



**ESPI**

European Space  
Policy Institute

# ESPI Insights

Space Sector Watch



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## EUROPEAN SPACE CONFERENCE – SHAPING EUROPE’S FUTURE – NEW 2040 HORIZONS



The new year’s debate in Europe on space always starts with the European Space Conference in Brussels by Business Bridge. The 2024 edition “Shape Europe’s future” delivered a record attendance of 2000+ participants. It brought a new level of **ESPI contribution**, with two ESPI sessions on “Europe’s Road to space power” and “A vision for Europe in space in 2040”, together with panel moderations with Heads of Agencies, on Global Partnerships, Exploration, Cybersecurity and Space Traffic Management.

The conference succeeded in its forward-looking ambition and 2040 indeed a defined time horizon of many speakers. Headlines included “Autonomy”, “Industry”, “Cooperation”, and to an unseen extent “Defence”, with statements such as “The time of blue eyes is over” (EC). Yet, a number of mission-critical topics were missing from a conference pre-dominantly focused on Europe. The international dimension of space, with less than 4% of international speakers, was absent from most panel discussions. There was little mentioning of China. It was the ESA DG, asking to look at the world around us, pointing out the global space race. And while talent indisputably is part of the foundation of any future, the topic did not find much consideration. Exploration received spot-light attention with a live link to the ISS (ESA), but the “Revolution Space” called upon by the **HLAG report** still seemed to be largely on hold. Science appeared to be entirely absent from the debate.

What took center stage was the debate on Europe’s space industry ecosystem (with most conference partners coming from the upstream segment), asking for an industrial policy. Industry is feeling threatened by a low level of institutional demand, which represents a true risk to its future and required supply chains. While ESA was acknowledged as #1 institutional customer (Eurosace), it was clear that more was needed. Competitiveness on a global market requires a “good home base” (EC), a strong European internal market to build from. It was stressed that any space capability, including in security & defence relied on a strong economy and sustainable industrial base, able to deliver innovative solutions.

The launcher sector stood out, and next to its numerous new entrants in small launchers, it appears that Europe is entering the age of space ports, similar to seaports centuries earlier, adding to its resilience. The EC voiced ambitions to include launchers, incl. R&D, as part of the future EU space programme (EC) (the actually available EU funding for such ambition may be a challenge).

There were diverging opinions on whether Europe is a space power. While the leading role with Copernicus and Galileo provide an excellent foundation, promoted by EUSPA, it remains ESPI’s view that in the absence of an equally strong Security & Defence and a Human Exploration component, Europe is not (yet) a space power.



*Credit: Business Bridge, Logos, MCI*

There still is a lack of political will to translate ambition into funding, enabling action. EIB, with “Houston, we have a problem”, quantified an enormous funding gap between Europe and the U.S., of \$38B/\$40B for upstream/downstream respectively. It was made clear that an effort to narrow down these gaps required verticalisation (EC), to connect space to other sectors of politics, such as transport and digital and obtain funding from these sectors beyond the perimeter of EC DEFIS and ESA funding lines. (Indeed, the Accelerator initiative proposed by ESA is based on this logic). Following a similar line, industry (OHB) called for technology riverbeds to be defined, to bring innovation into other industry sectors, e.g. the combination of space (EO, PNT, connectivity) and AI for geo-spatial intelligence.

May be most importantly, there was a clear call for “breaking the silos between space and defence” and the call for “we need to invest more” (EEAS), to get beyond the Space Strategy for Security and Defence to a “We have to do it!”. The Dual-use potential was underlined many times as something to be exploited much further.

There was general agreement that 2024 was going to be a decisive year and that ESA CM25, CM28 and MFF 2028- would need to be aligned, with a joint plan and priorities to ensure Europe’s future in space in the 2040 horizon. Sustainability may be a Leitmotif for such European vision. ESPI will continue to provide independent recommendations and proposals as presented in **ESPI2040**. Beyond regulations, rules, and governance discussions, Europe needs funded space programmes and projects for industry to implement, to provide solutions to society and the economy.

Yours sincerely,

*Hermann Ludwig Moeller  
Director of ESPI*



*Credit: Business Bridge Europe, Logos, MCI*





## POLICY & PROGRAMMES

### 16<sup>th</sup> European Space Conference

On January 23<sup>rd</sup> and 24<sup>th</sup> 2024, the 16th European Space Conference took place in Brussels. As every year, **ESPI was present with an active role at the conference**, having moderated 5 sessions, 2 own sessions as well as a concluding speech on the **conference's key takeaways** – and with a first ever ESPI booth.



*Credit: ESPI*

The conference sessions covered key topics such as autonomy, launchers, defence, competitiveness. Belgium took over the Presidency of the Council of the EU and in this frame, Thomas Dermine, Belgium's State Secretary for Economic Recovery and Strategic Investments, gave a keynote speech, highlighting, among others, the role of "space as inspiration for society". ESA DG Josef Aschbacher highlighted in his keynote the global space race, new spacefaring nations/regions, the importance of cooperation inside and outside of Europe, as well as recent success of Europe in space exploration and science (JUICE and Euclid mission launches) and current and future challenges (i.e. European launchers, space debris, and Europe to find its role in (human) space exploration).

During the conference, it was announced that the **European Commission will table a draft of the first comprehensive European space law by March**. The EU space law will address issues of safety and sustainability. Moreover, highlighting the "need to build a true EU single market for space", Thierry Breton outlined in his keynote speech that this is the "purpose of the upcoming EU space law".



*Credit: Business Bridge, Logos, MCI*

Moreover, Breton announced an intent of the European Commission to be involved in the development of launchers through an expanded EU Space Programme and first contracts as part of the European flight ticket initiative. In a ceremony during the conference, **ESA and the European Commission announced the 5 launch companies** (Arianespace, Isar Aerospace, Orbex, PLD Space and Rocket Factory Augsburg) that will participate in the European Flight Ticket Initiative, which aims to stimulate demand for European launch services by opening competition for missions in the EU's In-Orbit Demonstration and Validation technology programme. 4 of the 5 selected launch companies (Isar Aerospace, Orbex, PLD Space and RFA) are startups working on small launch vehicles. As part of the initiative, each of the companies will receive a "frame" contract, which allows them to compete for task orders to launch specific missions.

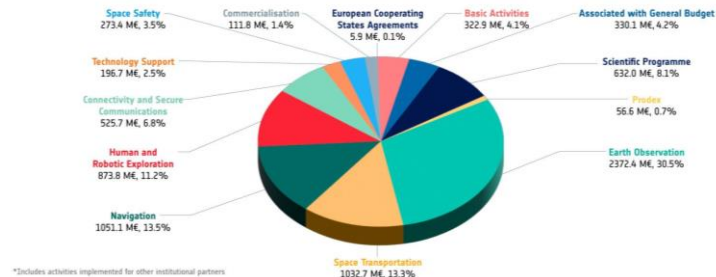
Moreover, the EU awarded two €2.4M contracts as part of the EO Governmental Service (EOGS) to two consortiums led by the Italian Telespazio and by German OHB System each with a €2.4M contract value, to conduct 12-month long studies (starting in Q1/2024) to **explore the feasibility of exploiting the Copernicus constellation for defence and military purposes**. In particular, the studies aim to explore how best to deliver and implement the service and can include the development of new satellite-based reconnaissance capabilities at European level. The goal is to make the service available to the EU and MS in the next EU MFF (2028–2034).



## Key European Space Budgets for 2024 in Numbers

The ESA 2024 budget is valued €7.79B, marking a 10% increase from the previous year. This increase is fuelled by contributions from both the European Commission and member states' contribution, following strong subscriptions during the ESA Council at Ministerial level in 2022.

ESA BUDGET BY DOMAIN FOR 2024: 7.79 B€\*



Credit: ESA

Furthermore, **CNES saw a 16.6% budget increase in 2024**, totalling €3.03B (of which €1.05B is the French contribution to ESA). The increase is driven by government economic-stimulus initiatives aimed at reinforcing the French space sector. CNES will guide a portion of these funds towards startups, focusing on small launch vehicles. In Germany, the **German Bundestag Budget Committee approved the 2024 federal budget**. Compared to the 2023 budget (€371M), the National Space Programme budget for 2024 was decreased totalling ~€333M – compared to previously announcements (~€313M), the 2024 space budget, the budget received a slight increase of €20M.

## Belgium took over Council of EU Presidency – Priorities for Space

In January 2024, **Belgium took over the 6-months rotating Presidency of the Council of the EU**. The Belgian presidency aims to work towards better protecting European citizens, strengthening EU cooperation, maintaining support to Ukraine, as well as preparing the EU's shared future and supporting the adoption of the Strategic Agenda 2024-2029 and prepare discussions on the future of the EU. **Belgium's Presidency's programme** will focus on 6 thematic areas. 2 areas are related to space: (1) Research, innovation and space, and (2) Digital, cyber and telecommunications. Key aspects include:

- prioritising the contribution of research and innovation as foremost catalyst for achieving greater open strategic autonomy for Europe.
- acknowledging the importance of space activities as a strategic asset, particularly in security, defence, climate change mitigation, and the empowerment of New Space actors.
- facilitating the implementation of the EU space strategy for security and defence.
- advancing cybersecurity and secure connectivity and to promote the safe, sustainable, and secure use of space, and ensuring the cyber resilience of space infrastructure. The Presidency will also support any action taken by the European Commission to collectively enhance the resilience of space systems and services in the EU and will strive to ensure coordination between Member States.
- prioritising a human-centred and sustainable approach to the digital transition, strengthening Europe's resilience to cybersecurity threats and addressing diverse challenges in telecommunications.





Moreover, the Presidency will leverage the mid-term review of the EU Space Programme, to which also **ESPI contributed with feedback**, to evaluate the progress made and lay the groundwork for future deployment of the programme. The Belgian Presidency will further contribute to the reinforcement of EU-ESA relations and coordination, in order to secure Europe's autonomous access to space, resilience of space systems and to guarantee open EU strategic autonomy.

### **ESA Council renews ESA DG Aschbacher's term and appoints two new directors**

In December, the **ESA Council approved the renewal of Josef Aschbacher's mandate as Director General of ESA** (from March 2021) for a further period of 4 years from 1st March 2025. Moreover the Council appointed two new directors: Laurent Jaffart will serve as Director of Connectivity and Secure Communications from the first semester of 2024, and Marco Ferrazzani will be Director of Internal Services from April 1st 2024.

### **Council adopts conclusions on European approach to STM**

On December 8<sup>th</sup>, the **Council of the EU adopted conclusions on the European approach for STM**. The **conclusions** highlight the urgency of developing an **EU STM approach**, welcome the progress, and highlight the importance of taking into account both civil and military STM needs, calling on the EC, the EEAS and EDA to work with member states to ensure consideration of security and defence aspects while highlighting the civil nature of the EU space programmes. Moreover, the conclusions emphasise the role of the EU SST system and its importance to enhance Europe's strategic autonomy and call for the development of services for space debris mitigation. Furthermore, the Council calls on the EU member states and industry to enhance existing SST services and promote/boost R&D.

### **SaxaVord Spaceport receives U.K. licence**

The **UK Civil Aviation Authority has granted a spaceport licence to SaxaVord spaceport**. Located in the Shetland Islands, SaxaVord spaceport will become the UK's first licensed vertical spaceport. The licence allows Saxavord spaceport to commence launches in 2024 and authorises up to 30 launches per year. **Full orbital launches are planned to take place in 2025**. Several companies are already planning to launch from the spaceport including ABL Space Systems, Skyrora, HyImpulse, and Rocket Factory Augsburg.



*Credit: SaxaVord UK Spaceport*

### **Spain creates new Space Command and collaborates with EU Satellite Centre**

On January 8th, Spain's Minister of Defence, Margarita Robles, **inaugurated the new Space Command (MESPA)** at Torrejón de Ardoz Air Base, underscoring Spain's commitment to space sector advancement. MESPA, integrating the Aerospace Observation Systems Centre (CESAEROB) and the Space Surveillance Operations Centre (COVE), is tasked with monitoring space threats, reflecting the growing European focus on space security. The establishment of MESPA aligns with the broader European trend of forming space command structures, highlighting the strategic importance of space in national defence.



Simultaneously, Spain's Ministry of Defence has **entered into an agreement with SatCen, enhancing the EU's capabilities in Earth observation and security**. This collaboration provides SatCen access to Spain's national Earth observation satellite system, notably the Paz synthetic aperture radar satellite. The agreement, part of a larger framework with other EU member states, strengthens Spain's role in supporting EU security and defence decision-making, and demonstrates the country's interest in Earth observation technology.

### Japan becomes 5th nation to land on the Moon with the SLIM mission



*Credit: JAXA*

On January 19th, the **Japanese Smart Lander for Investigating Moon (SLIM) successfully landed on the lunar surface**, marking Japan as the fifth nation to land on the Moon. The mission, undertaken by JAXA, saw the SLIM spacecraft execute a descent from a 15-kilometer perilune, decelerating from a speed of approximately 1,700 meters per second before touching down successfully. Despite successful landing, the spacecraft encountered an unexpected challenge as its solar generators

failed to operate, leaving it reliant on limited battery power. However, communication has been established with SLIM, allowing JAXA to focus on data acquisition and maximising the scientific output of the mission.

The successful touchdown affirmed the spacecraft's advanced capability to navigate and land with extremely high accuracy. Further assessments are underway to understand the extent of the solar cell issue and to determine the mission's future operational capabilities. JAXA will continue to monitor SLIM's operations and to overcome the technical hurdles encountered during the mission.

### NASA postpones plans to send humans to the Moon, but ups funding to commercial space stations

On January 9<sup>th</sup>, **NASA postponed Artemis II to September 2025 and Artemis III to September 2026** due to technical issues with the Orion spacecraft, including life support, heat shield, and batteries. Artemis II will conduct a crewed lunar orbit, testing life support systems and including diverse astronauts. Artemis III, targeting the first crewed lunar landing since Apollo, is **delayed for further development of SpaceX's Starship and lunar spacesuits**. These missions support NASA's broader goals for lunar exploration and future Mars missions. Safety remains a central concern following Artemis I's test mission findings.

On January 5<sup>th</sup>, **NASA increased funding for the commercial space station projects of Blue Origin and Voyager Space by a combined \$99.5M under the CLD programme**. This move aims to expedite the development of space stations succeeding the ISS. Blue Origin's Orbital Reef received an additional \$42M, and Voyager Space's Starlab, in collaboration with Airbus Defence and Space, got an extra \$57.5M. The funding adjustment **follows Northrop Grumman's exit from its own station project** and partnership with Voyager on Starlab. NASA's goal is to transition to commercial space stations by the 2030's, positioning itself as a customer to ensure ongoing human presence in low Earth orbit and support future space exploration.



## India returns Chandrayaan-3 propulsion module to Earth orbit and India sets sights on a Moon base by 2047

The Chandrayaan-3 propulsion module returned to Earth orbit. ISRO have been working on manoeuvres since October to return the spacecraft from a low lunar orbit. The 2,145kg module's main objective was to transport the Chandrayaan-3 from an elliptical Earth orbit to low lunar orbit. ISRO chairman S Somanath has laid out a roadmap for India's for lunar exploration which includes the goal of establishing a moon base by 2047. The roadmap also focuses on the Gaganyaan human spaceflight plan, the Indian-Japanese LUPEX rover and the Chandrayaan-4 lunar-sample return mission. In addition, ambitions include crewed docking with NASA's Gateway space station and the development of a Next Generation Launch Vehicle to enable these missions. Moreover, ISRO stated that India plans to launch 50 satellites in the upcoming 5 years for geo-intelligence gathering.



## China advances in space exploration with Einstein Probe Launch and upcoming Chang'e-6 Lunar Mission

China's space exploration efforts have reached new heights with two major projects. The Chinese Academy of Sciences (CAS) successfully launched the Einstein Probe on January 9, 2024, in collaboration with ESA and Germany's Max Planck Institute. The mission aims to study X-ray emissions from space objects like black holes, with ESA providing significant technical support and receiving 10% of the data. Simultaneously, China is preparing for the Chang'e-6 lunar mission, set to launch around May 2024. This mission will collect samples from the far side of the moon, facilitated by the Queqiao-2 relay satellite. The mission includes international contributions and will open its findings to global researchers after initial Chinese analysis. These efforts mark China's growing presence in space exploration and its commitment to international collaboration.

## India-France Collaboration Agreement



Credit: X/@narendramodi

On January 25th, India and France agreed on a Defence Industrial Roadmap for military equipment collaboration. The partnership aims to meet the defence needs of India and supply other aligned nations while enhancing bilateral cooperation in aerospace and defence. Additionally, discussions encompassed space cooperation, cybersecurity, and nuclear energy.

Moreover, ISRO's Commercial Arm NewSpace India Limited (NSIL) and Arianespace signed a MoU to support satellite launch missions, in particular, aiming to address the global demand for launching heavier communication and EO satellites – with both, ISRO's heavy lift launch vehicle LVM-3 and Ariane-6.

## The U.S. and Russia extend agreement on cross-flights to ISS through 2025

End of December 2023, Roscosmos and NASA agreed to extend the agreement on cross-flights to the ISS through 2025. This will ensure joint Russian and U.S. crew flights and the presence of at least one Roscosmos representative in Russia's ISS segment and at least one NASA representative in the U.S. segment of the ISS.



## New Dutch space Policy released

At the end of January, **the Netherlands released a comprehensive long-term space agenda** for maintaining international standing, developing satellite capabilities, ensuring strategic autonomy, and fostering technological innovation. Collaboration with international organisations like ESA, the EU, NATO, EUMESTAT and the UN is set as essential for maximising access to relevant services and opportunities. Moreover, a sufficient governmental investment is considered crucial to retain control in the space domain and to mitigate reliance on foreign commercial entities.

The proposed long-term space agenda outlines 6 missions:

- Mission 1: Enhancing Safety through Space Utilisation
- Mission 2: Addressing Climate and Environmental Challenges
- Mission 3: Leading in Space Science and Technology
- Mission 4: Leveraging Satellite Data for Societal Solutions
- Mission 5: Expanding Economic Opportunities in the Space Sector
- Mission 6: Advocating for International Space Regulations



*Credit: Dutch Government*

These missions are built upon concrete objectives to be achieved over the next 10-15 years and align with both governmental needs and the capabilities of Dutch industry and research institutes. The first three missions address specific themes regarding space utilisation, the latter three missions aim to maximise the Netherlands' benefits from the space sector through broader use of satellite data, bolstering industry, and further space regulation.

## Dutch Ministry of Defence and Airbus partner for global satellite imagery access



*Credit: Airbus*

The Dutch Ministry of Defence signed a four-year agreement with Airbus Defence and Space **to provide comprehensive worldwide satellite imagery through the OneAtlas Basemap**. This collaboration extends the Ministry's access to Airbus' global imagery base map layer, featuring resolutions of 30cm, 50cm, and 1.5m. Embedded into their collaborative environment, the imagery layer will bolster mission support with complete and consistent coverage over land surfaces.

## FCC reaffirms orbital debris mitigation rules

On January 25th, **the Federal Communications Commission (FCC) affirmed its rules regarding orbital debris mitigation**, following a unanimous vote by the five FCC commissioners. The decision comes in response to three industry petitions seeking adjustments to the rules applied to satellite operators. Boeing, EchoStar, Hughes Network Services, Planet, Spire, and Telesat requested reconsideration of disclosure requirements, raising concerns about potential industry encumbrances. The FCC dismissed these concerns, asserting that its rules align with established guidance and allowing tailored adherence to the Orbital Debris Mitigation Standard Practices. Additionally, the FCC shared a proposal for licensing spacecraft engaged in in-space servicing, assembly, and manufacturing applications as part of its space innovation agenda. Concurrently, a Senate bill, the SAFE Orbit Act, was introduced to authorise the Commerce Department's Office of Space Commerce to conduct space traffic coordination activities, emphasising the collection and sharing of relevant data to enhance SSA and coordination efforts.





## House and Senate pass 2024 defence policy bill

On December 14th the 2024 **National Defense Authorization Act (NDAA)** was approved by both the **U.S. House of Representative and the Senate**. The bill allows U.S. \$841.4B in funding for the U.S. DoD, of which U.S. \$30B has been authorised for the U.S. Space Force. The NDAA permits the DoD to support commercial launches on government-owned launch sites, enter agreements with commercial launch providers, and calls for the Department of the Air Force to appoint an active-duty officer as a principal military deputy for space acquisition and integration among other provisions.

## U.S., UK and Australia sign agreement to operate deep space radar network

In December, the **U.S., UK and Australia signed an agreement to jointly develop, host and operate a network of three space-tracking radars for deep space**, the "Deep Space Advanced Radar Capability (DARC)", with 3 sites to be set up in Australia, in the UK and in the U.S. by 2030 - as part of the trilateral security partnership and pact AUKUS. DARC will enhance the three countries SDA capabilities, providing 24/7 all-weather capabilities to track, identify and characterise objects deep in space. The radar sensors are funded by the U.S. Space Force and are currently developed by Northrop Grumman.



*Credit: DoD*

## South Korea to establish national aerospace agency

In January, **Korea's National Assembly's Science, ICT, Broadcasting and Communications Committee passed a bill to establish Korea's aerospace agency, the "Korea AeroSpace Administration (KASA)"**. Korea's President Yoon Suk Yeol pushed to create the agency as a centralised authority to leverage the national space programme elements, currently coordinated in different divisions and agencies. KASA will have 7 departments for launch vehicles, space science and exploration, satellites, advanced aerospace, aerospace policies, aerospace business and international cooperation and will exist separately from KARI.

Moreover, **South Korea plans to launch two military intelligence EO satellites in 2024** to facilitate monitoring activities in North Korea.

## ESA adopted LISA and EnVision missions

**ESA Science Programme Committee (SPC) adopted the LISA and EnVision missions**. Being adopted means that the study phase is completed, and ESA is now committed to implementing the missions. LISA will launch in the mid-2030s, while EnVision's departure to Venus is currently scheduled for 2031. LISA's mission to detect gravitational waves mirrors Earth-based LIGO detectors, utilising interferometry principles to measure minuscule beam deviations caused by cosmic events. EnVision, focused on Venus, seeks to unravel the planet's stark contrast with Earth, investigating its turbulent atmosphere and surface composition using radar instruments and spectrometers.



## Liechtenstein's space act enters into force

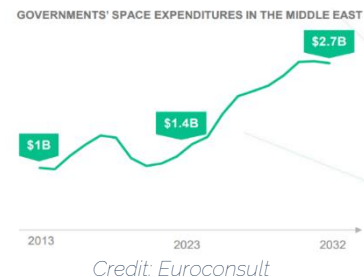
On January 1<sup>st</sup> 2024, the Government of Liechtenstein's **new space ordinance and space act for a space law, adopted in July 2023, entered into force**. The space act serves as a legal basis for regulations on the authorisation and registration of space activities and on liability in the case of damage.

## Pakistan approved first ever national space policy

Pakistan's federal cabinet **approved the country's first National Space Policy**, allowing private sector companies to offer affordable internet services through low-orbit communication satellites, establishing a space regulatory regime, and allocating funds to the Space and Upper Atmosphere Research Commission (Suparco) for research and development.

## Middle East's space race with an ever-Increasing activity & diversity of actors

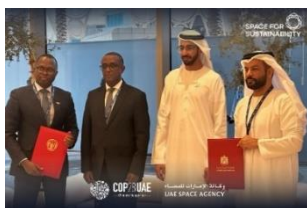
December 2023 and January 2024 saw several developments in the Middle East region's national space sector. A **Study by Euroconsult, titled "Beyond the Stars: Middle East's Space Ecosystem on the Move"** released at the Middle East Space Conference in Oman in January, unveiled that the **Middle East's space sector could be worth \$75B by 2032, mapping the region's rapid growth in the space sector** (tripled over the past decade to an estimated value of \$25B in 2023, including investment in satellites, services and exploration missions). The study predicts that the region has the potential to play a crucial role in the global space economy in the coming decade (with a share of 8.5% in the global space economy by 2030).



### Developments in the UAE

In December 2023, NASA and the UAE's Mohammed bin Rashid Space Centre **discussed to send the first Emirati astronaut to the Moon**. Currently, Nora Al Matrooshi, the first Emirati woman astronaut, and Mohammed Al Mulla are training at NASA's Johnson Space Centre in Houston.

Later, in January 2024, **NASA and the UAE MBRSC agreed that the UAE would contribute to NASA's Lunar Gateway by developing the Crew and Science Airlock**, which will allow the crews to perform spacewalks outside the Gateway and install external science payloads. The UAE follows a multilateral approach in partnerships for Moon exploration: The UAE signed the Artemis Accords, while more recently in November 2023, the UAE's University of Sharjah signed a MoU with China's Deep Space Exploration Laboratory to cooperate on China's ILRS.



Credit: Space in Africa

The **UAE Space Agency and the Rwanda Space Agency signed an MoU for cooperation** in the fields of civil space activities, supporting R&D, space technologies, geospatial data sharing, and establishing joint space projects.

The UAE Space Agency in collaboration with Bayanat unveiled the **operational phase of the Geo-Spatial Analytics Platform**. The Platform has three main services: facilitating access to satellite imagery from international space agencies and leading private entities, employing AI-based algorithms for generating analytics reports, and establishing a marketplace for space applications and AI space-based models.





Additionally, the **UAE Space Agency signed an MoU with the Maldives** to exploit the services of the Platform to create an atlas of loss and damage for the Maldives. The Geo-Spatial Analytics Platform will enhance capabilities to analyse, forecast, and predict natural disasters and climate change issues.

### Developments in Saudi Arabia

**Saudi Arabia signed an agreement with the U.S. to further collaboration on outer space exploration.** The collaboration is set to enhance the development of aerospace industries in both countries and further trade opportunities.

Moreover, **the Saudi Arabian Space Agency (SSA) signed an MoU with U.S. company Sierra Space.** The agreement aims to exchange information and expertise and aid Saudi Arabia in developing its national capacities and competencies in the space sector. The MoU was signed by SSA CEO Dr. Mohammed bin Saud Al-Tamimi and Sierra Space CEO Tom Vice.

**The SSA also signed an MoU with the U.S. company Axiom Space** to help develop national capabilities and exchange, information, skills, and expertise in the domain of manned spaceflight. Additionally, Axiom Space will provide Saudi students with educational and training programmes, as well as staff training opportunities.

Moreover, **Saudi Arabia and Brazil have agreed during a visit of President Luiz Inacio Lula da Silva of Brazil to Saudi Arabia on fostering further cooperation** in various fields, notably including in the space sector. Both countries have decided to set up a Saudi Brazilian Coordination Council to strengthen cooperation.

### Developments in Iran

Iran's permanent ambassador to the UN, Amir Saeid Iravani, has stated in a letter to Secretary General Antonio Guterres and the president of the Security Council that the country's **space programme fully complies with international law**. The letter argued that Iran's space activities are not inconsistent with Security Council Resolution 2231.

**Iran has also publicly stated that it launched its first Bio-Capsule to an altitude of 130km.** The capsule was launched by a Salman rocket and aimed to test propulsion, recovery, control and parachute deployments. The launch was part of Iran's aims to send humans into space by the end of the decade.



*Credit: Iran*

### Developments in Bahrain

A delegation of the **National Space Science Associations (NSSA) visited JAXA to discuss increased cooperation between both agencies.** The visit was led by CEO Dr. Mohammed Ibrahim Al Asiri and included the attendance of Bahrain's ambassador to Japan, HE Ahmed Mohammed Al Dosari. The delegation visited key JAXA facilities, as well as the Kyushu Institute of Technology.

**The NSSA also welcomed Dr Apathukatha Sivathanu Pillai,** former Defence Research and Development Organisation (DRDO) chief controller, and BrahMos Aerospace's founder CEO and former managing director. NSSA CEO expressed interest in enhancing cooperation with India in the space science sector and requested that a technical delegation from the NSSA visit ISRO facilities in the first half of 2024.



### Developments in Oman

**Oman hosted the Middle East Space Conference from January 8th-10th** which aims to boost the space sector and investments in the Middle East area. Oman (through its Ministry of Transport, Communications and Information Technology) aims to develop the space sector to achieve the goals of "Oman Vision 2040".

Furthermore, Omani authorities unveiled **plans for the Middle East's inaugural spaceport, Etlaq**, aiming for operational readiness by 2030. The commercial spaceport, situated in Duqm, will adhere to U.S. Federal Aviation Administration standards to attract global launch companies. The spaceport will comprise three launch complexes catering to varying rocket sizes, from micro to large orbital and suborbital.

### Türkiye Celebrates its First Astronaut Amid Other Developments

Turkey's first astronaut embarks on mission to the ISS

**Alper Gezeravcı becomes Türkiye's first astronaut** as he embarked on Axiom Space's Ax3 Mission to the ISS alongside fellow astronauts from Spain, Italy, and Sweden. Gezeravcı is set to **stay on the ISS for 14 days and conduct 13 scientific experiments** for Turkish scientists and research institutions.



*Credit: AA Photo*

Turkish Space Agency signs MoU with KDU

Sri Lanka's Cabinet Ministers has approved the signing of an **MoU between the national Sir General Sir John Kotelawala Defence University and the Turkish Space Agency**. The agreement will include resource cooperation and the opportunity for the University's students to take part in an International Internship programme at the Turkish Space Agency.

Turkey selects Hughes Europe's JUPITER HTS

Turksat has **signed an agreement with Hughes Europe for its JUPITER high-throughput (HTS) ground system** to bolster Turksat's satellite services across the country, as well as in neighbouring countries in both the Middle East and Europe. Using JUPITER ground system, Turksat aims to provide high-speed Ka-band satellite services, which will be introduced following the Turksat 4B satellite launch, expected in 2025.



### In other news

**The EC (DG DEFIS) announced two new initiatives:** These initiatives are aimed at improving the skills situation in the space sector: (1) employment opportunities to gain experience in local space companies; and (2) CASSINI Space Summer Camp, targeting younger students to inspire them to pursue a career in the space sector.

**ESA and the UN Environment Programme sign a MoU on sustainability:** the agreement, signed during Earth Information Day at COP28 in Dubai, aims to enhance the use of space technology and data for environmental conservation, nature and biodiversity protection and restoration.

**Angola signs Artemis Accords:** Angola became the 33<sup>rd</sup> signatory of the Artemis Accords and the 2nd African country, alongside Nigeria.

**Belgium signs Artemis Accords:** Belgium became the 34<sup>th</sup> country joining the Artemis Accords.

**Egypt joins China's International Lunar Research Station (ILRS) Moon base initiative:** This was part of a MoU signed on space cooperation. Egypt is the second African country to sign up for ILRS after South Africa. Also, China launched the Misrsat-2 EO satellite for Egypt.

**ESA's exoplanet mission Ariel is entering the construction phase:** Ariel's preliminary spacecraft design, which was established in the 19-month preliminary design phase B2, was approved by ESA review board and passed the Preliminary Design Review (PDR).

**Azerbaijan and Uzbekistan aim to cooperate in ICT, cybersecurity and space:** this was decided during a meeting of Azerbaijan's Minister of Digital Development and Transport Rashad Nabiyeu and Uzbekistan's Minister of Information Technologies and Communications Development Sherzod Shermatov.



## INDUSTRY & BUSINESS

### Updates on European Launchers

On December 14th, **ESA postponed the last launch of the original Vega rocket from spring to September 2024 due to missing tanks for the rocket's Avum upper stage.** Two tanks intended for the final Avum upper stage were reported missing from an Italian factory used by Avio during facility renovations. The director of space transportation at ESA, Toni Tolker-Nielsen, confirmed the tank issue, stating that the tanks were later discovered in a landfill, rendered unusable. The September launch date relies on a workaround solution, considering two options. One involves using tanks built for Vega qualification over a decade ago, allowing a July launch, but deemed risky. The preferred solution is adapting tanks from the larger Avum+ stage for the Vega C rocket, with structural modifications to the Avum inner structure.

Meanwhile, on December 7th, it was conducted an **upper stage Ariane 6 test at the DLR facility in Germany.** The upper stage experienced an early abort just two minutes into the test. The purpose of this test was to demonstrate the performance of the rocket's upper stage in degraded conditions, following a successful full-duration test firing on September 1st. Despite the setback, Toni Tolker-Nielsen, stated that the early abort would not impact the planned maiden flight of Ariane 6, scheduled between June 15th and July 31st, 2024. In a subsequent statement on December 19th, ESA reported the successful completion of a combined test loading (CTLO3) for an Ariane 6 prototype at the spaceport in Kourou, French Guiana. The core and upper stages' CTLO3 test demonstrated extreme ignition conditions and degraded liftoff modes, concluding with a successful four-second firing of the core stage's Vulcain 2.1 engine.

Furthermore, on January 23rd, during the European Space Conference in Brussels, **ESA and the European Commission unveiled the European Flight Ticket Initiative.** Five launch companies have been chosen for this initiative, including startups Isar Aerospace, Orbex, PLD Space, and Rocket Factory Augsburg, alongside Arianespace. With a focus on facilitating In-Orbit Demonstration and Validation missions, the programme aims to incentivise demand for European launch services and propel the small launcher sector forward.



*Credit: European Commission*



*Credit: Réaltra Space Systems Engineering*

Lastly, ArianeGroup awarded the Irish-owned Réaltra Space Systems Engineering a contract valued at close to €1M. **The contract entails the development and delivery of a GNSS telemetry system for the maiden flight of Ariane 6.** The contract was officially signed on December 11th at the Residence of France in Dublin, with the presence of Minister of State for Business, Employment, and Retail, Neale Richmond, and Ambassador of France to Ireland, H. E. Mr Vincent Guérend. The

Réaltra GNSS telemetry system, developed and manufactured in Dublin, will be situated on the upper stage of the Ariane 6 rocket, collecting data from the Galileo fleet of satellites to provide positioning, velocity, and timing measurements.



## The EU Commission signs an EDF grant agreement with OHB System AG

OHB System AG, a subsidiary of OHB SE, coordinator for the ODIN'S EYE II project, secured **€90M in funding from the European Commission through the European Defence Fund (EDF)**. The initiative, aimed at fortifying Europe's defence against ballistic and hypersonic missile threats, involves a consortium of 43 companies from 14 European states, including ArianeGroup, Leonardo, and Thales Alenia Space. The ODIN'S EYE system seeks to create a coherent and interoperable architecture that can collaborate with non-EU systems, including NATO's. OHB System AG will lead the consortium in defining, developing, and integrating the space-based early warning system. Furthermore, under ESA's guidance, **OHB System AG has been contracted for the Next Generation Sentinel-2 mission**. The current Sentinel-2 satellites have been instrumental since 2015, providing insights for agriculture, forestry, and environmental monitoring. The upcoming iteration promises an enhancement: a three-day revisit rate with superior 5-meter image resolution, bolstering precision for diverse applications.

## Thales Alenia Space Signs Multiple Contracts and R&D Agreements

Thales Alenia Space and PT Len Industri collaborate with Indonesian Ministry of Defence

Thales Alenia Space, in collaboration with PT Len Industri, signed a **multi-mission contract to deliver an EO constellation for the Indonesian Ministry of Defence**. The amount of the contract remains undisclosed, and the partnership involves the deployment of an end-to-end system, encompassing both space and ground segments, within Indonesia. The EO constellation integrates optical and radar satellites, operated through a multi-mission ground segment, with Telespazio contributing to the project. Thales Alenia Space's solutions aim to ensure rapid system responsiveness and augment Intelligence, Surveillance, and Reconnaissance (ISR) capabilities. PT Len Industri will oversee the operation of the constellation, meeting the Ministry of Defence's requirements for Indonesia's safety and sovereignty. The project also includes the development of a multimission ground segment system by PT Len Industri, offering control, maintenance, data processing, and analytic functions for the Defense Satellite System. In collaboration with BlackSky, PT Len Industri will provide early ISR satellite capability to the Ministry of Defence and Indonesian National Armed Forces, preceding the full operation of the Defense Satellite System.

Thales Alenia Space and Hellas Sat collaborate for Hellas Sat 5

Thales Alenia Space and Hellas Sat signed a **MoU to jointly develop an optical communication payload for the upcoming Hellas Sat 5 telecommunications satellite**. Hellas Sat 5, slated for operation at 39 degrees East in geostationary orbit, aims to deliver communication services with high data rates. The collaboration seeks to connect the satellite with various ground stations, including the Optical Ground Station of the National Athens Observatory in Greece, optical facilities in France, ESA's Optical Ground Stations, and Thales Alenia Space's LEO HyDRON telecommunication satellite. Thales Alenia Space, supported by France Relance (CO-OP), CNES (DYSCO), and ESA (HyDRON), is advancing capabilities for high data rate communication facing long distances and atmospheric turbulence.





### Thales Alenia Space chooses UK's national satellite test facility for ESA's FLEX

Thales Alenia Space awarded the UK's National Satellite Test Facility (NSTF) in Oxfordshire a **£116M contract for the assembly, integration, and test campaign of ESA's FLEX (Fluorescence Explorer) satellite**. FLEX aims to map Earth's vegetation fluorescence, enhancing global understanding of vegetation health and productivity. The satellite will quantify photosynthetic activity, offering insights into the carbon and water cycles, essential for managing resources amid growing demands for food and animal feed. Thales Alenia Space, as prime contractor, will lead the test campaign in 2025. The Fluorescence Imaging Spectrometer (FLORIS) instrument, developed by Leonardo, will be integrated into the satellite, capturing high-resolution images of vegetation fluorescence. FLEX will orbit alongside a Sentinel-3 satellite, part of the Copernicus programme, providing comprehensive plant health assessments.



*Credit: Thales Alenia Space*

### Exolaunch collaborates with ESA, DLR and UNOOSA

#### Exolaunch signs contract with ESA

Exolaunch secured its **first launch contract with ESA** through a public tender. The contract entails launching the Arctic Weather Satellite (AWS), developed to enhance weather forecasting in the Arctic. The ESA-Exolaunch collaboration aims to ensure the deployment of AWS data to end-users, contributing to improved weather predictions in the region. Scheduled for a SpaceX rideshare mission in June 2024, the AWS satellite will be deployed using Exolaunch's CarboNIX separation system, known for its reliability.

#### Exolaunch secures contract with DLR

Exolaunch secured a **governmental contract under the Small Satellite Initiative by the DLR**, acting on behalf of the German Ministry of Economics and Climate Protection (BMWK). This initiative, dedicated to providing diverse launch opportunities for small satellites and payload manufacturers on European microlaunchers, signifies a notable advancement in the flourishing German commercial space industry. Valued at nearly €18M, the contract mandates Exolaunch to oversee and execute a wide array of launch services for winners of the DLR competitions for small satellites and payload developers in 2023.



*Credit: Exolaunch*

#### Exolaunch signs agreement with UNOOSA

The United Nations Office for Outer Space Affairs (UNOOSA) and Exolaunch GmbH entered into an **agreement aimed at offering free launch opportunities for Cube Satellites (CubeSats)**, thereby expanding space access for more countries. This partnership is part of the Access to Space for All initiative, which seeks to enhance capacity-building in space science and technology by providing practical and educational opportunities. This joint CubeSat launch initiative will provide UN Member States with more opportunities for space engagement. The Satellite Development Track, a component of the initiative, facilitated the launch of the first satellite for four countries, with additional CubeSats and payloads in development.





## Starship plans to launch Starlab on a single mission



*Credit: Starlab*

Starlab Space LLC, a collaboration between Voyager Space and Airbus, chose SpaceX's Starship **to launch the Starlab commercial space station into LEO on a single mission**, saving the expense and risk of multiple launches and in-space assembly. With the launch planned for 2028, Starlab aims to cater to global entities, including space agencies, researchers, and companies, ensuring a transition of microgravity research from the ISS to the commercial space station

era. After reaching orbit, a team of four astronauts will delve into microgravity studies within the 8-meter-wide module, boasting nearly half the internal capacity of the ISS. The company prioritises hosting national astronauts, with the support of its European counterpart expected to bolster customer engagement in the region.

## Sierra Space's Dream Chaser enters final testing ahead of 2024 inaugural flight

Sierra Space **started the final testing phase for Dream Chaser, gearing up for its maiden voyage scheduled in 2024**. The extensive testing campaign will validate the spacecraft's resilience to launch dynamics and the harsh conditions of space, particularly in preparation for its initial mission to the ISS under a NASA contract. Assembled alongside Sierra Space's cargo module, Shooting Star, the Dream Chaser and its counterpart will undergo rigorous environmental testing at the Neil Armstrong Test Facility. The testing process will include exposure to extreme launch vibrations using the facility's state-of-the-art spacecraft shaker table.

## SpaceX launches Starlink satellites for direct-to-cell connectivity

**On January 2nd SpaceX launched 21 Starlink satellites to provide direct-to-cell connectivity**. The Falcon 9 rocket, launched from Vandenberg Space Force Base, carried six satellites with a payload designed to connect to unmodified smartphones. SpaceX, in partnership with T-Mobile, aims to offer coverage in cellular dead zones, starting with text messaging this year and expanding to voice and data connectivity by 2025. The technology enables the Starlink satellites to function as cell towers in space, providing coverage in remote and underserved locations. The initial phase will use T-Mobile's U.S. mobile partner spectrum, with collaborations extending to Australia, Canada, Chile, Japan, New Zealand, and Switzerland. SpaceX plans to coordinate with astronomers to minimise the impact of the satellites on observations. The service is planned to benefit emergency responders and individuals in remote locations and reflects a broader trend in the satellite industry toward direct-to-cell capabilities. The successful launch positions SpaceX at the forefront of this technology, with potential applications for IoT devices and global communication expansion.

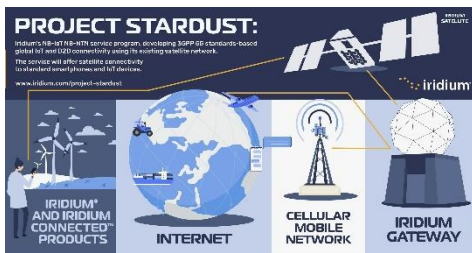


*Credit: SpaceX*



## Advancements in satellite to phone direct connectivity

Google partnered with AST SpaceMobile, a competitor to Starlink, **to develop technology enabling internet access from remote areas via mobile devices**. Joining AT&T and Vodafone in a \$110M investment, Google aims to fund a direct-to-smartphone satellite constellation. AST SpaceMobile's prototype, BlueWalker 3, showcased 14 Mbps download speed and 5G voice calls. With additional funding, AST plans to launch five satellites this quarter.



*Credit: Iridium*

Moreover, **Iridium Communications revealed Project Stardust**, an initiative transforming its direct-to-device (D2D) approach with 3GPP 5G NB-IoT NTN service development. Leveraging its existing satellite network, Iridium aims to offer D2D and IoT services, blending proprietary and standardised solutions. The initiative opens avenues for smartphone firms, OEMs, and chipmakers to integrate their requirements into Iridium's

LEO satellites. Project Stardust's NB-IoT offering promises advanced 5G NTN messaging and SOS features for various consumer applications. Through seamless integration, device manufacturers can tap into Iridium's global coverage, ensuring reliability and low-latency user experience.

## Huawei ventures into LEO satellite internet

The Chinese tech Huawei **shared the outcomes of its LEO satellite internet test on Weibo**, demonstrating download speeds of up to 660 Mbps, mirroring the capabilities of Starlink. While Huawei initially focused on connecting with geostationary satellites through its Mate 60 Pro smartphone, the industry is now witnessing a shift towards LEO systems due to their speed and practicality. LEO's smaller size reduces manufacturing complexity but also promises speedier network connections. Additionally, the inherent safety feature of LEO satellites, burning up in Earth's atmosphere in case of failure, addresses concerns about space debris.

## Equatorial Launch Australia unveils finals plans for its spaceport

Equatorial Launch Australia (ELA) **revealed its final plans for the Arnhem Space Centre Advanced Launch Pads (ASCALP)**, designed to accommodate multiple rocket companies with minimal changes. ELA aims to host up to seven rocket companies at its Northern Territory spaceport, addressing the demand for satellite launches. ASCALP features a world-first design with a proprietary Interface Plate element, allowing rockets to seamlessly mate with the standard launch pads. ELA recently secured Innospace as a long-term tenant and is working with the Australian Space Agency to obtain a launch permit. Moreover, the spaceport gained recognition for launching three NASA rockets in 2023, marking Australia's first commercial space launches.

## Europe choses Falcon 9 for Sentinel-1C launch

Europe's Copernicus EO satellite, **Sentinel-1C, may find its ride to orbit aboard SpaceX's Falcon 9**. Simonetta Cheli, ESA's EO director, disclosed the ongoing assessment to switch from Vega C to Falcon 9 during a press briefing. The decision, jointly made by ESA and the European Commission, aims to mitigate schedule setbacks and meet the urgent demand for SAR observations. With Vega C's uncertain return to flight post-launch failure, the Falcon 9 emerges as an alternative for the satellite's deployment.



## Astrobotic launches Peregrine lunar lander and encounters problems



Credit: Astrobotic

On January 8th, the **Astrobotic's Peregrine lunar lander was launched**, with the aim to accomplish a Moon landing in late February. The Pittsburgh-based company completed all pre-launch integration activities, fuelling the lander and securing it to the payload adapter for United Launch Alliance's Vulcan Centaur rocket. Originally scheduled for a December launch, ULA's postponement allowed for a wet dress rehearsal, addressing ground system issues. Peregrine carried a diverse payload, including 20 commercial and government instruments, with five from NASA's Commercial Lunar Payload Services (CLPS) programme. However, the Peregrine spacecraft **encountered a significant setback shortly after launch**. A fuel leak in the spacecraft's propulsion system was identified about 12 hours after liftoff, leading to a probable loss of attitude control within 40 hours. This malfunction disrupted plans for the Moon landing scheduled for February 23rd. Despite the fuel leak, Astrobotic affirmed the spacecraft's ability to continue operating as a spacecraft, though a lunar landing became unattainable. NASA remains committed to supporting commercial vendors despite mission failures, signalling resilience in pursuing lunar exploration endeavours.

## Amazon's updates on Project Kuiper satellite launches

Amazon signed a contract with SpaceX **to launch its Project Kuiper internet satellites on three Falcon 9 rockets**. The three-launch agreement comes after Amazon had previously excluded SpaceX from its heavy-lift launch plans. This move follows Amazon's successful testing of two Kuiper prototypes. With the first launches scheduled for mid-2025, Amazon aims to deploy its extensive LEO constellation, investing over \$10B in the Project Kuiper.

Furthermore, **Amazon filed a motion to dismiss a shareholder lawsuit accusing its board of acting in bad faith when awarding Project Kuiper launch contracts**. The lawsuit, filed by a Cleveland-based pension fund, alleged the board overlooked SpaceX and performed minimal diligence on contracts with Arianespace, Blue Origin, and United Launch Alliance. Amazon argued that the suit failed to present the "extreme set of facts" required to demonstrate the board's improper approval, asserting that directors underwent a diligent review of agreements, including hours of discussions and full board deliberation. The company's filing maintains that the lawsuit falls short of proving bad faith, emphasising that claims of deliberate inaction are unfounded. Amazon's redacted filing did not provide new details on the launch contract process or discuss any changes in plans since the lawsuit's filing.

## PLD Space secures second phase funding for Spanish launcher development

**PLD Space secured funding in the second phase of the Aerospace PERTE initiative**. The funding, totalling €40.5M, is aimed at advancing the development of a Spanish launcher tailored for small satellites. PLD Space's role involves designing, constructing, and conducting testing on an orbital launcher by the target deadline of 2025. Managed through Spain's Centre for Technological Development and Innovation (CDTI), the project's funding mechanism stipulates repayment through royalties over the initial decade of commercial operation. PLD Space envisions launching the maiden flight of their Miura 5 satellite by 2025.



Credit: PLD Space



## ICEYE boosts presence in UAE

ICEYE **inaugurated an office in the UAE with plans to allocate increased resources to the UAE in the upcoming years.** In November 2023, the company also entered into a partnership with Bayanat and Yahsat, aiming to expand commercial opportunities and reinforce the country's standing in the global space race. As the Middle East gains prominence as a hub for space-related activities, ICEYE's move aligns with the broader regional trajectory. The UAE government's substantial \$816M investment in the space sector, with a focus on supporting private companies, further indicates the region's commitment to space exploration.

## Rocket Lab launches 'Four of a Kind' mission



*Credit: Rocket Lab*

On January 31st, **Rocket Lab USA launched the 'Four Of A Kind'**, its inaugural Electron mission for 2024, designated as a "space-junk focused" endeavour for Spire Global, Inc. and NorthStar Earth & Space. It was launched from Rocket Lab Launch Complex 1 in New Zealand, and it saw the successful retrieval of the rocket's first stage post-launch. The Electron rocket deployed four SSA satellites into a 530km circular Earth orbit:

they will observe near-Earth objects to furnish timely and precise data for space object detection, tracking, orbit determination, collision avoidance, navigation, and proximity alerts.

## Blue Origin launches New Shepard and makes advancements for New Glenn

On December 19th, **Blue Origin's New Shepard suborbital vehicle completed its first mission in over 15 months.** Originally slated for December 18th, Blue Origin's NS-24 mission faced a setback due to a ground system issue and an earlier delay. Marking its 24th liftoff, the uncrewed NS-24 mission took off from Launch Site One in West Texas, with the capsule reaching an altitude of 107 kilometres. The mission carried 33 payloads showcasing a diverse range of experiments.



*Credit: Blue Origin*

Furthermore, **Blue Origin is set to perform tanking tests and simulated countdowns in preparation for assembling and erecting the New Glenn rocket** at Cape Canaveral Space Force Station. Despite past setbacks and scepticism invoking Berger's Law, Blue Origin maintains its commitment to a 2024 launch, backed by visible progress at its manufacturing plant near NASA's Kennedy Space Center. Blue Origin's Vice President, Lars Hoffman, highlighted plans for engine testing in the coming months, emphasising the launch of New Glenn in 2024.

## ESA and GomSpace sign €1.5M contract for satellite mission control system

GomSpace Luxembourg signed a **€1.5M contract with ESA to further develop its mission control system, the Hands-Off Operations Platform (HOOP).** The Luxembourg Space Agency is providing funding for the contract via the Luxembourg National Space Programme LuxIMPULSE, and its execution is underway through the facilitation of ESA. Initiated in 2018, HOOP facilitates autonomous operations for single satellites and constellations and is set to undergo enhancements to accommodate multiple missions, incorporating manoeuvres for collision avoidance and integration of diverse satellite fleets. The contract, scheduled from January 2024 to November 2025, aims to bolster HOOP's capabilities and extend its support to complex missions.



## In-orbit Servicing Missions and Companies see Several Key Developments

### Rogue Space Systems lands first in-orbit service contract

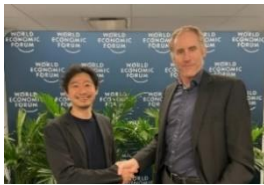
**Rogue Space Systems Corporation secured its inaugural in-orbit service contract.** While details of the contract and the identity of the commercial constellation owner/operator remain confidential, the contract involves locating and servicing a satellite post-deployment from SpaceX's Transporter 9. The mission encompasses tasks such as establishing communication with the satellite and executing operations to ensure its optimal functionality. Rogue's Mission Operations team will collaborate closely with the customer's ground station partner and the satellite bus provider to facilitate these operations, potentially leveraging imaging capabilities from the currently active Barry-1 mission, also deployed aboard Transporter 9.

### D-Orbit secures launch contracts with TelePIX

The Italian company D-Orbit signed two launch service contracts with TelePIX, a South Korean space startup. **The collaboration will see D-Orbit launching and testing TelePIX's On-Board Processor (OBP), Tetraplex, in orbit.** Tetraplex will undergo in-orbit demonstration, validating its performance and reliability in the space environment. The launch service contracts include technical guidance for launch requirements, transportation, and integration of Tetraplex into D-Orbit's ION Satellite Carrier for both missions. D-Orbit will oversee the launch of Tetraplex into the target orbit, along with providing in-orbit demonstration services.

### Orbit Fab partners with Space Machines Company, ispace and ClearSpace

The Australian **Space Machines Company (SMC) partnered with U.S.-based Orbit Fab for a leap in in-space servicing.** SMC plans to use their alignment markers on the Optimus Orbital Servicing Vehicle, launching in 2024 on SpaceX Falcon 9 rideshare mission. Orbit Fab's markers simplify space manoeuvres, ensuring precise docking and fuel replenishment.



*Credit: ispace*

In addition, Orbit Fab joined forces with Tokyo-based ispace **to collaborate on in-space propellant harvesting and delivery for upcoming Moon missions.** The MoU outlines plans for resource mapping and in-situ resource utilisation missions, aiming to reduce dependence on Earth supplies. Orbit Fab's RAFTI (Rapidly Attachable Fluid Transfer Interface) refuelling ports will facilitate the replenishment of satellites and lunar landers.

Lastly, **Orbit Fab partnered with ClearSpace** to enhance in-space refuelling and servicing capabilities. The partnership will focus on integrating an Orbit Fab fuel depot with a ClearSpace shuttle and involves the development of technologies to enable in-orbit refuelling.

### Astroscale reveals APS-R refuelling vehicle

**Astroscale is developing APS-R,** an in-space refuelling vehicle set to redefine satellite operations. This vehicle will ferry hydrazine from a GEO fuel depot operated by Orbit Fab directly to client satellites, eliminating the need for satellite manoeuvring. Through a \$25.5M contract with the USSF and additional funding, Astroscale aims to deliver APS-R by 2026. The satellite, manufactured in Texas, will utilise Orbit Fab's refuelling ports to ensure seamless docking.

### ANU researchers test eco-friendly bogong thruster in orbit

Researchers at ANU **successfully tested in-orbit the Bogong thruster.** Developed by Boswell Technologies and utilising solid naphthalene, they aim to advance eco-friendly propulsion. This innovation, ideal for small satellites, could change orbital manoeuvres with minimal power consumption.





## Aalyria and ESA forge 5G/6G connectivity partnership

The U.S. company Aalyria signed a development contract with ESA supported by UKSA. The amount of the contract remains undisclosed and aims **to pioneer an O-RAN compliant orchestration system for 5G/6G Terrestrial (TN) and Non-Terrestrial Networks (NTN)**. The project focuses on creating an orchestration system to connect diverse assets across land, sea, air, and space, based on emerging 5G-Advanced and 6G standards. Aalyria's Spacetime platform will be adapted to develop a novel TN/NTN-capable Service Management & Orchestration platform. This platform will enable interoperability within and among TN/NTNs, addressing challenges posed by the constant motion of non-terrestrial assets.

## Neutron Star Systems secures contract with ESA

The German company Neutron Star Systems (NSS) signed its second **contract with ESA to develop the "Very High Thrust Density for Space Transportation"**. The agreement involves the design and manufacturing of a high-power electric propulsion prototype, aiming to establish the foundation for deploying electric propulsion technologies in future space missions. NSS collaborates with diverse partners: the Institute of Space Systems at the University of Stuttgart, Germany, and the University of Pisa, Italy, for the execution of this project. The focus of the 24-month contract, scheduled until mid-October 2025, encompasses defining propulsion system requirements, optimising thruster design, achieving stable discharge operation, and conducting performance characterisation through testing and analysis of thrust, discharge, and thermal behaviour.

## UK companies secure funding for TRUTHS climate mission

Airbus UK and Teledyne e2v have been **awarded £95M and £9M, respectively, by the UK Space Agency – as part of ESA's Earth Observation Earth Watch programme – to advance the TRUTHS mission**. Focused on climate monitoring, TRUTHS aims to provide precise measurements of solar energy and Earth's reflected light, enhancing climate change understanding. Airbus will allocate funds to satellite design, while Teledyne e2v will develop a Hyperspectral Imaging Spectrometer Detection System. Due to launch in 2030, TRUTHS will serve as a 'climate and calibration observatory in space', linking satellite observations to international standards.



*Credit: UK Space Agency*

## UK Space Agency invests £820K in Snowdonia Space Centre

The UK Space Agency earmarked **£820K to support the creation of a Space Technology Test Centre (STTC) in Wales**. The Snowdonia Space Centre, in collaboration with Newton Launch Systems, secured the funding through the Space Clusters Infrastructure Fund. Located at the former Llanbedr Airfield near Cardigan Bay, the Snowdonia Space Centre's STTC will house a flight test range for rocket-powered vehicles, support near-space scientific flights, microgravity research, and trials for re-entry vehicles and payload recovery systems. Complementing the test range, the centre will feature a space technology testing laboratory equipped with essential facilities. The STTC project, scheduled for completion by March 2025, will be open to UK organisations, providing them with a platform to develop, test, and qualify space technology and products.





## UKSA funds Orbex and HyImpulse Space through ESA "Boost!" initiative



*Credit: ESA*

The **UK Space Agency** allocated **£6.7M in funding to two launch startups aiming to operate from UK spaceports**. The funding, part of the ESA's 'Boost!' initiative, accelerates the development of Sutherland Spaceport with a focus on sustainability. Orbex, based in Scotland, received £3.3M to establish a biofuel plant at the Sutherland Spaceport for its sustainable micro-rocket Prime. Orbex plans to launch from Sutherland up to 12 times annually, deploying small satellites into polar and sun-synchronous orbits. Meanwhile, HyImpulse, associated with SaxaVord Spaceport in the Shetland Islands, was awarded £3.4M to test the propulsion system of its SL1 microlauncher, which uses synthetic paraffin fuel produced with renewable energy sources. HyImpulse aims to conduct a demonstrator sounding rocket launch from Australia in early 2024.

## U.S. Space Force explores in-orbit refuelling strategies

In a bid to enhance satellite operations, the USSF tested the **"Parallax Rising 2.2" to understanding the complexities of in-orbit refuelling**. Held at the Space Systems Command in El Segundo, California, the exercise delved into the strategic, logistical, and operational implications of adopting this cutting-edge technology. The exercise underscored the critical need for sustained satellite manoeuvring in today's congested and contested space environment. With adversaries deploying manoeuvrable spacecraft, the Space Force is pivoting towards "dynamic space operations", facilitated by autonomous refuelling and other in-orbit services.

## Viasat enhances Irish Air Corps aircraft connectivity with Airbus collaboration

Viasat successfully **integrated advanced Ku- and Ka-band airborne technology onto Airbus C295 MSA aircraft for the Irish Air Corps**, a division of the Irish Defence Forces. The collaboration aims to provide enhanced capabilities to the multi-role surveillance aircraft, supporting Military Air Defence and UN peacekeeping operations. The integration involves Viasat's GAT-5530 dual-band broadband terminal, offering secure, reliable satellite connectivity. This advancement enables greater command, control, and communication (C3) mission capabilities, including tactical transport and intelligence, surveillance, and reconnaissance. The collaboration also includes a managed SATCOM service contract covering multiple aircraft, ensuring near-global service coverage.

## Marlink integrates Starlink and Eutelsat OneWeb services for icebreaker

The Norwegian company Marlink successfully **integrated Starlink and Eutelsat OneWeb LEO internet services on PONANT's Le Commandant Charcot**, a hybrid electric polar exploration vessel. Le Commandant Charcot benefits from Marlink's collaboration solutions, ensuring connectivity in remote and extreme environments. This project combines Marlink's Sealink GEO VSAT with Starlink, Eutelsat OneWeb, and Iridium LEO services, providing PONANT with a comprehensive solution for polar itineraries. The approach allows PONANT to select the backbone VSAT for guaranteed throughput and access augmented polar coverage through LEO services. This integration enhances connectivity for passengers and crew, leveraging Marlink's expertise in smart hybrid networks.



*Credit: Marlink*



## Telespazio and Hughes Europe collaborate on connectivity services

Telespazio and Hughes Europe formed a collaboration **to introduce connectivity services using the Eutelsat Konnect VHTS (K-VHTS) satellite**, developed by Thales Alenia Space. The K-VHTS satellite boasts very high throughput, delivering 230 beams over Western Europe and a Ka-band capacity of 500 Gbps. Built on the Hughes JUPITER System, the satellite will leverage Hughes JUPITER terminals. The collaboration between Telespazio and Hughes Europe aims to provide reliable, high-performance connections, with Telespazio as the exclusive commercial provider for defence, government, and security services, and Hughes Europe as expert in satellite broadband managed services and user terminal manufacturing. The partnership will focus on the K-VHTS services launch phase, targeting both government and enterprise broadband market segments across Europe.

## Starlink faces setback from the Federal Communications Commission

The Federal Communications Commission (FCC) maintained its 2022 ruling **to deny SpaceX's Starlink a Rural Digital Opportunity Fund subsidy worth \$886M**. The subsidy, aimed at expanding internet access in rural areas, was initially awarded in 2020 but was reversed in 2022 due to concerns over Starlink's user terminal costs and download speeds. Despite SpaceX's appeal, the FCC upheld its decision, sparking disappointment from the satellite-based internet service provider. FCC Commissioner Brendan Carr dissented, accusing the agency of politicising the decision and applying a unique standard exclusively to Starlink. Despite this setback, Starlink continues to improve its performance, with download speeds reaching 65 Mbps in Q3.

## Eutelsat OneWeb partners with Hanwha Systems

Hanwha Systems entered into a distribution partnership with Eutelsat OneWeb **to extend LEO connectivity services to South Korea**. With plans to facilitate a Korean commercial LEO satellite-based communication system, Hanwha Systems aims to address connectivity challenges in remote areas, maritime zones, and aviation sectors. Hanwha Systems aims to deploy satellite terminals and support the establishment of a robust communication network. Despite the company's own plans for a LEO constellation, the focus remains on collaborative efforts with Eutelsat OneWeb to meet immediate connectivity needs.

## Rivada Space Networks partners with Wiseband Forge



*Credit: Rivada Space Networks*

Rivada Space Networks partnered with Wiseband, an Emirati satellite services company, **to deliver secure connectivity solutions to the Middle East**. Wiseband specialises in tailoring private satellite networking solutions to meet stringent security and performance demands, with ongoing projects spanning the UAE, KSA, Kuwait, and Egypt. Rivada offers the OuterNET, a low-latency point-to-point orbital network. This constellation leverages inter-satellite laser links and advanced onboard processing to establish an optical mesh network in space. The OuterNET ensures data remains in space from origin to destination, promising end-to-end latencies surpassing those of terrestrial fibre over similar distances. By routing traffic on a physically separated network, Rivada enhances security for organisations requiring secure data sharing across distributed sites.



## Intelsat advances military services and improves in-flight connectivity

Intelsat showcased a **flat panel antenna designed for moving vehicles, providing broadband services through the company's geostationary satellites and SpaceX's Starlink** network in LEO. The antenna's multi-orbit capabilities, integrating both geostationary and LEO satellite connectivity, respond to market demands for low-latency, reliable, and consistent service across various sectors. The flat panel antenna, already in production, garnered interest from the U.S. Department of Defense, with approximately a dozen units sold. The antennas, equipped with SpaceX modems, ensure interoperability with Starlink, and meet military specifications, including ruggedisation for combat environments. Intelsat aims to offer these antennas under the Proliferated Low Earth Orbit (PLEO) Satellite-Based Services contract, serving military vehicles with enhanced connectivity, redundancy, and adaptability to military communications systems.

Furthermore, **Intelsat is set to enhance in-flight connectivity on dual-class regional aircraft, starting in early 2024**, by deploying multi-orbit Wi-Fi connectivity to American Airlines with their Electronically Steered Array. The move aims offer internet on over 900 mainline aircraft, with the goal of surpassing 1,400 satellite-connected aircraft after regional updates are completed. The multi-orbit technology operates on both geostationary and LEO satellites, ensuring a low-latency, high-speed internet connection for passengers. The terminals, based on Ball Aerospace's antenna technology and integrated by Stellar Blu Solutions, offer connectivity to Intelsat's geostationary fleet and LEO satellites from Eutelsat OneWeb.

## SDA collaborates with Rocket Lab and L3Harris

Rocket Lab has been **chosen by the Space Development Agency (SDA) to lead the design and construction of 18 Tranche 2 Transport Layer-Beta Data Transport Satellites (T2TL - Beta) in a \$515M firm-fixed price agreement**. The contract positions Rocket Lab as the prime contractor, enhancing Department of Defense supply chain diversity through vertical integration. As the prime contractor, Rocket Lab will oversee the entire satellite lifecycle, from design and development to production, testing, and operations. The contract, including \$26M in incentives and options, is a strategic move to bolster the U.S. defence and intelligence community's capabilities, highlighting Rocket Lab's role as a leading player in the satellite domain. Scheduled for launch in 2027, the T2TL – Beta satellites, integrated into SDA's Transport Layer, aim to provide secure, low-latency military data and connectivity globally.

Furthermore, **SDA partnered with L3Harris, Lockheed Martin, and Sierra Space to construct and operate 54 satellites with infrared sensors**, aimed at monitoring hypersonic missiles at all flight stages. The project, part of SDA's Tranche 2 Tracking Layer, envisions a global network of low-orbit satellites for enhanced missile detection and defence. These contracts, valued at approximately \$2.5B, will see each company managing 18 satellites. The satellites, expected to launch by April 2027, promise to significantly bolster missile defence systems. They will integrate wide-field-of-view sensors and advanced infrared systems for precise tracking, aiding in the interception of incoming threats.



## **USSF awards Lockheed Martin and Boeing contracts for MUOS Satellite Design**

The U.S. Space Force granted **Lockheed Martin and Boeing \$66M contracts each to develop a new communications satellite**, expanding the Mobile User Objective System (MUOS), a satellite network for transmitting voice and data communications for the U.S. military. Over the next 15 months, both companies will create prototype satellites demonstrating how they meet Space Force requirements. By 2025, Space Force aims upgrade the existing constellation of five MUOS satellites in geosynchronous orbit. These contracts aim to reduce risk and uncertainty and will further develop the new satellites, named MUOS SV6 and SV7, with improved power and communication technologies, targeted for launch by 2030.

## **Viasat secures \$900M USAF contract for rapid technology integration**

Viasat secured a **contract with the USAF's Life Cycle Management Center (USAF LCMC), valued at \$900M**. The Indefinite Delivery/Indefinite Quantity (IDIQ) contract, known as LCMC XA IDIQ, spans approximately five years, with provisions for an additional five-year extension. Under this contract, Viasat will collaborate with the USAF to integrate cutting-edge technologies, encompassing systems, hardware, software, and cybersecurity solutions. The company is tasked with prototyping and testing these innovations to provide integrated, multi-domain capabilities for the Air Force. The partnership aims to expedite technology integration across the Air Force, aligning with the military's imperative to swiftly adopt advancements. Viasat, chosen for all three categories within the contract, will contribute to Development Planning, Systems Development, and Synthetic Environment Development. These areas encompass the rapid transition of technology from laboratories to operational use, incorporation of emerging systems into existing platforms, and the creation of advanced models and simulations for operational assessments, respectively.

## **Westinghouse, Northrop Grumman, and Astrobotic collaborate on space nuclear power programme for USAF**

Westinghouse Electric Company, in collaboration with Northrop Grumman and Astrobotic, has been **selected by the U.S. Air Force Research Laboratory's Space Vehicle Directorate for an advanced space research programme**. The programme, known as the Joint Emergent Technology Supplying On-Orbit Nuclear power (JETSON) High Power programme, aims to explore and develop alternatives to current space power systems. The collaboration involves leveraging nuclear energy to power satellites, offering constant and reliable power without the operational limitations of solar arrays or batteries. The JETSON High Power programme explores new solutions to the limitations of current space power systems, such as solar arrays and batteries, and it represents an effort to advance space power technology and enhance the capabilities of spacecraft systems.

## **Gilat's Wavestream secures \$20M US Army contract for satellite connectivity**

On December 4th, Gilat Satellite Networks announced that its U.S.-based subsidiary, Wavestream, has been awarded a \$20M contract by the U.S. Army. The contract, an extension of an existing deal, **aims to sustain anytime, anywhere satellite connectivity for the military**. Wavestream's Solid State Amplifier (SSPA), renowned for its durability in harsh environments, plays a crucial role in enabling Satellite Transportable Terminals to provide a reliable "Communications-on-the-Pause" solution globally.



### In other news

**Eutelsat OneWeb collaborates with Imperial College London to utilise its LEO satellite constellation for global space weather monitoring:** Dr. Martin Archer's UKRI Future Leaders Fellowship, supported by Eutelsat OneWeb, will analyse magnetometer data to enhance space weather predictions and mitigate its impact on technology globally.

**KVH Industries partners with Eutelsat OneWeb for LEO services:** the deal aims to offer LEO connectivity to commercial and leisure vessels. KVH plans to integrate Eutelsat OneWeb's LEO technology into its existing KVH One network, enhancing global maritime connectivity.

**The German start-up Polaris successfully tested the AS-1 engine ignition:** the inaugural ignition of the engine occurred during the Hot Fire Test, conducted on an airfield situated at a former airport in northern Germany. The AS-1 is slated to be integrated into the MIRA flight demonstrator following the conclusion of the ground test programme.

**GomSpace signs €414K contract with DLR:** the aim is to create the first phase of the 16U cubesat project and will be executed during the first half of 2024.

**New Space India chooses SpaceX for the Falcon 9 launch of the GSAT-20 communications satellite in Q2 2024:** GSAT-20, designed for high-throughput connectivity across India, weighs 4,700 kg. NSIL opted for SpaceX due to limited launch alternatives.

**Intuitive Machines announces a revised launch window in mid-February 2024, in partnership with SpaceX, for its IM-1 lunar mission:** the Nova-C lunar lander is set to land near the Moon's south pole, requiring specific lighting conditions. This mission, part of NASA's CLPS initiative, aims to pave the way for human exploration and sustained presence on the lunar surface.

**Australia's ELO2 reveals a lunar rover prototype for the \$50M Moon to Mars Trailblazer programme:** developed with partners like BHP and Northrop Grumman Australia, the rover aims to transport lunar regolith for oxygen extraction at a NASA facility.

**Exolaunch USA signed a launch deal with Capella Space for the Acadia-5 satellite on SpaceX's Transporter-11 mission:** this marks Exolaunch's US expansion, managing planning, integration, and launch.

**GHGSat collaborates with Yahsat and ADNOC to reduce global energy sector methane emissions:** this aims to create methane mitigation solutions using satellite-based environmental solutions, emphasises environmental sustainability and accelerates positive change in the global fight against climate change, benefiting NOCs in the MENA region and beyond.

**Tomorrow.io, MTN Group, and Microsoft collaborate to deliver life-saving early warnings to over 300 million Africans:** using Microsoft's AI for Good Lab grant, the partnership integrates Tomorrow.io's weather engine, Microsoft Azure, and MTN's mobile network for weather information dissemination. Launching in Western Africa and expanding, the initiative addresses climate challenges, supporting sustainable development.

**Raytheon NORSS, part of RTX, wins UKSA contract to provide SST Data for objects LEO:** using the LOCI sensor network, it enhances the UK's space domain awareness, monitoring satellites and debris for asset safety. LOCI's international deployment spans the UK, U.S., and Australia.

**DARPA chooses 14 companies for LunA-10 Capability Study to develop a sustainable lunar economy:** the selected companies will work collaboratively over seven months to design integrated system-level solutions covering lunar power, mining, communications, navigation, logistics, and robotics.





## INVESTMENT & FINANCE

### D-Orbit secures €100M in Series C funding



*Credit: Marubeni Corporation*

The Italy-based company **D-Orbit** successfully concluded the **first phase of its Series C funding, raising approximately €100M**. The deal follows a 2023 with triple-digit annual revenue growth since 2021, winning over €60M in European government contracts. The round was led by the Japanese Marubeni Corporation and includes participation from Avantgarde, a family office rooted in pharmaceutical and space industries, alongside renewed support from existing investors. The funds will fuel the

expansion of D-Orbit's space logistics services, emphasising in-orbit satellite servicing and space cloud computing. Additionally, the company aims to enhance operational capabilities across the U.S., Europe, and the UK.

### ArianeGroup commits €85M to MaiaSpace

With the €85M commitment ArianeGroup's **total direct financial commitment to its launch subsidiary MaiaSpace will raise to €125M**. The company is developing a partially reusable microlauncher planned to launch for the first time in 2025. On top of the direct financial commitment by ArianeGroup, the subsidiary is also benefiting from synergies in programmes such as Prometheus engines, which the MaiaSpace launch vehicle is planned to use.

### Yahsat and Bayanat boards propose merger with a \$4B market capitalisation

According to the **agreement reached between the companies' boards of directors**, 54% of the combined company shares will belong to Bayanat shareholders and 46% to Yahsat shareholders. Assuming the shareholders accept the deal, the merger is expected to be completed in H2 2024, subject to regulatory approvals, establishing the new company called Space42. The plans for the merger follow joint efforts from both companies to develop national satellite remote sensing and Earth Observation capabilities in the UAE, with a footprint across the space value chain.

### HawkEye 360 acquires Maxar Intelligence's RF Solutions

On December 15th, **HawkEye 360 acquired RF Solutions from Maxar Intelligence**. The acquisition encompasses assets (two RF satellites, intellectual property for RF scanning, and a global database with RF collections ranging from 1.4 GHz to 40 GHz) and expertise gained from the former



HawkEye<sup>360</sup>

*Credit: HawkEye 360*

Aurora Insight acquisition completed by Maxar Intelligence in January 2023. The acquisition of the wideband scanning mission expands HawkEye 360's capability to serve government intelligence users and also opens doors to new market segments, including support for the needs of commercial telecommunication operators. With the two new satellites, HawkEye 360's constellation now totals 23, and the company plans to launch an additional dozen satellites in 2024 to meet the increasing demands for RF Intelligence.





### Galactic Energy secures \$154M for Pallas-1 reusable rocket development

Chinese launch startup **Galactic Energy** raised **\$154M in funding to advance the development of its reusable Pallas-1 rocket**.

The company revealed the completion of the C and C+ funding rounds on December 18th, with Ziyang Heavy Industry Fund leading the investment, along with participation from Bengbu Investment Group, Langfang Linkong, Founder Hesheng Investment, Jintuo Capital, and other undisclosed investors. The funding will be directed towards the research and development of reusable launch vehicle technology for the Pallas-1, a 42-meter-long kerosene-liquid oxygen medium-lift launcher capable of lifting 5,000 kg to LEO or 3,000 kg to a 700 km sun-synchronous orbit.



*Credit: Galactic Energy*

### True Anomaly secures \$100M in Series B funding

U.S.-based **True Anomaly** has successfully raised **\$100M in a Series B funding round** to further develop its spacecraft and software addressing space domain awareness. Riot Ventures led the funding round. True Anomaly, which exited stealth mode in August with \$30M in initial financing, operates a spacecraft manufacturing facility in Denver, Colorado.

The company has doubled its workforce from 50 to over 100 employees and recently completed the construction of its first two autonomous orbital vehicles (AOVs), named "Jackal." These AOVs are scheduled to launch aboard SpaceX's Transporter-10 mission in 2024. True Anomaly aims to enhance space security, stability, sustainability, and transparency to address the evolving challenges in the space domain.

### SPAC Slam Corp sign non-binding letter of intent to merge with Lynk Global

The Special Purpose Acquisition company (SPAC) Slam Corp announced a **non-binding letter of intent to merge with Link Global**. In the same letter, it amended its articles of association to allow the company to extend the merge deadline to 25<sup>th</sup> of January 2024 and up to December 2025, based on a monthly authorisation by the board of directors. Following the announcement, Slam Corp had to give \$176M back to investors who chose to redeem shares. With the latest redemptions, the company, which had originally accrued \$575M when listed on Nasdaq in 2021, is left with less than \$99M.

### Latitude secures \$30M



*Credit: Latitude*

The French company **Latitude** secured **\$30M in a Series B funding round**. Existing investors have contributed, including Crédit Mutuel Innovation, Expansion, and DeepTech 2030 managed by Bpifrance, joined by Blast.club and Kima Ventures. The funding will accelerate Zephyr's development (scheduled for launch in 2025) and enable the launch of four new satellites in 2024. This financing will facilitate the commencement of manufacturing for the inaugural launcher, the establishment of assembly lines, the conduction of tests on electrical, propulsion and fluidic systems, as well as structural integrity, the operational readiness of the Test Center and recruitment of new talent.



### Armada secures \$55M in funding

The U.S. start-up Armada emerged from stealth **on December 11th after securing over \$55M in funding**. The company, backed by investors like Founders Fund and Lux Capital, aims to enhance data processing in remote areas by leveraging SpaceX's Starlink broadband constellation. The fund will implement Armada's Galleon data centres, compact units the size of shipping containers, providing real-time data processing capabilities to off-grid locations, such as oil rigs and battlefields. These centres, around nine meters in length, offer a portable solution for industries in need of data processing. The technology relies on SpaceX's satellite network for global connectivity, utilising an operating system that allows customers to manage multiple Starlink deployments across their businesses.



*Credit: Armada*

### iQPS raises \$23.7M in IPO

Shares of Institute for **Q-shu Pioneers of Space (iQPS) rose 82% in their Tokyo growth-market debut after raising 3.48B yen (\$23.7M)** in an initial public offering (IPO). The stock opened at 860 yen but faced heavy selling, closing at the daily limit low of 710 yen. iQPS, which spun off from Kyushu University in 2005, develops small satellites equipped with synthetic aperture radar (SAR), a technology vital for national security and disaster management. CEO Shunsuke Onishi highlighted the importance of securing funds to launch more satellites and maximise SAR capabilities. iQPS aims to establish a satellite constellation for near real-time data by 2028. With 80% of shares sold to domestic investors, the closing price values iQPS at around 24.9B yen. Japan's focus on building a robust space industry, especially considering China's technological and military advancements, has contributed to the success of space ventures like iQPS.

### Axelspace secures \$44M in Series D funding for satellite constellation expansion

The Japanese company Axelspace Holdings Corporation **concluded its Series D funding round, raising approximately \$44M**. This round increases Axelspace's cumulative equity financing to around \$89M. Key investors include SMBC-GB Growth I Investment Limited Partnership, Mitsui Fudosan, Yamato Holdings, among others. With the funds, Axelspace Corporation, a wholly owned subsidiary, will address diverse customer demands by enhancing EO services through the expansion of its proprietary microsatellite constellation, currently comprising five operational satellites.

### EchoStar concludes merger with DISH Network



*Credit: Echostar*

On December 31st, **EchoStar Corporation finalised its acquisition of DISH Network Corporation**. The merger unites DISH Network's satellite technology, streaming services, and 5G network with EchoStar's premier satellite communications solutions, establishing a presence in both terrestrial and non-terrestrial wireless connectivity. In this merger, DISH Network became a wholly owned subsidiary of EchoStar.



### CASSINI Business Accelerator welcomes 21 space startups in second batch

In the second batch of the CASSINI Business Accelerator, 21 space startups and scaleups were selected from over 120 applicants. **The diverse group specialises in areas such as robotics, satellite information, sustainability metrics, and rocket launches.** Notable companies in the selection include 10Lines (autonomous robots for pavement marking), Algoryx, constellR, and EnduroSat.



**CASSINI**

*Credit: European Commission*

### EIB signs MoU with Belgian region of Wallonia

The EIB signed an MoU with the Belgian region of Wallonia **to explore funding and advisory support** to help develop the space industry in the region. The agreement aims to boost Wallonia's space industry and support EO and reusable launch vehicles projects over the next 2 years through Wallonia's aerospace cluster Skywin. The cluster's membership includes ~50 companies, research centres and academic institutions.

### NorthStar raises \$14.7M in Series D

**NorthStar, a Canadian startup specialising in in-situ space situational awareness (SSA), has closed a \$14.7M Series D funding round.** Participants in the funding round included Telesystem Space Inc., the Québec government, and the Luxembourg Future Fund. The company aims to develop its "Skylarks" constellation, consisting of 24 satellites designed to map small space debris from low Earth orbit (LEO) to geostationary Earth orbit (GEO). NorthStar plans to launch its first batch of Skylark satellites in early 2024, supported by the recent funding. The company also plans to scale its operations with the opening of a data processing centre in Montréal.

### Albedo secures \$35M in Series A-1

The U.S. company **Albedo secured \$35M in Series A-1 funding**, bringing their total funding to \$97M. The round, propelled by Standard Investments, witnessed participation from investors like Booz Allen Ventures, Cubit Capital, and Bill Perkins, alongside Albedo's existing supporters. The company expressed intentions to utilise the investment to deploy their inaugural satellite and expedite constellation expansion, envisioning the realisation of the VLEO (very low Earth orbit) platform, offering different possibilities in imagery and data collection.

### Aldoria secures €10M in Series A funding for SSA activities



*Credit: Aldoria*

Aldoria, previously known as Share My Space, successfully concluded its **Series A funding round, raising €10M to bolster its Space Situational Awareness (SSA) system.** The funding will be used to expand Aldoria's optical telescope network to 12 telescopes by 2025, enhancing data processing systems, and refining collision identification capabilities. Leading the investment is Starquest Capital, supported by the European Innovation Council

Fund, the French government's Deeptech 2030 fund managed by Bpifrance, among others. Aldoria is one of the first companies supported by the **European VC fund Expansion Ventures, which recently raised €100M to invest in "European New Space and New Air Mobility".** Of the €100M raised by the fund, €60M were allocated by the European Investment Fund (EIF).



### In other news

**LiveEO secures \$10M in the first closing of its financing round:** partnering with Greencode Ventures, the funding accelerates LiveEO's entry into the EU Deforestation Regulation market.

**The Spanish company Sateliot secures €6M from Banco Santander:** the investment marks its third funding round in a year and supports the company's goal of launching the 5G-enabled nanosatellite constellation for IoT connectivity. In 2024, Sateliot plans to launch four new satellites and initiating a Series B funding for further development.

**SynMax raises \$13M in a funding round led by energy trader Bill Perkins:** the company monitors industrial assets and dark ships using commercial satellite imagery. The funds will aid market expansion, team scaling, and algorithm upgrades.

**Voyager Space and Airbus finalise the establishment of Starlab Space joint venture:** the companies completed the transaction to design, build, and operate the Starlab commercial space station.

**OurSky closes a \$9.5M seed funding round:** led by Upfront Ventures and Venrex Investment Management, the funding will accelerate telescope deployments and enhance their software platform, offering a solution for space data access and applications development.

**San Francisco's Pachama raises \$9M in a Series B extension:** The funds will advance AI-driven geospatial data initiatives for climate mitigation, emphasising transparency. The round was led by Deutsche Telekom's T.Capital and joined by existing investors.

**Insurtech BirdsEyeView secures an undisclosed seven-figure investment:** led by ESA, Big 5 Investors, InsurTech NY, and ACF Investors, the funds will fuel UK and U.S. market expansion and enhance its RAPTOR technology, which aims to automate underwriting processes.

**PierSight raises \$6M in seed round:** they plan to use the funds to enhance their technological capabilities and design and launch demo satellites. The round was co-led by Alpha Wave Ventures and Elevation Capital.

**Oxford Space Systems completes a £3M equity investment round:** with the funds, raised primarily with existing investors, the company plans to expand its product range, explore high-growth opportunities in satellite communication markets, and develop new antennas

**RocketStar secures a \$2M seed investment and acquires Miles Space:** the investment bolsters the merger and supports ongoing operations. Additionally, this capital injection catalysed the transformation of \$1.4M in previously issued notes into the new Series Seed equity..

**McKenzie Intelligence Services secures an investment from Maven Capital Partners:** Maven's funding will propel the enhancement of MIS' Global Events Observer platform, leveraging real-time data and machine learning for accelerated, data-driven decisions. The investment supports expansion into the UK, U.S., and European markets.

**SpaceX acquires Pioneer Aerospace out of bankruptcy for \$2.2M:** the deal is seen as a strategic move to secure SpaceX's supply chain and potentially save costs compared to finding a new supplier for parachutes.

**Kenyan startup Amini secures \$4M in seed funding:** led by Salesforce Ventures and the Female Founders Fund, with participation from existing investors, the startup aims to launch its first satellite in early 2025 and to expand its constellation to at least six satellites to offer more precise information on droughts, floods, soil conditions, and crop health.

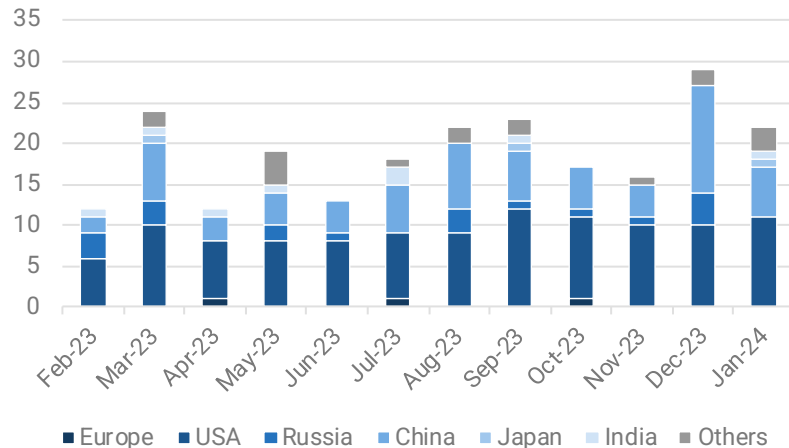


## LAUNCHES & SATELLITES

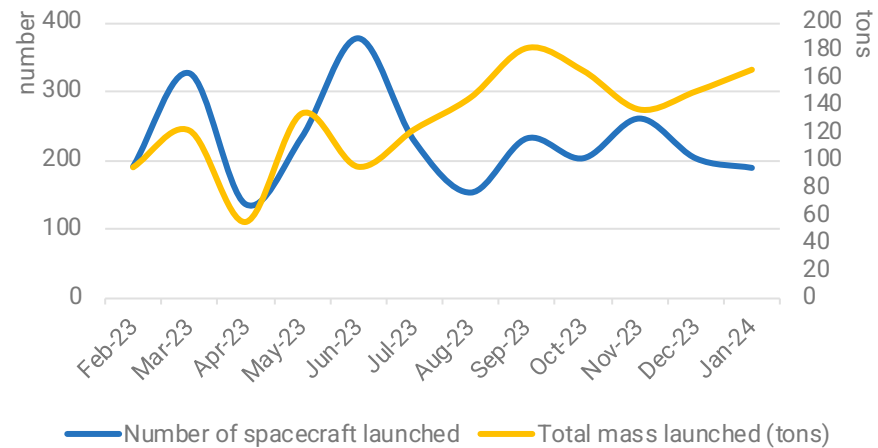
### Global space activity statistics

December 2023 – January 2024	USA	China	Russia	Japan	India	Others	Total
Number of launches	21	19	4	1	1	5	<b>51</b>
Number of spacecraft launched	326	47	4	1	2	10	<b>390</b>
Mass launched (in kg)	268 278.7	32 165	13 530	1600	869	314	<b>316 756.2</b>

### Launch activity over the year



Evolution of the number of launches per launch country

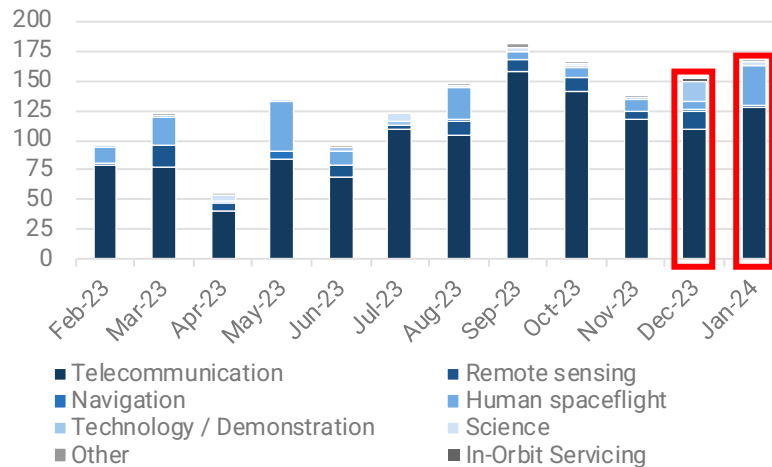


Evolution of launch activity over the year 2023-2024

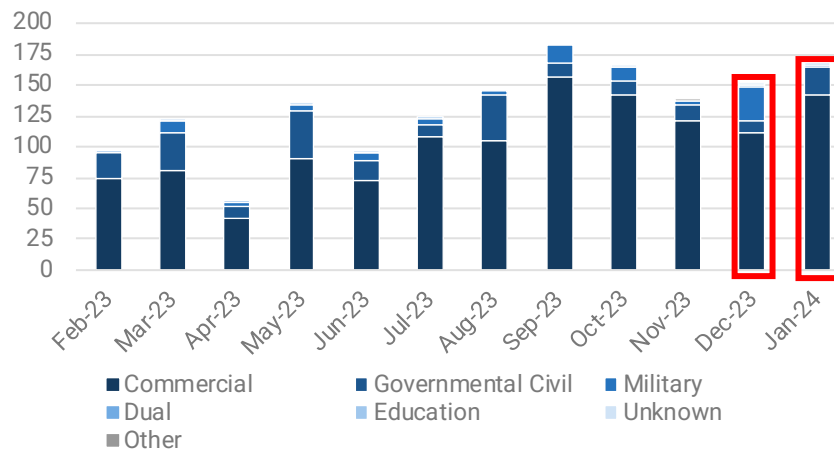




## Satellite missions and markets



Evolution of the total mass launched (tons) per mission (Feb. 2023-Jan. 2024)



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

Dec. 2023/Jan. 2024	Telecom	Remote sensing	Nav.	Human	Tech/ Dem	Science	IOS	Other
Europe	1500	3609.7			79.9		100	
USA	235 420	30		19547	5836	1283		16.5
China		4.375	2120	12 910	10 060	1450		900
Russia		6250		7280				
Japan		1700				43		
India					400	469		
Others	54	1150	9		155			10

Total mass (kg) launched by mission and customer country

Dec. 2023/Jan. 2024	Commercial	Gov.Civil	Military	Dual	Education	Unknown
Europe	3215	171	3600		1	
USA	249.240.5	7492	5400			
China	2.060	15.220	12870	750	15	900
Russia		9380	4150			
Japan	100	43		1600		
India		869				
Others	1045	3.743	800		1	

Total mass (kg) launched by market and customer country



## Launch Log

Launch date	Launch country	Launcher	Spacecraft name	Main customer	Customer country	Prime manufacturer	Manufacturer country	Mass (kg)	Mission	Market
01/12/2023	Russia	Soyuz-2-1a	Progress-MS 25	Roscosmos	Russia	RKK Energia	Russia	7280,00	Cargo Transfer	Gov.Civil
01/12/2023	USA	Falcon-9	425 Project EO/IR Sat 1	Korean Agency for Defense Development	South Korea	Korea Aerospace Research Institute	South Korea	800,00	Earth Observation	Military
			ALISIO 1	IACTEC	Spain	Open Cosmos	UK	9,70	Earth Observation	Gov.Civil
			Bane	York Space Systems	USA	York Space Systems	USA	136,00	Tech/Demo	Commercial
			EIRSAT 1	University College Dublin	Ireland	University College Dublin	Ireland	2,00	Tech/Demo	Gov.Civil
			ENSO / Robusta 1E	University of Montpellier	France	University of Montpellier	France	1,00	Tech/Demo	Education
			GNOMES 4	PlanetiQ	USA	Blue Canyon	USA	30,00	Meteorology	Commercial
			Hayasat 1	Bazoomq	Armenia	Bazoomq	Armenia	1,00	Tech/Demo	Education
			ION-SCV 15	D-Orbit	Italy	D-Orbit	Italy	100,00	In-Orbit Servicing	Commercial
			KOYOH	Kanazawa University	Japan	Kanazawa University	Japan	43,00	Astronomy	Gov.Civil
			Lilium 1	National Cheng Kung University	Taiwan	National Cheng Kung University	Taiwan	3,00	Tech/Demo	Gov.Civil
			LOGSATS	Patriot Infovention	Thailand	Patriot Infovention	Thailand	4,00	Telecom	Commercial
			MDQube-SAT 1 (2)	Innova Space	Argentina	Innova Space	Argentina	0,50	Tech/Demo	Commercial
			MicroHETSat	SITAEL	Italy	SITAEL	Italy	70,00	Tech/Demo	Commercial
			NanoFF (A & B)	TU Berlin	Germany	TU Berlin	Germany	2,7 (each)	Tech/Demo	Gov.Civil
			SplRIT	University of Melbourne	Australia	University of Melbourne	Australia	11,50	Tech/Demo	Gov.Civil
			Unicorn 2 (L , M & N)	Alba Orbital	UK	Alba Orbital	UK	0,5 (each)	Tech/Demo	Commercial
			Unknown (Cubesat) (5 spacecraft)	Unknown	Unknown	Unknown	Unknown	2 (each)	Unknown	Unknown
03/12/2023	USA	Falcon-9	Starlink (23 spacecraft)	SpaceX	USA	SpaceX	USA	800 (each)	Telecom	Commercial
04/12/2023	South Korea	GYUB-TV2	Doory-Sat	Hanwha	South Korea	Hanwha	South Korea	100,00	Tech/Demo	Commercial
04/12/2023	China	CZ-2C(3)	MisrSat 2	EgSA	Egypt	CAST	China	350,00	Earth Observation	Gov.Civil
04/12/2023	China	CZ-2C(3)	Xingchi-1 02 (A & B)	EllipSpace	China	EllipSpace	China	30 (each)	Earth Observation	Commercial
04/12/2023	China	Ceres-1 (3)	Tianyan 16 / Jiheng 1	Cultivate Space	China	Cultivate Space	China	250,00	Meteorology	Commercial
			Xingchi-1 01A	EllipSpace	China	EllipSpace	China	30,00	Earth Observation	Commercial
05/12/2023	China	Jielong-3	Hulianwang Jishu	China Satellite Network Group	China	CAS	China	190,00	Tech/Demo	Gov.Civil
07/12/2023	USA	Falcon-9	Starlink (23 spacecraft)	SpaceX	USA	SpaceX	USA	800 (each)	Telecom	Commercial
08/12/2023	China	ZhuQue-2	Honghu (1 & 2)	Shanghai Lanjian	China	Spacety Co.	China	50 (each)	Tech/Demo	Commercial
				Hongqing Keji YG	China	Spacety Co.	China	50,00	Tech/Demo	Commercial



## Launches & Satellites

08/12/2023	USA	Falcon-9	Starlink (22 spacecraft)	SpaceX	USA	SpaceX	USA	800 (each)	Telecom	Commercial
10/12/2023	China	CZ-2D(2)	Yaogan 39-05 (A , B & C)	PLA	China	DFH Satellite Co.	China	750 (each)	Signal Intelligence	Military
14/12/2023	China	CZ-2F/T	Chongfu Shiyong Shiyan Hangtian Qi 3 / CSSHQ 3	PLA	China	CAST	China	8500,00	Tech/Demo	Military
15/12/2023	NZ	Electron KS	QPS-SAR 5	iQPS	Japan	iQPS	Japan	100,00	Earth Observation	Commercial
15/12/2023	China	CZ-5	Yaogan 41	PLA	China	CAST	China	750,00	Earth Observation	Dual
16/12/2023	Russia	Soyuz-2-1b Fregat	Arktika-M 2	Roshydromet	Russia	Lavochkin	Russia	2100,00	Meteorology	Gov.Civil
17/12/2023	China	Hyperbola-1 (2)	Liangxi / DEAR 1	AZspace	China	AZspace	China	250,00	Tech/Demo	Commercial
19/12/2023	USA	Falcon-9	Starlink (23 spacecraft)	SpaceX	USA	SpaceX	USA	800 (each)	Telecom	Commercial
21/12/2023	Russia	Soyuz-2-1b	Kosmos 2573 / Bars- M5	RAF	Russia	Progress Rocket Space Center	Russia	4000,00	Earth Observation	Military
22/12/2023	USA	Firefly Alpha	Tantrum / ESA-Demo	Lockheed Martin	USA	Terran Orbital	USA	300,00	Tech/Demo	Commercial
23/12/2023	USA	Falcon-9	Starlink (23 spacecraft)	SpaceX	USA	SpaceX	USA	800 (each)	Telecom	Commercial
24/12/2023	USA	Falcon-9	SARah (2 & 3)	Bundeswehr	Germany	OHB	Germany	1800,00	Earth Observation	Military
25/12/2023	China	CZ-11H	Shiyan 24C-(1 , 2 & 3)	Unknown (China, Public)	China	Unknown (China, Public)	China	300 (each)	Unknown	Unknown
25/12/2023	China	Kuaizhou-1A	Tianmu-1 (11 , 12 , 13 & 14)	Xiyong Microelectronics	China	Xiyong Microelectronics	China	20 (each)	Meteorology	Commercial
26/12/2023	China	CZ-3B/G3Z	Beidou 3 M (25 & 26)	PLA	China	CAST	China	1060 (each)	Navigation	Military
27/12/2023	China	Kuaizhou-1A	Tianmu-1 (19 , 20 , 21 & 22)	Xiyong Microelectronics	China	Xiyong Microelectronics	China	20 (each)	Meteorology	Commercial
27/12/2023	Russia	Soyuz-2-1v	Kosmos 2574 / EO- MKA 5	MoD of the Russian Federation	Russia	VNIIE	Russia	150,00	Earth Observation	Military
28/12/2023	USA	Falcon-9	Starlink (23 spacecraft)	SpaceX	USA	SpaceX	USA	800 (each)	Telecom	Commercial
28/12/2023	USA	Falcon Heavy	X-37B OTV 07 / X-37B 02 F4	US Space Force	USA	Boeing	USA	5400,00	Tech/Demo	Military
30/12/2023	China	CZ-2C(3)/YZ- 1S	Hulianwang Jishu Shiyan 4 (A , B & C)	China Satellite Network Group	China	CAST	China	190 (each)	Tech/Demo	Gov.Civil
01/01/2024	India	PSLV-DL	POEM-3 XPoSat	ISRO ISRO	India India	ISRO ISRO	India India	400,00 469,00	Tech/Demo Astronomy	Gov.Civil Gov.Civil
03/01/2024	USA	Falcon-9	Ovzon 3	Ovzon	Sweden	Maxar	USA	1500,00	Telecom	Commercial
03/01/2024	USA	Falcon-9	Starlink (15 spacecraft)	SpaceX	USA	SpaceX	USA	800 (each)	Telecom	Commercial
			Starlink D2D (6 spacecraft)	SpaceX	USA	SpaceX	USA	970 (each)	Telecom	Commercial



## Launches & Satellites

05/01/2024	China	Kuaizhou-1A	Tianmu-1 (15 , 16 , 17 & 18)	Xiyong Microelectronics	China	Xiyong Microelectronics	China	20 (each)	Meteorology	Commercial
07/01/2024	USA	Falcon-9	Starlink (23 spacecraft)	SpaceX	USA	SpaceX	USA	800 (each)	Telecom	Commercial
08/01/2024	USA	Vulcan Centaur VC2S	Celestis 20 / CPAC 20	Space Services Inc.	USA	Space Services Inc.	USA	0,50	Other	Commercial
			Peregrine 1 / CLPS 1	Astrobotic	USA	Astrobotic	USA	1283,00	Planetary Science	Commercial
09/01/2024	China	CZ-2C(3)	Einstein Probe	CAS	China	CAST	China	1450,00	Astronomy	Gov.Civil
11/01/2024	China	Gravity-1	Yunyao-1 18 / Lianxin Yingda 1	Yunyao Yuhang	China	Chang Guang Satellite Technology Co.	China	100,00	Tech/Demo	Commercial
			Yunyao-1 19 / Sanxia Yaogan 1	Yunyao Yuhang	China	Chang Guang Satellite Technology Co.	China	100,00	Tech/Demo	Commercial
			Yunyao-1 20 / Langfang Kongjian 1	Yunyao Yuhang	China	Chang Guang Satellite Technology Co.	China	100,00	Tech/Demo	Commercial
11/01/2024	China	Kuaizhou-1A	Tianxing 1-02	Unknown (China, Public)	China	CAS	China	100,00	Tech/Demo	Gov.Civil
12/01/2024	Japan	H-2A-202	IGS-Optical 08	Cabinet Satellite Intelligence Center	Japan	Mitsubishi Electric	Japan	1600,00	Earth Observation	Dual
14/01/2024	USA	Falcon-9	Starlink (22 spacecraft)	SpaceX	USA	SpaceX	USA	800 (each)	Telecom	Commercial
15/01/2024	USA	Falcon-9	Starlink (23 spacecraft)	SpaceX	USA	SpaceX	USA	800 (each)	Telecom	Commercial
17/01/2024	China	CZ-7	Nanjing	Nanjing University	China	Nanjing University	China	15,00	Earth Observation	Education
17/01/2024	China	CZ-7	Tianzhou 7	CNSA	China	CAST	China	12910,00	Cargo Transfer	Gov.Civil
18/01/2024	USA	Falcon-9	Crew Dragon Ax-3	Axiom Space	USA	SpaceX	USA	12055,00	Crew Transfer	Commercial
20/01/2024	Iran	Qaem-100	Suraya	Iran Space Agency	Iran	Iran Space Agency	Iran	50,00	Telecom	Gov.Civil
23/01/2024	China	Zhongke-1A	Taijing-1 03	MinoSpace	China	MinoSpace	China	70,00	Earth Observation	Commercial
			Taijing-2 (02 & 04)	MinoSpace	China	MinoSpace	China	60 (each)	Earth Observation	Commercial
			Taijing-3 02	MinoSpace	China	MinoSpace	China	240,00	Earth Observation	Commercial
			Taijing-4 03	MinoSpace	China	MinoSpace	China	350,00	Earth Observation	Commercial
24/01/2024	USA	Falcon-9	Starlink (22 spacecraft)	SpaceX	USA	SpaceX	USA	800 (each)	Telecom	Commercial
28/01/2024	Iran	Simorgh	Hatef 1	Iran Space Agency	Iran	Iran Space Agency	Iran	9,00	Navigation	Gov.Civil
			Keyhan 2	Iran Space Agency	Iran	Iran Space Agency	Iran	7,00	Tech/Demo	Gov.Civil
			Mahda	Iran Space Agency	Iran	Iran Space Agency	Iran	32,00	Tech/Demo	Gov.Civil
29/01/2024	USA	Falcon-9	Starlink (23 spacecraft)	SpaceX	USA	SpaceX	USA	800 (each)	Telecom	Commercial
29/01/2024	USA	Falcon-9	Starlink (22 spacecraft)	SpaceX	USA	SpaceX	USA	800 (each)	Telecom	Commercial
30/01/2024	USA	Falcon-9	Cygnus CRS-20	NASA	USA	Northrop Grumman	USA	7492,00	Cargo Transfer	Gov.Civil
31/01/2024	NZ	Electron KS (R)	Lemur-2 / Skylark (1 , 2 , 3 & 4)	Spire	USA	Spire	USA	4 (each)	SSA	Commercial



## LAUNCH HIGHLIGHTS

### Third Axiom/SpaceX mission lifts three Europeans to the ISS

On January 18th, SpaceX successfully launched the third private astronaut mission for Axiom Space to the ISS. The launch was executed by SpaceX's Falcon 9 rocket and Crew Dragon spacecraft. This two-week mission included an ex-NASA astronaut and three astronauts sponsored by European countries. Marcus Wandt from Sweden, who was named a reserve astronaut by ESA in November 2022, is making his inaugural space voyage, being the first from his cohort to do so. This mission, known as Ax-3, marks Axiom's third endeavour in orchestrating such missions. These are part of the company's broader strategy to accumulate spaceflight experience in anticipation of adding commercial modules to the ISS. These modules are intended to eventually become a key part of a new commercial space station following the ISS's decommissioning.



*Credit: Axiom*

### United Launch Alliance new Vulcan rocket launches Peregrine Lunar lander



*Credit: United Launch Alliance*

The Vulcan Centaur rocket, developed by United Launch Alliance (ULA), successfully embarked on its inaugural flight on January 8th, from Cape Canaveral. Swiss-based. Mounted on the rocket was the Peregrine Moon lander by Astrobotic. Peregrine was transporting 20 payloads from various customers, among which are five scientific instruments for NASA, as part of the agency's first service delivery under the Commercial Lunar

Payload Services (CLPS) program. Swiss based **Beyond Gravity** majorly contributed to this specific mission, providing payload fairings, the interstage adapter, the heat shield, and the payload attachment fitting. The lander was planned to be the first American spacecraft to land on Earth's natural satellite since 1972, and potentially the first privately funded mission to achieve a lunar landing. However, soon after separating from its rocket, the spacecraft suffered a fuel leak, the mission has not been successful in reaching the Moon and was brought back to burn in Earth's atmosphere.

### US and China both launch classified spaceplanes

On December 28th, the **X-37B Orbital Test Vehicle, operated by the Space Force, embarked on its seventh mission to space**, this time aboard a SpaceX Falcon Heavy rocket from the Kennedy Space Center. While specific details about the X-37B are limited, the Space Force has confirmed that the mission aims to explore new orbital patterns, trial space domain awareness technologies, and study the effects of radiation on NASA materials. Additional payloads carried by the X-37B are classified. Notably, each mission of the spacecraft has seen an increase in its duration in orbit, setting a record of 908 days during its previous return in November 2022. X-37B was launched shortly after **China's spaceplane, named Shenlong, was sent to orbit on December 14th** on a Long March 2F for a third flight. Shenlong was observed to releasing six classified objects into orbit, some of which were transmitting signals. The US Space Force had initially scheduled the X-37B's launch for December 7, ahead of Shenlong's deployment, but faced multiple delays.





### Chinese-European Einstein Probe launches

On January 9th, the **Einstein Probe**, a space telescope developed by the Chinese Academy of Sciences (CAS), was launched aboard a Long March 2C rocket from the Xichang, China. Its mission is to scan the skies for X-ray emissions from enigmatic cosmic entities such as neutron stars and black holes. The Einstein Probe project is led by CAS, with significant contributions from ESA and Germany's Max Planck Institute for Extraterrestrial Physics (MPE). The spacecraft is outfitted with two main instruments: the Wide-field X-ray Telescope (WXT) and the Follow-up X-ray Telescope (FXT). ESA played a crucial role in testing and calibrating the X-ray detectors and optics of WXT, and also in developing the mirror assembly for one of the telescopes of FXT. As part of this collaborative venture, ESA is entitled to access 10% of the observational data collected by the Einstein Probe.

### Largest Chinese commercial rocket lifts off from Yellow Sea

Orienspace's Gravity-1 rocket was launched from the Defu-15002 mobile sea platform located in the Yellow Sea on January 11th.

The mission's primary payload included three weather forecasting Yunyao-1 satellites. This launch marked the inaugural mission for Orienspace and represents a significant milestone in the Chinese commercial space sector, with Gravity-1 now standing as the largest rocket in terms of launch capacity. Since 2020, there has been a noticeable trend among Chinese commercial launch companies to develop larger rockets. This shift aligns with emerging potential revenue sources, such as the Guowang and G60 LEO broadband constellations and possible space station cargo missions.



*Credit: Orienspace*

### SpaceX launches German military satellites

SpaceX successfully deployed two reflector satellites for the SARah reconnaissance system on 28<sup>th</sup> December, using its Falcon 9 rocket from Vandenberg Space Force Base. The SARah mission is a project developed by OHB System AG with Airbus Defence and Space, to create and assemble three radar satellites for Germany's Federal Ministry of Defence. The integration of these two types of satellites is intended to enhance the global reconnaissance capabilities of the German Armed Forces, irrespective of daylight or weather conditions. Due to the delay of the Ariane 6 heavy launcher, Europe currently has to rely on foreign launch service providers, such as SpaceX.

### Iran launches multiple spacecraft

January saw two Iranian launches lifting multiple spacecraft into orbit. First, on January 20th, Iran employed its Qaem-100 launch vehicle to bring the **Suraya communication satellite into a Low Earth Orbit. Germany, France and the UK condemned the launch**, stating fears that the technology could be used to advance the development of a long-range ballistic missile system. Just a week later, **on January 28th, Iran simultaneously launched three payloads in the same launch for the first time.** The payloads consist of communication and navigation technology demonstrations.

### Ireland launches its first satellite

On December 1st, **Ireland launched its first satellite as part of a rideshare mission on a Falcon 9 rocket.** The Educational Irish Research Satellite-1 (Eirsat-1) is a cubesat developed by students at the University College Dublin.

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