy Minister, Adolfo Urso, announced that **the Fucino Space Centre in Italy will become the primary control site for the EU's IRIS² satellite constellation**. Owned by Telespazio, with joint control by Leonardo and Thales, the Fucino site is crucial for national security operations. Urso highlighted the significant economic impact of this development, with a €50M investment and the creation of 200 new jobs. The European Commission is expected to formalise the deal soon, with additional control hubs planned for Toulouse, France, and Luxembourg.

Latest developments in Saudi Arabia

The UK and Saudi Arabia have **agreed to expand their collaboration in various tech sectors including healthcare, climate change mitigation, and space technology**. This partnership, underscored by a deal signed by UK Science Minister Andrew Griffith and Saudi Minister Abdullah Alswaha, aims to leverage Saudi Arabia's Vision 2030 for economic diversification with significant investments in clean energy and innovation. The collaboration will feature regular meetings between key decision-makers and researchers from both countries, starting later this year, to foster joint ventures in space and other innovative technologies.

Saudi Arabia is launching a national space strategy, focusing on space exploration and the development of space telecommunications, navigation, and earth observation among other objectives. This move aligns with efforts to empower women in tech, where Saudi Arabia has seen substantial progress, and boost the kingdom's digital economy, which is reportedly growing at three times the global average.

Morocco enhances surveillance capabilities with Israeli Satellite Deal

Morocco ordered two advanced Ofek-13-type surveillance satellites from Israel, in view to supplement its existing Mohammed VI/A and Mohammed VI/B satellites, with the aim to improve security and intelligence efforts within the country. The Ofek-13 satellites, developed by Israel Aerospace Industries (IAI) for the Israeli Ministry of Defence and the IDF, have high-resolution imaging capabilities and the ability to capture images with clarity, down to a resolution of 0.5 meters. These satellites utilise Synthetic Aperture Radar (SAR) technology to generate detailed images, providing invaluable intelligence even in adverse weather conditions.

Japan begins $6.7B Space Strategic Fund

Japan's government has established a $6.7B (1 trillion yen) fund to enhance its space sector, focusing on innovation, autonomy, and competitiveness. Managed by JAXA, the 10-year initiative supports technology development in satellites, exploration, and transportation, aiming to secure Japan's leadership in space. The fund is a part of a broader economic strategy conducive of increased private investment.. This comes as Japan seeks to maintain its space superiority in the APAC region amid growing competition and geopolitical tensions, particularly with China and India's advancing space ambitions.

SAIC secures $444M U.S. Space Force contract for launch site modernisation

Credit: U.S. Space Force

SAIC has won a $444M contract from the U.S. Space Force to upgrade the launch instrumentation and information systems at Cape Canaveral in Florida and Vandenberg in California. The five-year Digital Transformation, Acquisition, Modernisation, and Modification (DTAMM) contract, with an option to extend for five more years, aims to modernise space launch range instrumentation and support faster space mission cadences. The project will introduce improvements such as cloud infrastructure, software development services, and cybersecurity strategies to enhance efficiency at these critical launch sites.

Australia joins Landsat next satellite mission with $207.4M commitment

Credit: U.S. Geological Survey

USGS Director David Applegate and Australian Minister for Resources Madeleine King have **signed a joint statement announcing Australia's plans to join the Landsat Next satellite mission**, an initiative emerging from the December 2023 U.S. National Space Council's Landsat 2030 International Partnership Initiative. This partnership aims to support sustainable land and water management and resource use.

Building on a nearly 50-year collaboration in the Landsat program, Landsat Next represents the future of global land imaging, offering higher resolution, more spectral bands, and increased observation frequency. Australia's $207.4 million investment over four years will enhance its Alice Springs ground station and develop new data processing and analytics capabilities, preparing for the early 2030s launch of three advanced Landsat Next satellites. Formal updates to the agencies' agreements are expected by summer in the U.S.

FCC approves satellite ground rules for enhanced connectivity

The FCC gave its nod to ground rules **enabling satellite operators to utilise radio waves from terrestrial mobile partners for improved smartphone connectivity** beyond cell tower range. Approved unanimously on March 14th, the Supplemental Coverage from Space (SCS) regulatory framework by the FCC allows SCS providers to operate as a secondary service to Mobile Satellite Services (MSS) providers. Under this framework, SCS operators must cease operations immediately if they interfere with primary rights holders like MSS providers or terrestrial telcos. While the final version of the framework is pending public release, it will come into effect after publication in the Federal Register and the Office of Management and Budget (OMB) review.

Gilmour Space secures Australia's first orbital launch facility license

Gilmour Space Technologies, having raised $55M**, secured Australia's inaugural orbital launch facility license for its Bowen Orbital Spaceport in Queensland**, allowing satellite launches into low earth orbits. The license, granted by the Federal Minister for Industry and Science, Ed Husic, marks a significant step in Australia's space capabilities. The spaceport, also approved environmentally, promises job creation and 'rocket tourism' in the region. Gilmour plans its first Eris TestFlight soon, aiming to expand its team to over 300 by 2027.

Credit: Gilmour Space

iQPS Research Institute awarded satellite prototype contract by the Japanese Ministry of Defence

iQPS announced a milestone contract from the Ministry of Defence for a satellite prototype, focusing on key space utilisation technologies. The contract, valued at ¥5.6B (Approximately €39.2M), is scheduled for delivery by May 2028, underlining Japan's push towards space security and technology development. This initiative aligns with Japan's Space Security Initiative, advocating for enhanced space capabilities and technological autonomy. It coincides with efforts to craft a Space Technology Strategy, supporting civil and military space activities and emphasising the nation's technological leadership and supply chain independence.

EDA launches LEO2VLEO Satellite Project with Netherlands and Austria

The European Defence Agency, in partnership with the Netherlands and Austria, has launched the €10 million LEO2VLEO project to develop a satellite constellation capable of manoeuvring between LEO and VLEO. This initiative aims to enhance military operations with a planned initial launch in two years. The project leverages VLEO for higher resolution imaging and improved communications, addressing the challenge of surface erosion through innovative materials. Funded by EDA's Hub for EU Defence Innovation (HEDI), LEO2VLEO paves the way for advanced defence capabilities through European collaboration, aiming to extend satellite lifespan and optimise mission support.

ESA invests €12M in advanced atomic clock technology for Galileo Satellite System

ESA has awarded a €12M contract to Leonardo S.p.A and the Istituto Nazionale di Ricerca Metrologica to develop new atomic clock technology for the Galileo satellite navigation system. This project, part of Horizon Europe, aims to boost Galileo's accuracy and efficiency by introducing an ultra-precise, energy-efficient atomic clock, marking a significant advancement in satellite navigation technology. The initiative will see the design and testing of a new clock model, with plans for early in-orbit verification on a Galileo Second Generation satellite. This development is expected to enhance Galileo's global positioning services, ensuring Europe remains at the forefront of satellite navigation technology.

EUSPA introduces new maritime navigation service: ESMAS

EUSPA has introduced the EGNOS Safety of Life Assisted Service for Maritime Users (ESMAS), augmenting maritime navigation accuracy and safety. This new service, leveraging GNSS signals like Galileo and GPS, **improves positioning and error detection without additional infrastructure**. Designed for areas lacking Differential GNSS (DGNSS) services, ESMAS is ideal for coastal and ocean navigation, and harbour approaches. Available for SOLAS-conforming vessels in the EU, Iceland, Norway, and Switzerland at no cost, ESMAS also facilitates the provision of Maritime Safety Information (MSI). Managed directly by EUSPA, the service expands EGNOS's portfolio, supporting various sectors with enhanced satellite navigation.

India aims to further develop its space strategy

On March 5th, during the opening of the IN-SPACe Technical Centre in Ahmedabad, **India unveiled its ambitions to enhance its space strategy by 2030**, aiming to achieve a space economy valued at $8B by 2040, with potential to surge to $100B by 2040. Situated at the headquarters of the Indian National Space Promotion and Authorisation Centre (IN-SPACe), the new technical hub will support satellite manufacturing and rocket development. Equipped with facilities like the Climate Simulation Test Facility (CSTF), Thermal and Vacuum Environment Simulation Facility (TVAC), and Vibration Test Facility (VTF), among others, the centre aims to facilitate research and development. Furthermore, the **successful execution of the RLV Landing Experiment (RLV-LEX-02) on 22nd March** further highlights India's dedication to enhancing its space capabilities. The prototype space plane, known as Pushpak, autonomously completed its second landing experiment, showcasing India's pursuit of cost-effective and reusable space access.

Developments in South Korea

South Korea joins EU's Horizon Europe Programme

Credit: Korea EU Research Centre

South Korea finalised its association with the EU's Horizon Europe, becoming the first Asian country to join the €95.5 B research and innovation programme. The agreement, effective from 2025, allows Korean researchers and institutions to compete for grants alongside EU counterparts, focusing on industrial and global challenges. This partnership marks a significant step in South Korea's strategy to open its science and technology sector to international collaboration and aligns with the EU's aim to connect with scientifically advanced democracies globally. South Korea's rapid negotiation and commitment to contributing to the program's funding reflect its ambition to enhance its global science and technology footprint.

South Korea expands space strategy and doubles the budget

South Korea unveiled plans to **establish a comprehensive space industry cluster over the next eight years**, aiming to bolster its capabilities in satellite manufacturing, rocket development, and astronaut training. The initiative, announced by President Yoon Suk Yeol, marks a relevant investment in the country's aerospace sector, with a budget allocation of $1.14B for 2027. The space expansion strategy involves the establishment of a new aerospace industry cluster, which will serve as a hub for innovation and technological advancement. President Yoon outlined various goals, including South Korea's first Moon mission by 2032 and a mission to Mars by 2045. The cluster will comprise three key areas: Sacheon, Goheung, and Daejeon. Sacheon will focus on satellite development and manufacturing, Goheung will house facilities for rocket assembly and testing, and Daejeon, known as a science hub, will host an aerospace training and research centre equipped with facilities for hands-on training and professional development. Additionally, efforts will be made to foster collaboration with international partners, such as the Kennedy Space Center in the U.S. and the Toulouse Space Centre in France.

European Control Centre to become hub for Moon missions

Credit: ESA

ESA's Columbus Control Centre in Oberpfaffenhofen, Germany, is set to transform into a Moon mission control hub. A new agreement between ESA, DLR, and the Free State of Bavaria aims to develop the centre's capabilities to support lunar missions, including operations for the upcoming lunar Gateway space station. Currently managing the Columbus laboratory on the International Space Station, the centre will expand its role to support European contributions to lunar exploration and future missions to Mars. With a history of managing space station activities and supporting ESA's Artemis I mission, the Munich-based centre's expertise will be crucial as Europe aims for the Moon and beyond.

INTEGRASYS leads development of IRIS² payload tested for secure government communications

Post-Russian invasion of Ukraine, **ESA fast-tracks the IRIS2 GOVSATCOM project** for European government secure communications. INTEGRASYS, with Inster-Grupo Oesía and UPM, will develop a testbed to ensure future payloads are secure against electronic warfare and jamming. The testbed will simulate LEO subsystems for interference resilience testing and operational reconfigurability, utilising INTEGRASYS's extensive experience in interference technologies.

Airbus secures contract for NASA's GRACE-C twin satellites

NASA's Jet Propulsion Laboratory has awarded Airbus the contract to design and build the spacecraft for the GRACE-C mission, aimed at continuing Earth's gravity field observations. Jointly with DLR, GRACE-C (Gravity Recovery and Climate Experiment-Continuity) will monitor changes in Earth's groundwater, oceans, land, and ice sheets. Comprising two satellites, each about 600 kilograms and operating 200 kilometers apart at a 500-kilometer altitude, GRACE-C will feature advanced avionics and a Laser Ranging Interferometer. The mission, operated by the German Space Operations Centre, is slated for a U.S. launch in late 2028, extending the legacy of its predecessors in climate monitoring.

Christian Hauglie-Hanssen reappointed as director of Norwegian Space Agency

On March 8, 2024, **Christian Hauglie-Hanssen was reappointed by the Cabinet for another six-year term as director of the Norwegian Space Center**, a position he has held since 2018. This decision aligns with Norway's growing emphasis on space-based services and the national space industry's development, highlighting NOSA's key role in overseeing space activities. Minister for Business Jan Christian Vestre praised Hauglie-Hanssen's leadership following the reappointment.

In other news

ESA sets course for Mars with EP Tug Initiative: ESA's EP Tug project, under the Terrae Novae programme, aims to enhance Mars exploration with cargo delivery and orbital services. Pending approval, it seeks scientific contributions for Martian study and landing site identification.

ESA initiated a call for proposals to begin work on a reusable launch vehicle upper stage demonstrator: Under ESA's programme, the project targets identifying tech needs and commercial uses, aligning with initiatives for reusable boosters (BEST!) and engines (THRUST!).

The UK Space Agency grants £2M to The Open University (OU) for Mars Ice Mapper mission: aiming to develop detector technology crucial for Mars exploration, OU collaborates with Teledyne e2v to create a novel imager distinguishing water and CO2 ice, crucial for future human missions.

The UK government announces a £10M investment in SaxaVord Spaceport: the investment is seen as a positive step forward for the Shetland space economy, with SaxaVord anticipating its inaugural orbital launch later this year.

Australia releases the full text of the Technology Safeguards Agreement (TSA), allowing more U.S. rocket launches from Australian spaceports: the TSA aims to ease restrictions on launching U.S. spacecraft, benefiting firms in both nations. Australian spaceports, such as ELA and Gilmour, are poised for significant rocket launches, attracting global interest.

The **U.S. released its budget proposal for FY2024**: the bill, signed by President Biden, allocated $1.2T across various sectors, with Defence receiving the largest share at $825B and the U.S. Space Force securing $28.9B.

Blue Origin aims to launch its first version of the Blue Moon lunar lander, Mark 1, by 2025: this cargo vehicle serves as a technology demonstrator, with plans for at least two flights before the development of the crewed Mark 2 lander. Blue Origin's $3.4B NASA contract involves the Mark 2 lander for the Artemis 5 mission.

The Egyptian Space Agency and Chinese Space Agency signed a protocol for operating the MisrSat-2 satellite: launched in December 2023, MisrSat-2 aids Egypt's sustainable development by providing high-resolution imagery for monitoring waterways, coastlines, agriculture, and land use.

Zimbabwe aims to launch three new satellites, with EO satellite ZimSat-2 scheduled for launch this year: collaborating with Japan, the country aims for self-reliance in satellite manufacturing. The Zimbabwe National Geospatial and Space Agency (ZINSGA) coordinates efforts, targeting local satellite production by June 2024. ZimSat-2 aims to enhance landscape monitoring with improved sensors and resolution, following the success of ZimSat-1 launched in 2022.

UKSA's £2 Million Study for Sustainable Space Missions: involving Astroscale UK's work on the nation's first Active Debris Removal mission with the COSMIC servicer spacecraft. Partnering with over 10 UK firms, including industry leaders like Thales Alenia, Airbus, Orbit Fab, and GMV, the initiative aims to enhance satellite sustainability and support economic growth.

UKSA funded twelve projects with up to £200,000: each of them for applying satellite data in industries like finance and transport until July 2024. Notable examples include Assimila's wildfire tool for insurers and One Big Circle's rail monitoring system.

INDUSTRY & BUSINESS

Eutelsat expands collaboration with Intelsat and launches EUTELSAT 36D

Eutelsat Group extended its partnership with Intelsat regarding the OneWeb LEO constellation, with a **commitment of $250M for LEO service over the initial six years and an option for an additional $250M**. This aims to integrate LEO capabilities further into Intelsat's solution offerings across its current and future customer base. Intelsat will collaborate with Eutelsat in the development of its Next Generation OneWeb constellation, providing design and functionality input.

Credit: Eutelsat Group

Moreover, on March 30th, **Eutelsat Group successfully launched and deployed its EUTELSAT 36D satellite**. It was launched by SpaceX's Falcon 9 rocket from Kennedy Space Center and built on the Airbus Eurostar Neo platform. EUTELSAT 36D is set to replace EUTELSAT 36B at the 36° East orbital position, alongside EUTELSAT 36C. Featuring 70 physical Ku-band transponders, the satellite ensures improved service continuity and optimised performance for video customers across its footprint. It also offers increased flexibility and coverage options to effectively manage diverse missions.

Thales Alenia Space signs contracts with ESA and ASI amid staff shifts and commercial headwinds

Thales Alenia Space has been **chosen by ESA to lead a broad European industrial consortium for the Harmony constellation project**. The Harmony mission, part of ESA's Earth Explorer programme, promises to enhance the understanding of climate change, geological phenomena, and ocean-atmosphere interactions. With its extensive experience in radar-based EO satellites, Thales Alenia Space will spearhead the development of the Earth Observation Synthetic Aperture Radar (SAR) instrument for ESA's 10th Earth Explorer mission. Under a €7M initial contract, Thales Alenia Space will oversee the development of the C-Band SAR instruments for the Harmony satellites, expected to launch aboard a Vega-C vehicle by 2029. This initiative, in collaboration with the Copernicus Sentinel-1 mission, aims to provide observations of ocean, sea ice, and solid ground.

Credit: ASI

Furthermore, **Thales Alenia Space secured a contract with ASI to develop the communications subsystem for the International Mars Ice Mapper (I-MIM) mission**. This Phase B1 contract, valued at €22M, builds upon Thales Alenia Space's completion of the Phase A award in 2022. I-MIM, a collaborative effort involving ASI, JAXA, CSA, and NASA, aims to develop a Mars orbiter to identify and measure water ice in Mars' mid- and low-latitude regions, crucial for future human missions. Thales Alenia Space will design the mission's multi-user communications system and develop an innovative Large Deployable Reflector (LDR) antenna. This antenna, operating in Ka- and X-band, will facilitate high-data-rate communications with ground stations and support the Synthetic Aperture Radar (SAR) instrument operating in L-band.

However, Thales Alenia Space **adjusted its workforce strategy in response to a decrease in demand for commercial telecommunication satellite orders in 2023**. The company's 2023 full-year results, released on March 5th, unveiled plans to redeploy 1,300 positions to other Thales activities by 2025. Despite booking significant contracts in other areas, the absence of large telecommunication satellite orders in 2023 impacted overall performance. Thales aims to align its

workforce with evolving market dynamics while sustaining capabilities in constellation projects and defence opportunities, focusing on flexible GEO satellites and defence projects like Syracuse IV for the French Ministry of Defence.

Unseenlabs successfully launched two satellites with SpaceX

On March 4th, **Unseenlabs launched of its twelfth and thirteenth satellites, BRO-12 & BRO-13 (H2OWL MISSION)**, aboard SpaceX's Falcon 9 as part of the Transporter-10 mission. With the addition of BRO-12 and BRO-13, Unseenlabs' constellation expands, featuring advanced RF monosatellites designed for unparalleled maritime surveillance. The deployment paves the way for enhanced capabilities in RF detection, ensuring more comprehensive coverage and accuracy in tracking maritime activities. With this constellation, Unseenlabs continues to empower a wide array of customers in combating unlawful activities at sea, from governments to NGOs, shipowners, and marine insurance companies.

FCC grants conditional approval for SpaceX's E-band frequency usage in Starlink system and rejects SpaceX's proposal for very low earth orbit satellites

SpaceX gained conditional **approval from the Federal Communications Commission (FCC) to employ E-band radio waves**, enhancing the capability of its Starlink broadband constellation in LEO. The FCC's decision sanctions SpaceX to operate between 71 and 76 gigahertz from space to Earth, and 81-86 GHz Earth-to-space, alongside existing Ka and Ku bands. With up to 7,500 Gen2 satellites authorised, SpaceX aims for a total of 30,000 Gen2 satellites, alongside 4,400 Gen1 satellites already approved. However, the FCC deferred action on the remaining three-quarters of the Gen2 constellation, awaiting rules for E-band frequencies in space.

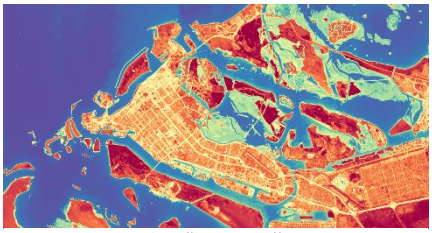
On the other side, SpaceX's plan to deploy thousands of internet satellites in very low earth orbits (VLEO) has been dismissed by the FCC. The **FCC's recent order prohibits SpaceX from deploying satellites below the ISS's operational altitudes**, set at a minimum of 370 kilometres. SpaceX aims to reduce latency below 20 milliseconds, primarily by shortening data travel distances. Despite SpaceX's claims of lower collision probabilities and easier deorbiting for VLEO satellites, the FCC remains unconvinced. Concerns over potential impacts on NASA's assets and missions, as well as interference with other satellite operations, led to the FCC's rejection. Safety considerations and concerns from other satellite operators have prompted the FCC's decision. Despite the setback, SpaceX retains the option to revisit its proposal in the future.

Exotrail deploys satellite from spacevan orbital transfer vehicle

Credit: Exotrail

Exotrail successfully deployed a satellite, EXO-0, from its first spacevan orbital transfer vehicle. The deployment of the 8U cubesat, built by Endurosat, demonstrates Exotrail's capability to provide "last mile" delivery services, enabling customers to leverage cost-effective rideshare launch opportunities. The EXO-0 satellite carries a payload developed by Airbus Defence and Space, featuring a "passive detumbler" device designed to facilitate future active debris removal missions. This innovation aligns with Exotrail's vision of promoting sustainability in space operations. Exotrail plans to continue operating spacevan-001, with ongoing testing and deployment activities scheduled.

Telespazio Germany partners with constellr to combat climate change


Credit: constellr

Telespazio Germany and constellr partnered for constellr's upcoming satellite mission, slated for launch later this year. The mission aims to provide global land surface temperature (LST) imagery to aid in combating climate change. Constellr's HiVE constellation of infrared monitoring satellites will measure crop temperatures daily, down to a sub-field level, worldwide. The focus is on delivering optimised LST imagery for precision agriculture, water management, and sustainable resource management. Telespazio Germany will utilise its cloud-native platform, EASE-Rise, to support constellr's ground segment operations, offering monitoring, control, flight dynamics, and integration services for the constellation's lifetime.

AAC Clyde Space wins satellite order in Africa and partners with LusoSpace

AAC Clyde Space's subsidiary, **AAC Space Africa, won its inaugural satellite order to assemble, integrate, and test two satellites**. Valued at approximately €197M, this order is scheduled for delivery by June 2024. AAC Space Africa will design, construct, and execute space missions tailored to the continent's needs. In addition, it has been entrusted with the delivery of a ground station valued at approximately €318M for a client in Africa. This ground station will support various frequency bands up to S-band and in the amateur VHF band, enabling operators to receive instructions either remotely, from a control room, or in automated mode.

Additionally, **AAC Clyde Space has been awarded approximately €5M to supply 11 satellite kits to Portuguese company LusoSpace**. The delivery of these EPIC 8U variant satellite kits is scheduled for the fourth quarter of 2024. Co-designed by AAC Clyde Space and LusoSpace, the EPIC 8U satellites will be manufactured in Portugal. LusoSpace plans to leverage these EPIC 8U satellites to establish a VDES (VHF Data Exchange System) communication constellation, with a targeted launch date in late 2025. This contract follows an earlier order for a 3U satellite received by AAC Clyde Space from LusoSpace in the fourth quarter of 2023. Equipped with VDES payloads, the satellites aim to address the growing demand for data communication among maritime users, offering faster data transfer rates and enhanced integrity.

Indra and Enaire venture into space for air traffic surveillance

Spanish defence contractor Indra, in collaboration with local air navigation services provider Enaire, is venturing into space with **plans to launch two satellites next year to test their proposed air traffic surveillance and communications constellation**. Their joint venture, Startical, has ordered a 20-kilogram satellite from GomSpace and a 110-kilogram satellite from Kongsberg NanoAvionics, marking the beginning of a plan to deploy over 270 spacecraft in LEO. Startical intends to assess the performance of a receiver for tracking Automatic Dependent Surveillance-Broadcast (ADS-B) signals from aircraft and a very high-frequency (VHF) radio system aimed at enhancing pilot communications. While launch details remain undisclosed, Startical aims for the GomSpace satellite to be deployed in early 2025, followed by NanoAvionics around mid-year.

Neuraspace partners with NanoAvionics and launches STM platform

The Portuguese Neuraspace partnered with NanoAvionics for its space traffic management (STM) solution. The collaboration aims to enhance small satellite mission services with advanced collision analysis and manoeuvre planning. By automating spacecraft operations, including collision analysis and manoeuvre planning, NanoAvionics aims to ensure enhanced safety and efficiency for its customers' assets. Neuraspace's STM platform reduces manual labour, minimises mission disruptions, and potentially lowers insurance premiums through improved space debris mitigation.

Credit: Neuraspace

Furthermore, **Neuraspace launched a free version of its space traffic management platform** to encourage collaboration among satellite operators. Utilising data from public sources and partnerships with ground telescope providers, Neuraspace's software platform offers real-time satellite position data to aid operators in better managing their operations. Subscribed operators gain access to a shared view of conjunction alerts, facilitating discussions on collision risk avoidance. Additionally, an undisclosed premium version offers collision avoidance manoeuvre suggestions and advanced conjunction analysis tools.

SES and Aldoria sign MoUs at the International tech conference LEAP 2024

During the Riyadh LEAP 2024 conference, **SES signed an MoU with Saudi Arabian Aramco** to explore collaboration opportunities to accelerate Aramco's digital transformation objectives. The aim to deploy 5G backhauling for remote sites across Saudi Arabia and the Middle East, utilising high-performance MEO satellite connectivity services. The signing of the MoU represents a step towards the digitalisation of operations within the energy industry.

Furthermore, at LEAP 2024, the French company **Aldoria and Arabsat signed an MoU** to bolster space safety and security through advanced solutions. The MoU stems from the 1st Space Debris Conference in Saudi Arabia, facilitated by the Saudi Space Agency. Aldoria's advanced space solution will be deployed to bolster Arabsat's capabilities in safeguarding assets, with plans to establish sensor systems in member countries, thereby reinforcing space security measures.

Credit: Aldoria

Northrop Grumman to develop lunar railroad concept for DARPA

Northrop Grumman secured a **contract from DARPA to develop a lunar railroad concept as part of the 10-Year Lunar Architecture (LunA-10) Capability Study**. The envisioned lunar railroad network aims to facilitate transportation of humans, supplies, and resources across the lunar surface, supporting the growth of a space economy for the U.S. and its international partners. Under the study, Northrop Grumman will define the interfaces and resources required for building the lunar rail network, assess cost, technological, and logistical risks, and identify prototypes for a fully operating system. The study will also explore the use of robotics in constructing and operating the system.

Avanti receives authorisation for HYLAS 4 satellite gateway in Senegal

Credit: Avanti Communications

Avanti Communications obtained the Infrastructure Operator Authorisation for its HYLAS 4 satellite gateway station in Diamniadio, Senegal. Endorsed by Mr. Moussa Bocar Thiam, the Minister of Communications, Telecommunications and Digital, Avanti will proceed to the final testing phase before offering comprehensive high-speed national satellite coverage, aligning with Senegal's "Senegal Digital 2025" strategy. This initiative aims to provide reliable voice and data connectivity to various sectors, including rural communities, educational institutions, healthcare facilities, businesses, and government agencies, while bolstering national security. The gateway will extend coverage to neighbouring West African countries, positioning Senegal as a digital hub for the region. Through Avanti's carrier partners, services will be extended to underserved areas, addressing current network limitations.

Viasat awarded contract to enhance U.S. Air Force connectivity

Viasat secured a contract from Northrop Grumman **to support the USAF Research Laboratory (AFRL) initiative known as the Defense Experimentation Using Commercial Space Internet (DEUCSI) Call 003 programme**, referred to as "Global Lightning". The four-year contract aims to explore the integration of space internet services into existing military systems. As part of this initiative, Viasat will provide its ViaSat-3 Satellite Communications Network to facilitate easy access to high-bandwidth satellite internet connectivity for military users operating from USAF aircraft or ground vehicles. Viasat will integrate its ViaSat-3 modem into Northrop Grumman's open systems processors and antenna solutions to demonstrate its effectiveness across multiple platforms.

Boeing secures $439.6M contract with U.S. Space Force

Boeing has been awarded a **$439.6Mcontract by the USSF to construct the 12th Wideband Global SATCOM (WGS) communications satellite**. Slated for delivery in January 2029, this satellite will enhance the high-capacity, secure, and resilient communications capabilities vital to the U.S. military and its allies. The WGS constellation will deliver responsive, steerable, high-capacity beams, ensuring assured connectivity through the Protected Tactical Enterprise Service (PTES) ground system. Additionally, enhanced anti-jam communications are facilitated by integrating Boeing's new Protected Tactical Satcom Prototype payload onto WGS-12, further fortifying the U.S. military's anti-jam communications capacity.

GITAI completes space robotics demonstration outside the ISS

Credit: GITAI

GITAI U.S. announced **the successful completion of all planned tasks in an external demonstration focusing on in-space servicing, assembly, and manufacturing (ISAM)** using a 1.5-metre-long autonomous dual robotic arm system (S2) outside the ISS. This marks GITAI's second successful demonstration, following a previous one inside the ISS in 2021. With the completion of these tasks, GITAI's robotic arm system has attained NASA's Technology Readiness Level (TRL) 7, confirming its full operational capability in space. GITAI plans to accelerate the development of a robotic satellite for in-orbit services, aiming to begin providing on-orbit servicing by 2026.

Axient awards two contracts to BlackSky and Terran Orbital Corporation

BlackSky has been awarded a **$2M contract by the defence contractor Axient Corporation, acting on behalf of the Air Force Research Laboratory (AFRL), to provide data for training AI models**. The contract aims to leverage BlackSky's satellite imagery and data analytics platform to support studies and technology demonstrations focused on tracking moving objects from space. The project will involve collecting and annotating thousands of BlackSky multi-frame burst images to train AI models for commercial motion imagery. Multi-frame burst images offer valuable data for identifying moving objects with greater accuracy and recognising patterns of life. By harnessing this data, AFRL experiments seek to develop more effective moving target algorithms and enhance overall situational awareness. The contract includes access to BlackSky's Spectra satellite-tasking and analytics platform, which enables efficient collection, analysis, and visualisation of satellite data.

Furthermore, Axient Corporation also awarded a **$15.2M contract to Terran Orbital Corporation to deliver Ambassador Class satellite platforms**, along with solar arrays and support equipment, to the Air Force Research Laboratory (AFRL). The contract aims to integrate payloads onto ESPA-Grande size space vehicle platforms, supporting specific missions for the USSF, with delivery slated for the fourth quarter of 2024. The task order includes the supply of two Ambassador-class satellite platforms, support equipment, and payload integration for upcoming missions. These satellites will be integrated with the ESPA Grande platform, designed to facilitate rideshare missions and provide additional payload capacity on national security launch vehicles.

Nilesat partners with Arabsat and Hughes Network Systems

Credit: Nilesat

The Egyptian Satellite Company **Nilesat and the Arab Satellite Communications Corporation Arabsat signed a partnership agreement** during the third edition of the Saudi Media Forum in Riyadh. The agreement focuses on bolstering satellite television broadcasting and communication services across the region. The collaboration aims to streamline and enhance satellite broadcasting and communication services through an advanced system covering a wide geographic area. This system is designed to cater to the diverse needs of customers in the Middle East and Africa.

Moreover, during the Saudi Media Forum, **Nilesat also partnered with Hughes Network Systems**. Nilesat purchased a Hughes JUPITER System Gateway and plans to use Hughes JUPITER terminals for its Nilesat 301 satellite. This collaboration aims to enhance broadband connectivity in the MENA region and is scheduled to start in Q2 and finish by the end of Q3 2024.

In other news

ArianeGroup completed integrating the first booster for Ariane 6's maiden flight: these boosters, fuelled by the P120C engine, deliver the primary thrust during liftoff. Each booster, 21 metres tall, carries 142 tons of solid propellant, operating for over two minutes.

Airbus subsidiary AALTO announces plans to offer 5G connectivity and EO services via high-altitude platforms, with Japan among the first beneficiaries by early 2026: these platforms serve as an alternative to ground-based and satellite networks, aiming for global commercial services by 2026 pending certification.

Intelsat and South Africa's Openserve renew their partnership to enhance nationwide service reliability: Intelsat will modernise over 900 Openserve sites, improving network performance and delivering better connectivity. This upgrade aims to benefit businesses, organisations, and remote communities in South Africa. The upgrades are expected to conclude by June 2024.

ICEYE unveils ICEYE Ocean Vision for maritime domain awareness: Ocean Vision Detect, its first product, offers insights into vessel presence, location, and size, aiding authorities in threat mitigation. This SAR-based solution enhances monitoring from economic activities to hazard avoidance, improving maritime security.

Belgian startup Aerospacelab partners with U.S. startup Xona Space Systems: they aim to build Xona's first positioning, navigation, and timing (PNT) satellite. Aerospacelab will utilise its Versatile Satellite Platform (VSP) to integrate Xona's PNT payload. The collaboration aims to advance global navigation satellite systems and accelerate innovation.

ispace Technologies U.S. partners with Rhea Space Activity (RSA): they aim to deploy autonomous guidance and navigation technology aboard ispace's Mission 3 in 2026. RSA's Jervis Autonomy Module (JAM) facilitates autonomous navigation in lunar orbit, enhancing spacecraft trajectory determination without ground contact.

The NRO selects Umbra for Stage II of its Commercial RF Capabilities contract, enhancing U.S. national security: the Stage II option, worth $900K, extends through fiscal year 2025 and Umbra will deliver RF products to assess on-orbit performance and integration into the U.S. Government architecture, enabling NRO to validate satellite product performance.

Thaicom selects Astranis for THAICOM-9, a micro-geostationary satellite for broadband in Asia, launching in 2025: Astranis plans to deploy over 20 satellites in three years, providing targeted bandwidth at lower costs. Thaicom-9 joins Astranis' growing satellite constellation, aiming to bridge connectivity gaps in remote areas.

Antaris partners with SpeQtral to develop quantum-safe satellites for secure data transmission: SpeQtral's quantum payloads integrate with Antaris software, ensuring tamper-proof communication in orbit. Antaris will also create a digital twin for mission simulation. This collaboration enables dedicated missions for governments and defence, enhancing global communication security against cyber threats.

INVESTMENT & FINANCE

NATO Innovation Fund allocates funding to European Venture Capital firms

NATO Innovation Fund (NIF) began operating last year and is (i.a.) supporting Alpine Space Ventures and OTB Ventures, two venture capital funds that operate in the space industry. The goal of NIF is to provide direct or indirect investments in tech markets, mainly targeting early-stage investments with the possibility of follow-on investments.

Alpine Space Ventures Receives €10M Boost from NATO Innovation Fund

Credit: Alpine Space Ventures

German Alpine Space Ventures, a venture capital fund dedicated to early-stage investments in the space sector, **received a €10M investment from the NATO Innovation Fund** (NIF). The venture capital has a track record of investments in satellite manufacturers, space mobility, carbon composite manufacturers, and satellite energy solutions providers.

OTB Ventures Partners with NATO Innovation Fund for $185M Investment Drive

Dutch **OTB Ventures closed its $185M fund with NATO Innovation Fund as a limited partner.** The VC has already made space investments in satellite logistics, debris removal and imagery through companies like Kurs Orbital, ClearSpace and Hydrosat. The company plans to use funds to back 15-20 Series A startups. While it does not focus on defence investments, OTB Ventures intends to maintain support for startups across its four key sectors: spacetech, enterprise automation, cybersecurity, and fintech infrastructure.

Iridium Communications acquires the U.S.-based startup Satelles

The satellite operator **Iridium Communications acquired Satelles,** a startup dedicated to providing position, navigation and timing (PNT) services from LEO through Iridium's L-band network channel. Satelles will be incorporated into a new business line to complement its PNT services with greater capabilities for indoor coverage and by serving as a backup. While the official press release does not mention for how much the deal was settled, the company, which already had a 20% stake in the startup, **offered $115M to acquire the remaining 80% of Satelles**.

Japan's ispace Raises $53.5M for Lunar Mission

One year after going public on the Tokyo Stock Exchange, **Japan's ispace has raised $53.5M by selling 10.25 million shares** to help fund its third spacecraft, which is being developed under NASA's Commercial Lunar Payload Services (CPLS) programme.


Credit: ispace

From the total raised amount, the company is assigning $47M to the CPLS mission, where $21.1M are allocated for manufacturing costs, $13.9M to cover a portion of the launch cost aboard the Falcon 9, and $11.9M to support payment for two relay communications satellites for the mission.

The number of shares was reduced from the 16.5 million originally planned due to investor concerns about dilution. The shares were sold to unspecified non-Japanese institutional investors.

Lockheed Martin submits proposal to acquire Terran Orbital

Credit: Terran Orbital

Lockheed Martin is seeking to acquire U.S.-based spacecraft manufacturer Terran Orbital for $1 per share, totalling approx. $600M to investors and debtholders. Lockheed Martin already owns 28% of the company and is Terran Orbital's largest client for its satellite buses. Since going public in March 2022 via a merger with a special purpose acquisition company (SPAC), Terran Orbital's share price has dropped by approximately 90%. Moreover, the proposal comes at a time when the Space Development Agency is awarding large contracts to various companies, including Lockheed Martin, which in turn heavily relies on Terran Orbital manufacturing capabilities to complete them.

ILC Dover, Supplier of NASA Spacesuits, Acquired by Ingersoll Rand for $2.3B

U.S. company **Ingersoll Rand reached an agreement to acquire ILC Dover for $2.3B.** Founded in 1947, ILC Dover operates in the pharmaceutical and life sciences sectors, but is best known in the space sector as the primary supplier of NASA's spacesuits. The company also works on other space projects such as inflatable habitats and airbags for spacecraft landings. The aim of the acquisition is to strengthen Ingersoll Rand's presence in the life sciences market.

Belgian Camera Manufacturer Simera Sense Secures €13.5M Funding Round

Simera Sense, a Belgian manufacturer of cameras for optical payloads, raised €13.5M in a round led by NewSpace Capital and Knife Capital. The company plans to accelerate the development of its camera products by doubling its development team over the next two years. Simera Sense is also working on processing images directly from space, rather than a satellite camera sending all the data back to earth for processing.

Interlune Secures $15.5M Seed Fund for Helium-3 Extraction from the Moon

U.S. startup **Interlune raises $15.5M in a Seed fund** led by Seven Seven Six, Aurelia Foundry Fund, Gaingels, Liquid 2 Ventures, Shasta Ventures and a group of University of Michigan alumni. Founded in 2020, the company aims to extract Helium-3 from the Moon, and transport it back to Earth, where there is a scarcity of the isotope. The company expects to spur interest both from commercial and institutional customers, to be used in applications such as quantum computing, medical imaging, and fuel for fusion reactions.

Elve Raises $15M in Series A Funding for Millimetre-Wave Amplifiers

Elve, a US-based startup focused on manufacturing millimetre-wave amplifiers used to enhance wireless connectivity for space and terrestrial domains, **has closed a $15M Series A round** led by Lockheed Martin Ventures, TomEnterprise Private AB, Green Sands Equity, Yu Galaxy and Cambium Capital. The company, which has focused on lowering prices by redesigning its amplifiers, plans to use the funds to expand its manufacturing capabilities.

Credit: Elve

Blackwave Secures $6.6M Seed Extension for Carbon Fibre Space Solutions

Credit: Blackview

The **German start-up Blackwave concluded a $6.6M Seed extension round,** led by Alpine Space Ventures. The company, hosted at ESA's Business Incubation Centre in Bavaria, plans to expand their production capability of carbon fibre structures to offer them for launch vehicles, satellites, and other space applications. Since 2016, the company has also been producing and selling such structures to industries in sectors not related to space.

Kurs Orbital Secures €3.7M Seed Fund for Orbital Project

Kurs Orbital, an Italy-based startup, closed a €3.7M seed fund on 7th March. The round was led by OTB Ventures, Credo Ventures, Galaxia, In-Q-Tel and Inovo, and the funds are set to be used to build a prototype and flight model of their docking port.

The company provides rendezvous and docking technology systems that are used for satellite relocation, de-orbiting, inspections as well as space debris removal.

Kurs Orbital was founded in 2021 by the former director of Ukraine's space agency and relocated to Italy in 2022 after the Russian invasion of Ukraine. The firm is currently part of ESA's Business Incubation Centre in Turin despite having a R&D centre in Kyiv.

EIC Accelerator selects three Space Ventures to receive Blended Finance

The **European Innovation Council (EIC) Accelerator selected three space startups as companies for funding,** alongside 239 other innovative companies, out of 1083 proposals. Accordingly, mBryonics, Look Up Space and ION-X received blended finance support, a mix of grant and equity investment. mBryonics, based in Ireland, is dedicated to developing optical payloads and ground stations while Look Up Space and ION-X are both French startups and are a space safety and security data provider and a thruster manufacturer, respectively.

Japan's Space Strategic Fund selects focus areas of investment

The Japanese government's **$6.7B Space Strategic Fund defined satellites, space exploration and space transportation as the three areas to be supported.** Further details on principles and implementation guidelines will be provided in the coming months. An additional allocation of $2B for space technology development is also planned for fiscal year 2025. The Fund, to be administered by JAXA over a period of 10 years. aims to enhance the country's innovation, autonomy, and international competitiveness in space by providing strategic support to private companies and universities in their efforts to develop and commercialise advanced and space technologies.

Singapore-Based Aliena Raises $5.6M in a Series A Funding Round

Aliena raises $5.6M in a Series A funding in a round led by early-stage venture capital firms Wavemaker Partners, SEEDS Capital and Paspalis Innovation Investment Fund. The company is currently working on low-power propulsion systems for satellites, which could be used for on-board and de-orbiting manoeuvres in space. The funding consists of two tranches of $4.2M and a share issuance of approx. $1.2M to convertible note holders. It is the second round of funding closed by the firm since its foundation in Singapore in 2018, following the seed round of approx. €1M closed in 2019.

Credit: Aliena

In other news

Dutch startup Orbio raises $4M in a seed round: the round saw the participation of Initialized Capital, Collaborative Fund, and Y Combinator. The startup operates in the methane tracking market using freely available satellite data and plans to expand its analysis to other greenhouse gases.

Kongsberg Satellite Services (KSAT) completes the acquisition of VAKE: the acquired company remains an independent entity. Both companies are Norwegian and work on satellite-based data for the sea activities.

Astra's founders reduce offer price to take company private: after offering to take the company private at $1.50 per share in December, Chris Kemp and Adam London have now reduced their offer to $0.50 per share, warning that the company is facing imminent bankruptcy.

Pilot Photonics gets €2.5M from the EIC's Transition programme: the funds are provided to mature and commercialise technologies related to comb lasers and co-packaged optics. Founded in 2011 in Ireland, the company develops comb laser technology for applications in communications, space, and industrial markets.

POLARIS signs an investment and cooperation agreement with Aero Challenge Group: the agreement is set to provide the German-based company with an initial undisclosed investment of several million euros. POLARIS is working on the development of a reusable space launch and hypersonic transport system.

Phase Four, a U.S. based startup developing electric propulsion systems, obtains $6.25M in debt financing: the funds are provided by LEONID, an investment firm focused on tech companies working in the National Security industry.

U.S.-based Phantom Space completes a bridge round of funding: the round was led by Balerion Space Ventures and is set to contribute to the launch of the Daytona system in mid-2025. With the latest funding, the company is bringing its total fundraising to $37M.

U.S.-based Lumen Orbit closes a $2.4M pre-seed round: the goal is to launch the first prototype of an orbital data centre for in-space edge processing within 16 months. The round was led by Sequoia Capital and others.

Esper, an Australian remote sensing startup, closes a $1M pre-seed round: the round was led by Stellar Ventures and received grants from the Australian Federal Government and the 776 Foundation. The aim is to launch hyperspectral payloads to provide low-cost imagery by late 2025 and to ensure data accuracy through proprietary software.

Fused, a U.S. platform launched last year raises $1M in pre-seed funding: the company creates visual representations from geospatial data and was financed by Fontinalis Partners and undisclosed angel investors.

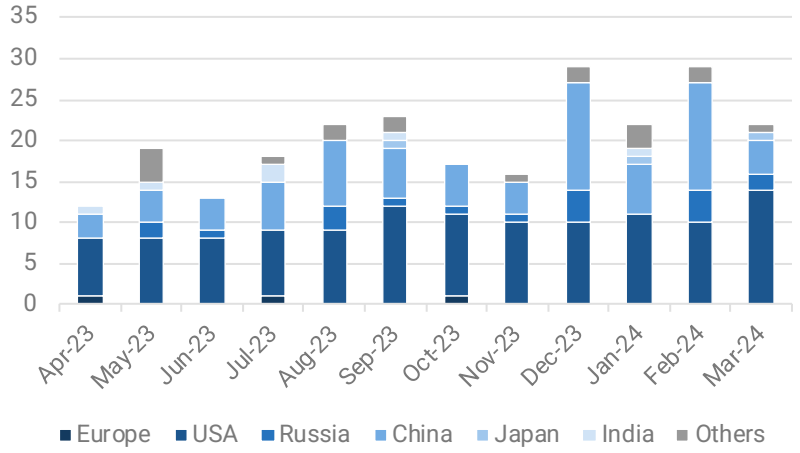
OrbitAID Aerospace, an Indian startup founded in 2021, receives approx. 500K in pre-seed: the funding comes from the regional governmental agency Startup TN and its seed fund initiative TANSEED. In return, Startup TN is set to take a 3% equity stake within the startup and to provide mentorship and networking support.

LAUNCHES & SATELLITES

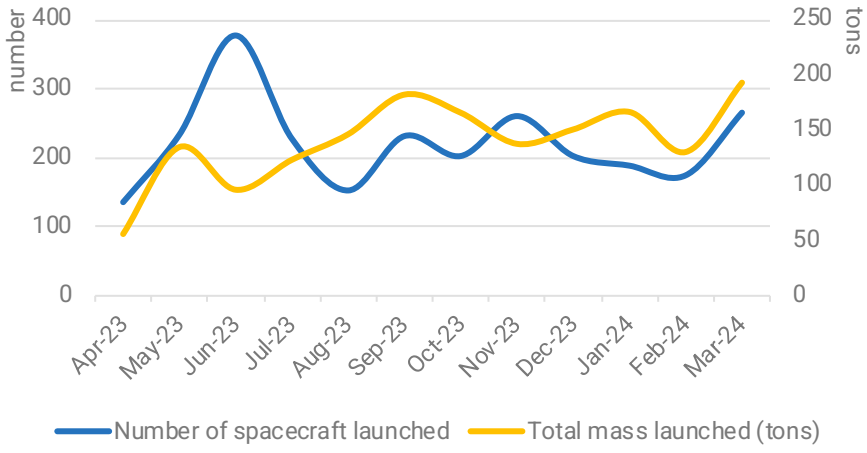
Global space activity statistics

March 2023	USA	China	Russia	Japan	Others	Total
Number of launches	14	4	2	1	1	**22**
Number of spacecraft launched	249	12	2	1	1	**265**
Mass launched (in kg)	177 128.3	3076	12 780	100	100	**193 184.3**

Launch activity over the year

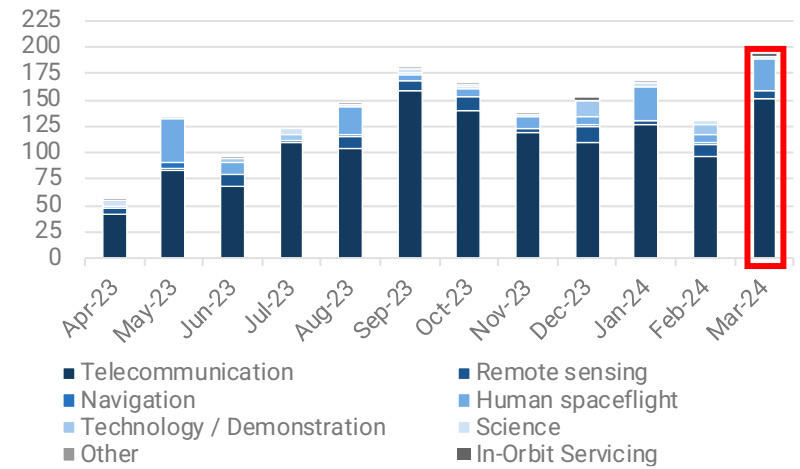


Evolution of the number of launches per launch country



Evolution of launch activity over the year 2023-2024

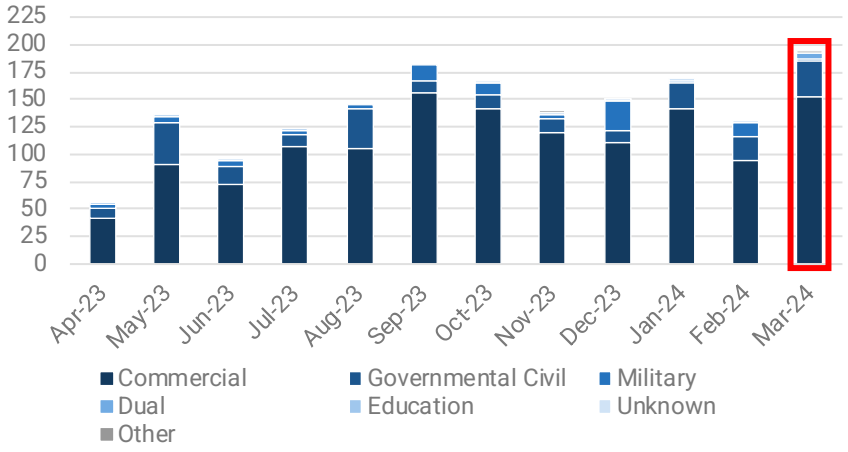
Satellite missions and markets



Evolution of the total mass launched (tons) per mission (Apr. 2023-Mar. 2024)

March 2024	Telecom	Remote sensing	Human Spaceflight	Tech/ Dem	Science	IOS
Europe	5000	768.5		41		
USA	145 728	769	23 055	449	8	791
China		1600		200	1276	
Russia		5730	7050			
Japan		100		245		
Others	1.8	63.5		9	2.5	270

Total mass (kg) launched by mission and customer country



Evolution of the total mass launched (tons), per market (Apr. 2023-Mar. 2024)

March 2024	Commercial	Gov.Civil	Military	Dual	Education	Other
Europe	5797.5				12	
USA	146 026.4	23 094.6	1700		6	
China		3076				
Russia		7050		5730		
Japan	245	100				
Others						18

Total mass (kg) launched by market and customer country

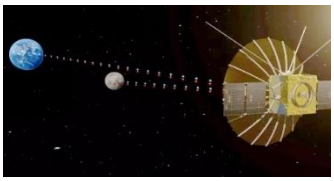
LAUNCH HIGHLIGHTS

Starship embarks on third, partially successful launch attempt

Credit: SpaceX

SpaceX's Starship rocket achieved orbital velocity for the first time on March 14th during its third test flight, launched from the Starbase in Texas. Despite not completing the journey to the planned splashdown point, the Starship and its Super Heavy booster accomplished many critical objectives, according to SpaceX representatives. Two previous test flights in 2023 ended with Starship exploding. After stage separation of the current test, the Super Heavy booster initiated return maneuvers but failed due to an engine reignition error. The Starship's upper stage continued its journey embarking on a suborbital trajectory above Earth but reentry led to a loss of communication with the ship. Starship is particularly crucial for NASA's Artemis 3 mission, which has set its sights on 2026 for landing astronauts on the moon, leaving SpaceX with less than two years to comply with NASA's vehicle requirements for lunar landings.

Two Chinese missions towards the Moon; one ends in failure



Credit: CASC

China successfully deployed the Queqiao-2 relay satellite, enhancing support for future missions targeting the moon's far side and its south pole. The mission commenced with the successful launch of a Long March 8 rocket from the Wenchang Satellite Launch Center on March 19. The spacecraft serves as an advanced successor to the original Queqiao satellite, which was sent into space in 2018. Queqiao-2s´ trajectory, an elongated lunar orbit, is deliberately chosen to facilitate the Chang'e-6 lunar far side sample return mission slated for May as well as the subsequent Chang'e-7 and Chang'e-8 missions in preparation for the International Lunar Research Station (ILRS). A week before, **on March 13th, another Chinese launch towards the moon ended in failure**. An issue in the YZ-1S upper stage in the Long March 2C rocket caused the DRO-A and DRO-B spacecraft to not reach Earth trabant. No further details on both spacecraft have been provided but they have been linked to testing navigation technology on the Moon. Since that time, China has successfully completed more than 100 consecutive launches using its Long March series.

First Japanese private launch attempt fails

The 18-meter four-stage **Kairos solid rocket, embarked on its journey from Space Port Kii in western Japan on March 12th**. However, the mission quickly ended with its explosion shortly after takeoff. This event marked the first orbit attempt by a privately-owned Japanese launch company and was tasked with deploying an experimental satellite aimed at evaluating responsive space capabilities on behalf of the Japanese military. Founded in 2018 and headquartered in Tokyo, Space One was initiated by key stakeholders including Canon Electronics, IHI Aerospace Co., Ltd., Shimizu Corporation, and the Development Bank of Japan.

SpaceX launches Eutelsat satellite

On March 30, SpaceX's Falcon 9 rocket deployed Eutelsat's new geostationary satellite, Eutelsat 36D, into orbit. This satellite is set to share its orbital location with Ekspress-AMU1, alternatively known as Eutelsat 36C, a satellite managed by Russia's RSCC. Eutelsat, which leases capacity from Ekspress-AMU1, has been affected by sanctions related to the conflict in Ukraine.

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