



**ESPI**

European Space  
Policy Institute

# ESPI Insights

Space Sector Watch



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## POLICY & PROGRAMMES

### New EU Space Commissioner hearings



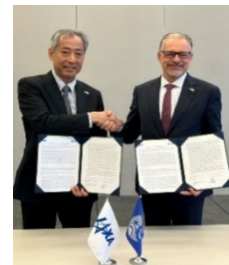
*Credit: European Parliament*

On November 5<sup>th</sup>, Andrius Kubilius, the new EU Commissioner for Defence and Space, had his confirmation hearing before the European Parliament's Foreign Affairs and Industry, Research and Energy committees. The Lithuanian Commissioner pointed to challenges the EU faces in defence, including the militarisation of space. He praised the development of a European Defence Union, and said Europe must be part of the "space revolution", pointing to continued work on ensuring autonomous access to space, supporting competitiveness, introducing the new EU space law, and reinforcing the EU's flagship space programmes.

Key among these is Europe's future multi-orbit satellite constellation Iris<sup>2</sup>. On October 31<sup>st</sup>, the EU Commission awarded the Iris<sup>2</sup> project to the SpaceRISE consortium, the only one that had been in negotiations with it. The 12-year concession is being managed as a public-private partnership, with the consortium being composed of Eutelsat, SES and Hispasat and having committed €4 billion to the project. Of these, €2 billion will reportedly come from Eutelsat, and roughly €1 billion from SES and Hispasat each. Over its life, Iris<sup>2</sup> is expected to cost around €12 billion. The signature of the concession agreement is scheduled by December 2024.

### ESA and JAXA Inter-Agency meeting, agree to expand deep space cooperation

On November 20<sup>th</sup>, ESA and JAXA issued a joint statement outlining new cooperation in areas that include planetary defence, Earth observation, space science, Mars exploration, and post-ISS LEO activities. Under the statement, which was signed during an ESA-JAXA Inter-Agency Meeting including the Heads of both Agencies, they also committed to studying cooperation in ESA's RAMSES mission to the Apophis asteroid in 2029, and to leverage joint expertise in topics like electric propulsion and entry, descent and landing for Mars missions next decade. The Japanese and European Space Agencies will also examine lunar exploration collaboration, including through the Gateway and Artemis programmes, and committed continued support to joint space science efforts. Both agencies also highlighted their cooperation destined at driving societal progress, scientific innovation, sustainability, and planetary defence.



*Credit: Josef Aschbacher on X*

### Denmark presents national strategy for space exploration and innovation

On November 18<sup>th</sup>, Denmark presented its new national strategy for space exploration and innovation towards 2035, at a ceremony attended by the ministers of Higher Education and Science, and for Business. The strategy, outlining nine strategic priorities poised to play a crucial role in advancing the space industry in Denmark, also sets strategic benchmarks and initiatives to foster the growth of the Danish space sector. Its growing ambition and leveraging of space to support critical policy domains evokes a more bold and pragmatic approach towards space, as pointed out by ESPI's Junior Research Fellow, James Francis. According to the country's projections, its space sector is heading for rapid growth, more than doubling its space companies in the next decade.



## ESPI delivers speech at Enhancing Space Cooperation in the EU Brussels event



*Credit: ESPI*

On November 28<sup>th</sup>, the event “Enhancing Space Cooperation in the EU” took place in Brussels, organised by the Permanent Representation of Italy to the EU. Dedicated to strengthening cooperation in the European space sector, the event focused on synergies between, European, national institutions and industry, and the role of Italy, and convened experts to discuss strengthening cooperation in the European space sector.

ESPI Research Manager, Matija Renčelj, and Lead on EU Relations & Regulatory Affairs, Sara Dalledonne, joined the event. Matija Renčelj developed a keynote speech, highlighting the necessity for a coordinated European space policy and strategy, and living up to Europe’s full economic and talent potential in space, among other points.

## Poland and Japan join US military satellite network

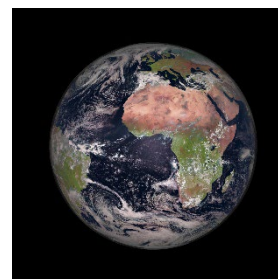
Poland and Japan have reached agreements with the US to join access to the US military’s Wideband Global Satcom (WGS) satellite network. The WGS satellites were built by Boeing and are operated by the US Space Force and provide military operations with high-capacity communication services. The two nations will join Australia, Canada, Denmark, Luxembourg, the Netherlands, New Zealand, Norway and the Czech Republic, as well as other NATO countries that leverage the WGS system when needed. Additional satellites serving as the primary access point to the new members are to be launched in 2025 and 2027, after the first one did in 2007.

## ESA to help strengthen Greece’s EO capabilities

ESA has signed six contracts with companies to help strengthen Greece’s position within the field of Earth Observation. Falling under Greece’s new National Satellite Space Project, part of the EU-funded Recovery and Resilience Facility plans for Greece, the contracts cover Axis-3 of the development of the thermal imaging and synthetic aperture radar (SAR) systems, the Greek optical satellite constellation and the relevant ground infrastructure, to complete the end-to-end observing system, turning raw data into systemic, coherent, timely and actionable information. Two contracts are with company Planetek Hellas, and one with AgroApps, Aristotle University of Thessaloniki, TotalView and Geosystem Hellas, each.

## France 2030 CO<sub>2</sub> monitoring constellation project awarded to TAS

The new Carb-Chaser project, funded as part of the France 2030 stimulus plan, aimed at detecting and measuring human-induced CO<sub>2</sub> emissions, will be led by Thales Alenia Space (TAS). The programme, based on a new constellation of satellites, is to combine efficiency and cost control to meet the needs of carbon monitoring markets. Each satellite will carry a hyper-compact multispectral interferometer, enhancing their ability to offer reliable operational data with shorter revisit cycles to establish an overview of industrial sites on a global scale. ESA, the French Space Agency (CNES) and scientific experts will certify measurements to ensure their use in regulatory frameworks. The consortium led by Thales Alenia Space also includes companies like U-Space, WaltR, Everimpact, SPASCIA and QAIrbon, as well as the IRT Saint Exupéry technological research institute.



*Credit: EUMETSAT/ESA*



## ESA awards funding for rocket builders, Themis demonstrator



Credit: ESA

On November 19<sup>th</sup>, ESA awarded Boost! contract extensions of €44.2 million to companies HyImpulse, Isar Aerospace, Orbex, and Rocket Factory Augsburg. The companies have already received funding from the same programme in previous years. The Boost! initiative, adopted in 2019, looks to provide co-funding to support development of commercial space transportation services. All four companies are pushing towards their first launches, and the latest round of ESA funding is aimed at alleviating financial pressures prior to inaugural flights.

Furthermore, on November 21<sup>st</sup>, ESA awarded an additional €230 million to ArianeGroup to build a second Themis demonstrator and refine its Prometheus rocket engine. Themis, initially a CNES project, was adopted by ESA in 2019, and will feature upgraded structures and propellant tanks, allowing it to fly higher and for a longer time. The Prometheus engine work will be focused around enabling a low-cost industrial manufacturing of the engine. Additional funding will also be allocated to Maia, a partially reusable rocket that will make use of the Themis architecture for its first stage, currently in development by ArianeGroup subsidiary MaiaSpace.

## ESA unveils super heavy-lift rocket studies

On November 13<sup>th</sup>, ESA released the findings of its super heavy-lift rocket launcher, commissioned last year under the PROTEIN (Preparatory Activities for European Heavy Lift Launcher) initiative. ArianeGroup and munich-based Rocket Factory Augsburg were invited to propose rocket designs for enough power and volume to launch huge payloads while ensuring low costs and environmental impacts. The study concluded that, in principle, the development of such a rocket within the next decade would be **challenging but possible**, requiring immediate action. Required fuels and ground infrastructure development were also considered, with the lack of a high-thrust staged-combustion engine highlighted as the main technology gap. ESA's Thrust! Project could potentially solve this issue. The executive summaries of the PROTEIN studies from ArianeGroup and from Rocket Factory Augsburg are available for download.



Credit: RFA

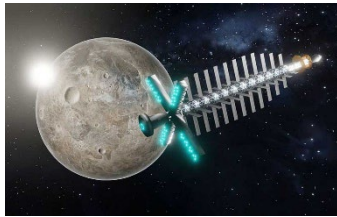
## Ariane 6 upper stage qualified for four-booster launches

On November 12<sup>th</sup>, ArianeGroup announced its Ariane 6 upper stage had passed a series of tests qualifying it for launches in its four-booster configuration (Ariane 64), enabling greater flexibility and payload delivery. The test model used for the qualification was the same as for the hot fire test at the DLR Lampoldshausen facility between 2022 and 2024, currently at ESA's ESTEC Centre in the Netherlands. To accurately simulate the conditions of a launch for the acoustic tests, the stage's tanks were filled with water and glycerine, and a mock-up of the rocket's intertank structures was employed. Ariane 64's first flight is planned for the second half of 2025.

On November 11<sup>th</sup>, ArianeGroup pushed the second launch of Ariane 6 to February 2025, carrying the CSO-3 reconnaissance satellite for the French armed forces. According to a company's press release, there had been "a small number of deviations" in the data collected from its maiden flight that contributed to the decision not to try a second launch in 2024. It also cited launcher production and the handover of the Ariane 6 launch complex as the primary reasons for the delay, though it did not detail how. Arianespace is maintaining scheduled dates for all other flights expected in 2025.



## ESA selects island of Santa Maria in Portugal as landing site for Space Rider



Credit: ESA

On November 7th, ESA confirmed the Portuguese Island of Santa Maria as the landing site for Space Rider's, ESA's new reusable orbital vehicle, maiden flight. The vehicle is scheduled for launch in 2027 and will perform tests and trials in a microgravity environment and is also able to return and be reused. Currently in the testing and validation phase, the Space Rider could also offer commercial services. The choice of the Santa Maria island comes as the Portuguese Space Agency also recently inaugurated its

headquarters there, at a ceremony attended by the President of Portugal, Marcelo Rebelo de Sousa, as well as the Presidents of the Azorean Regional Legislative Assembly and Government, Luís Garcia and José Manuel Bolieiro, and the Secretary of State for Science, Ana Paiva. ESPI, was also present at the inauguration.

## Sweden and Qatar look to strengthen defence partnership, including space

On October 30<sup>th</sup>, Sweden's Defence Minister presented a strategy aimed at strengthening the country's defence cooperation with Qatar, including space-based capabilities, and based on a letter of intent for military co-operation signed by both nations. Talking on potential space-based military capabilities cooperation, the Minister referred to Sweden's new strategy for security and defence aspects of space, as well as dramatic satellite deployment increases, as well as non-NATO cooperation with the Gulf country on regional security and bilateral opportunities.

## ESA-commissioned study on space nuclear propulsion systems completed

A study carried out by Brussels-based engineering firm Tractebel, aimed at mapping the way to the development of nuclear propulsion systems for space exploration was completed late in October. Work on the preliminary European research on nuclear electric propulsion for space applications (RocketRoll) initiative began in 2022, under ESA's Future Launchers Preparatory Programme, and included contributions from companies like OHB, ArianeGroup and several universities. The initiative focused on electric thrusters powered by a nuclear power source, with the study evaluating feasibility assessments, key technologies, and potential economic and industrial barriers. ESA's long-term objective is a more efficient exploration beyond Mars through the development of a nuclear-powered tug for missions.

## UK Defence Ministry awards SSTL €48 million reconnaissance satellite contract

On November 4<sup>th</sup>, the UK's Ministry of Defence announced it had awarded Surrey Satellite Technology Ltd (SSTL) a contract to build its Juno reconnaissance satellite worth over €48 million. The satellite, planned for launch in 2027, will advance space-based intelligence capabilities. The satellite will build on the capabilities of the country's Tyche reconnaissance satellite, launched earlier this August. Juno and Tyche are the first two of four projects being managed under a programme aimed at demonstrating the autonomous collection, processing, and dissemination of intelligence from the country's space-based assets.






## US Air Force grants Infinite Orbits \$1.25 million SSA and SDA contract

This month, the U.S. Air Force Research Laboratory and AFWERX have selected Infinite Orbits for a Direct-to-Phase II contract amounting to \$1.25 million, for the development of a space-based Space Situation Awareness (SSA) and Space Domain Awareness (SDA) solution in GEO. The contract falls within efforts by the U.S. Air Force Research Laboratory's to streamline the Small Business Innovation Research and Technology Transfer process and opens new opportunities for Toulouse-based Infinite Orbits, specializing in GEO in-orbit services, to continue expanding its operations in the U.S.



*Credit: Infinite Orbits*

## Czech Transport Ministry and Vast Partner on Human Spaceflight

On November 13<sup>th</sup>, the Czech Transport Ministry and US-based space habitation technologies company Vast signed a Memorandum of Understanding (MoU) to explore ways to partner on future human spaceflight projects. These include both private missions to the ISS and Vast's Haven space stations, as well as engagement with the Czech Space industry. The MoU also brings closer the possibility of Aleš Svoboda becoming the second Czech astronaut in future Vasts missions. 

## Australia cancels over \$5 billion military satellite programme with Lockheed



*Credit: Lockheed Martin*

This month, the Australian Department of Defence announced it was cancelling its JP9102 GEO satellite programme, valued at more than \$5 billion, which had been awarded to Lockheed Martin less than two years ago. The project, which began in 2021 and aimed to develop three to five GEO satellites and ground systems, has now been killed citing shifts in satellite technology and pivots to multi-orbit communications. In a November 4<sup>th</sup> statement, the Satellite

Industry Association of Australia (SIAA) issued a statement of "profound disappointment" in the government's decision, with some claiming real reasons may lie in unwillingness to increase defence spending beyond a certain point.

## US SDA taps Kratos for \$116.7 million missile defence ground system contract

On November 13<sup>th</sup>, the U.S. Space Development Agency (SDA) contracted Kratos Defence & Security Solutions for a \$116.7 million development of a ground system supporting missile-defence operations with LEO satellite data. The five-year contract, part of the Advanced Fire Control Ground Infrastructure (AFCGI) programme, will see the San Diego-based company build the ground infrastructure facilitating the real-time data coordination across a constellation of missile-tracking satellites. The U.S. is deploying a network of LEO satellites with infrared sensors to improve its military's ability to detect and respond to missile threats.

## Swedish government awards Ovzon contract for satcom solution

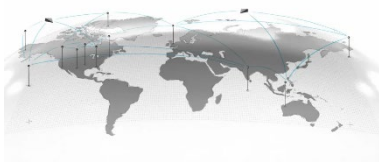
On November 11<sup>th</sup>, Ovzon announced the Swedish Defence Materiel Administration had awarded it a contract to deliver a resilient satellite communications solution to the organisation, including mobile satellite terminals and Ovzon's 3-based satcom service for unmanned ground vehicle demonstration. The company's satcom services support sovereign remote, within-borders control of globally deployed services, aiming to provide strong resilience to such customers.



## FAA environmental review update to increase Starship launches

On November 20<sup>th</sup>, the U.S. Federal Aviation Administration (FAA) published the latest version of its draft environmental assessment for an increase in the number of annual launches and landings of Starship/Super Heavy from its Starbase test site in Texas. Despite the assessment, which now begins a public comment period ending on January 17<sup>th</sup>, not providing a formal recommendation to increase launch numbers, no serious issues that could prevent such scenario were found. Formal approval of the document will only happen after the conclusion of the public comment period, and the FAA has not indicated how long that process might take. Earlier environmental reviews allowed SpaceX to perform up to five Super Heavy Starship launches a year from its Boca Chica Starbase.

## US Space Force awards Anduril \$99.7 million network upgrade contract



*Credit: Anduril*

On November 21<sup>st</sup>, the U.S. Space Force awarded Anduril a \$99.7 million contract to modernise the Space Surveillance Network, enhancing space domain awareness and threat detection. Under the five-year indefinite delivery indefinite quantity contract, Anduril will integrate its Lattice software and replace legacy systems with a more advanced architecture, autonomously processing and distributing data from a global

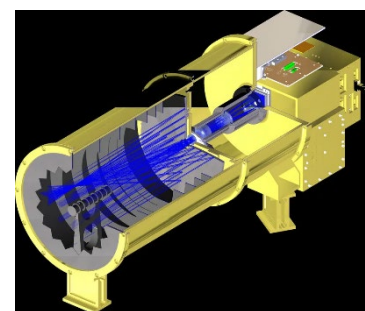
network of military space sensors. Anduril had already received contracts in the past years for Space Surveillance Network upgrades, as well high-speed connections between space domain awareness platforms.

## NASA purchases advanced radar and WorldDEM data from Airbus

On November 5<sup>th</sup>, Airbus announced NASA had secured access to its synthetic aperture radar (SAR) tasking and WorldDEM products through the Commercial SmallSat Data Acquisition programme. With these, NASA will have access to task the entire Airbus Radar Constellation, helping it identify and evaluate science and research application initiatives to support its Indian Space Research Organisation. Airbus will also provide digital elevation models (WorldDEM) to describe the topography of areas to support the NISAR mission,

## NOAA awards Southwest Research Institute \$60 million coronagraph contract

On November 14<sup>th</sup>, the U.S. National Oceanic and Atmospheric Administration (NOAA) awarded San Antonio-based Southwest Research Institute a \$60 million contract for the building of three coronagraphs for the Lagrange 1 Series project. Part of NOAA's Space Weather Next programme, the coronagraphs are designed to gather data for NOAA's Space Weather Prediction Center, which issues forecasts, alerts and warnings of geomagnetic activity. SwRI also is building the QuickSounder satellite to house an Advanced Technology Microwave Sounder engineering development unit refurbished by manufacturer Northrop Grumman.



*Credit: Southwest Research Institute*



## Ghana launches National Space Policy

On November 5<sup>th</sup>, Ghana officially launched its **National Space Policy**, aiming to harness and leverage space technology for economic growth, national security, and sustainable development. The African country, which already uses space technology in different areas, including agriculture or health, seeks to also strengthen governmental coordination with the private sector and optimise space-related activities to foster development. The Ghana Space Policy aligns with the country's broader national development objectives, particularly within its Coordinated Programmes for Social and Economic Policies (2017-2024) and focuses on integrating space science and technology (SST) into critical areas, supporting the country's integral development.

## NASA's JPL announces layoffs of around 5% of workforce



*Credit: JPL*

On November 12<sup>th</sup>, NASA's Jet Propulsion Laboratory sent a memo to employees announcing it would be cutting around 5% of its staff due to budget cuts, representing the second such major layoff at the centre in under a year. The extra 325 employees join the 530 staff laid off in February because of uncertainty around the Mars Sample Return programme the Lab runs, though this was not specifically mentioned as cause for the most recent layoffs. The lack of complete budget certainty

is partly linked to upcoming changes in the U.S. presidency.

## ISS cargo contracts extended through 2030, NASA

On November 8<sup>th</sup> procurement filings, NASA showed its plans to extend three contracts for cargo transportation to and from the ISS through the end of its life in 2030. The three companies, Northrop Grumman, Sierra Space, and Space X, received Commercial Resupply Services (CRS-2) contracts in 2016, and NASA announced in March 2023 its intention to extend them. It also sought information from companies claiming they could carry out cargo transportation to the station, though none were deemed able to meet requirements. The CRS-2 contracts have a combined not-to-exceed value of \$14 billion, with \$6.9 billion having been already allocated, and NASA contract extension will not cause them to hit that limit.

## US Space Command expands intelligence-sharing with commercial firms

On November 6<sup>th</sup>, the U.S. Space Command announced the expansion of its intelligence-sharing programme with commercial firms, adding five new companies to the initiative. Established in 2015, the Commercial Integration Cell (CIC), helps to ensure that military and private sector partners are aware of threats as they unfold, and operates from Vandenberg Space Force Base in California. Initial members, including Eutelsat America, Hughes Network Systems, Intelsat General Communications, Iridium Communications, Maxar Technologies, SES Government Solutions, SpaceX, Viasat, and XTAR, are now being joined by Earth observation company Blacksky, space intelligence contractor Kratos, space tracking firm LeoLabs, radar satellite operator Iceye and satellite communications provider Telesat.



### In other news

**Denmark joins Artemis Accords:** The Scandinavian nation has become the 48<sup>th</sup> country to sign the document outlining sustainable space exploration best practices.

**Djibouti joins COPUOS:** The African country becomes the latest to join, following the 79<sup>th</sup> UNGA, and representing the 22<sup>nd</sup> nation from the continent to be represented there. In September, Djibouti also joined the Space Climate Observatory Charter.

**Undisclosed NATO fleet acquires \$3 million Israel-based Orbit quad-band satcom system:** The installing of the military-grade OceanTRx 4MIL system will happen across 2025 and will provide continuous satellite connectivity across four bands.

**DLR's Reusable Flight Experiment launch pushed to 2026:** The winged reusable rocket first stage, which began being worked on in 2017, had already been pushed to 2025 from an initial projected launch in 2024.

**SpaceX granted conditional direct-to-smartphone connection approval:** Granted by the U.S. Federal Communications Commission (FCC) on November 26<sup>th</sup>, SpaceX will now use T-Mobile's cellular frequencies on up to 7,500 Gen2 Starlink satellites to provide Supplemental Coverage from Space, provided it does not interfere with other networks.

**Azercosmos hosts Space Summit during COP29 in Baku:** Named "Space challenges in the fight against climate change: Summit of Space Leaders", the summit gathered public and private officials from over 20 global space agencies, including UNOOSA and ICESCO.

**USAF awards Rocket Lab \$8 million contract for engine development:** The company will now demonstrate digital engineering techniques for Archimedes, the rocket engine that will power Neutron, a new reusable medium-lift launch vehicle projected to launch in 2025.

**US Space Force awards OpTech \$4.5 million contract:** Under its terms, Optimum Technologies will develop an optical imaging payload for a mission scheduled to fly in 2026 on an Impulse Space vehicle, part of the Space Force's Tactically Responsive Space program.

**South Africa launches fund to drive innovation in Earth Observation:** The NEOFrontiers Fund is aimed at transforming space-based ideas into tangible products and services that address pressing societal challenges, focusing on issues such as health innovation and gender balance.

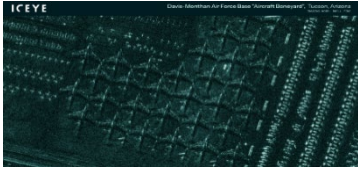
**Thailand to study potential for lunar exploration programme:** the Geo-Informatics and Space Technology Development Agency (GISTDA), ispace, and mu Space will collaborate within the framework of the country's "National Space Experiment and Exploration" program.

**Globalstar granted 10-year terrestrial authorisation in Mexico:** The company's subsidiary in the country was selected by its Federal Telecommunications Institute as the winner of its public bidding regarding the Complementary Terrestrial Service of the Mobile Satellite Service.



## INDUSTRY & BUSINESS

### ICEYE partners with Rheinmetall, Lockheed, Carahsoft for SAR imaging data



*Credit: ICEYE*

On November 11<sup>th</sup>, ICEYE and Rheinmetall signed a contract to provide Ukraine with synthetic aperture radar imagery (SAR), supporting its armed forces in facing off Russia's invasion. The contract, whose value was not disclosed, also received funding from the German Ministry of Defence. The Finnish firm has been offering Kiev access to its satellite constellation since August

2022, expanding their cooperation in July. ICEYE and Rheinmetall also signed a cooperation accord in June for the marketing of ICEYE's products in Germany and Hungary.

Furthermore, on November 20<sup>th</sup>, Lockheed Martin was announced to be partnering with an ICEYE-led consortium to develop AI-powered target recognition technologies for Finland's military. Under its terms, Lockheed Martin will develop AI algorithms using Iceye's SAR imagery to support Finland's F-35 tactical aviation programme by delivering space-based intelligence and analytics. The Finnish military will then integrate automated target recognition algorithms into its mobile intelligence, surveillance, and reconnaissance.

Finally, on November 7<sup>th</sup>, ICEYE also signed a cooperation agreement with Carahsoft Technology for the latter to serve as Master Government Aggregator for U.S. agencies. Carahsoft will ensure U.S. government agencies have timely and streamlined access to ICEYE's natural disaster insights, enhancing emergency management and disaster response, recovery and mitigation efforts.

### Eutelsat to expand services in Africa

Earlier this month it was reported that Eutelsat will partner with Clear Blue Technologies, a provider of smart energy solutions, to expand and improve connectivity solutions across Africa. Under the collaboration, Eutelsat will integrate Clear Blue's energy technology capabilities into its Konnect and OneWeb platforms to deliver energy-efficient connectivity solutions to rural and remote communities with troubled access to electricity. Additionally, on November 14<sup>th</sup>, Eutelsat announced a multi-year agreement with Q-KON, a satellite solutions and service provider, for expanded LEO services in Sub-Saharan Africa, to accelerate high-speed, low-latency connectivity to underserved businesses and communities. The new partnership will strengthen critical services such as cloud-based applications, remote healthcare, e-learning, fintech applications and enterprise connectivity across Sub-Saharan Africa, benefiting urban and rural populations.

### Apple to invest up to \$1.75 billion in Globalstar

On November 1<sup>st</sup>, Globalstar disclosed an agreement with Apple, valued at up to \$1.57 billion, to build a new LEO constellation and provide for Apple's direct-to-device emergency calling service. According to the terms of the agreement, Apple will make up to \$1.1 billion in prepayments to Globalstar for the capital spending needed to build the new constellation and related ground segment. The funds will be disbursed on a quarterly basis during construction and launching of the satellites. In addition, Apple has agreed to purchase \$400 million in Globalstar Class B stock for a 20% equity interest.



*Credit: Rocket Lab*



## Arianespace and Exotrail sign contract for launch services in 2026

On November 19<sup>th</sup>, Arianespace announced it had reached an agreement with Exotrail to launch its GEO spacevan in the second half of 2026. The spacevan, which is the GEO version of Exotrail's Orbital Transfer Vehicle, will transport and deploy other satellites into specific orbits. The secondary-payload launch will use the four-booster Ariane 64 configuration, which Arianespace claims to demonstrate Ariane 6's capacity to accomplish complex missions for a variety of customers.



Credit: Exotrail

## EnduroSat and ENPULSION sign contract for 100 propulsion systems

On November 25<sup>th</sup>, EnduroSat and ENPULSION signed a contract for the delivery of 100 fully integrated electric propulsion systems. The first 30 are to be delivered within the next 12 months. This contract will ensure manoeuvrability capacity on EnduroSat platforms to optimize performances and allow them to move freely in orbit. Both companies rapidly reached commercial success and became global references for smallsats due to their rising popularity in the 2010's, making space technology more accessible and more affordable for new entrants.

## Exolaunch's universal adapter to deploy satellites in 2026, agreement with HPS

During the Space Tech Expo Europe in Bremen, that German launch service provider Exolaunch announced it would be using its Exotube adapter for six constellation launches starting in 2026. Exotube, a universal modular adapter for integration, launch and deployment of spacecraft ranging from cubesats to 500-kilogram satellites, is launch vehicle agnostic and can be integrated with small launchers and medium- and heavy-lift class launch vehicles, according to Exolaunch. Its first launch will be aboard an American medium or heavy-lift launcher in the first quarter of 2026.

The company also announced this month it had reached a deal with Munich's HPS High Performance Space Structure Systems, under which its launch and deployment solutions will now include HPS' ADEO deorbit modules. These drag-sail systems are to ensure efficient deorbiting and compliance with evolving regulations and strengthen both companies' commitment to space sustainability.

## ENPULSION signs €4 Million ESA NextGen MICRO R<sup>3</sup> FEEP Thruster contract



Credit: ENPULSION

On November 11<sup>th</sup>, ESA and ENPULSION signed a contract to further develop the performances of the NextGen FEEP MICRO R<sup>3</sup> Thruster for a total of € 4 Million in funding. The contract will be dedicated to the development of its flight-proven MICRO R<sup>3</sup> thruster first flown in Q1/2021 which has already been used on several high-profile missions such as notably on SDA contracts. This contract will be dedicated to enhancing the performance of the thruster and boosting its already successful commercialization on global markets.



## Hungary's 4iG to launch HUSAT satellite programme



Credit: Budapest Business Journal

Hungarian company 4iG will launch Earth observation and telecommunications satellites in the HUSAT programme, as announced on November 20<sup>th</sup>. Plans for what it called the **“largest privately funded satellite program in Hungary and the Central and Eastern European region”** include a GEO telecom satellite called HUGEO, and an Earth Observation (EO) constellation comprising eight satellites. The EO satellites will be built through its subsidiary in Hungary, while the GEO telecom one will be made in cooperation with an international partner. The company plans to have the first satellites operational by 2028.

## TAS and Panafsat strengthen partnership through satellite agreement

On October 29<sup>th</sup>, during France's State visit to Morocco, Moroccan company Panafsat and Thales Alenia Space (TAS) signed a MoU outlining the development of a Moroccan satellite communications system. This new system is to strengthen the Pan-African strategic partnership between both countries through the delivery of very-high-throughput services to 26 African countries covering a combined population of around 550 million people. Under its terms, Thales Alenia Space will build a very-high-performance flexible satellite to deliver high-speed internet once in orbit, accelerating the transformation of the continent's digital landscape. The agreement comes after Morocco recently purchased two Earth Observation satellites worth approximately \$1 billion to enhance its intelligence and surveillance capabilities from company Israel Aerospace Industries, as reported in ESPI's July insights.

## Open Cosmos to expand operations in Portugal

European space tech startup Open Cosmos is expanding its reach in Portugal and opening facilities to build three new Earth Observation satellites to join its current constellation. The company already has offices in the UK, Spain and Greece, and will lead the development of three high resolution Portuguese satellites, including Earth Observation and IoT payloads. Open Cosmos' expects its new to be fully operational early next year, and contribute to missions including monitoring oceans, tracking wildfires, and studying climate change.

## D-Orbit USA satellites to be produced in partnership with Spectrum AMT

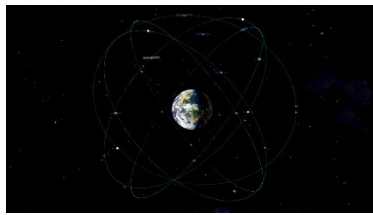
On November 26<sup>th</sup>, it was announced that Spectrum Advanced Manufacturing Technologies would be supporting the manufacturing of satellites and provide components for D-Orbit USA, formed by Italian space logistics company D-Orbit. Under the new agreement, Spectrum, a subsidiary of Ocutrx Technologies, will manufacture printed circuit board assemblies and harnesses and perform final assembly of D-Orbit USA satellite buses in a new 700-square-meter facility.



Credit: D-Orbit



## Astranis and Xona Space partner for GPS backup military programme



Credit: Astranis

On November 1<sup>st</sup>, satellite manufacturer Astranis announced it is teaming up with navigation startup Xona Space Systems to compete for a U.S. Space Force contract to develop a backup to the military's GPS system. In September, Astranis had been selected along three other companies for the designing of an initial fleet of eight satellites within the Resilient Global Positioning System (R-GPS) programme, securing an \$8 million contract. Under the new partnership, Xona Space will integrate its positioning, navigation and timing algorithms into Astranis' satellite platform.

## Rivada to develop next generation connectivity, loses ITU priority

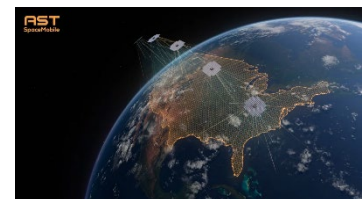
U.S.-based Rivada and Colt Technology Services have partnered to provide a connectivity network that works with the speed, security and performance required for digital innovation and transformation, aiming to start services in 2026. The partnership involves Colt harnessing Rivada's 600-satellite LEO constellation, Outernet, to provide resiliency for high quality voice, video and data solutions, and enterprise cybersecurity. Colt will also join Rivada's Customer Advisory Board and conduct technical workshops to exchange information and structure the collaboration. **The move comes as Rivada has lost its ITU priority for its LEO network** because of the rescinding of its licence by Liechtenstein's regulator, citing nonpayment of agreed-to performance-bond fees and Rivada's failure to present a credible business plan.

## Sony to test new laser communications, orders two satellites

On a November 12<sup>th</sup> news release, Sony and California-based Astro Digital announced they were partnering to test laser communications from two small satellites. The couple spacecraft, which will use optical disc technology the Sony pioneered for CD players, will be based on Astro Digital's Corvus satellite platform. Launch is expected in 2026. Sony aims to test high data-rate optical links from the satellites and the ground, and each other in LEO, through a Lasercom optical terminal developed by Space Communications Corporation (SSCC), a subsidiary it formed in 2022.

## AST SpaceMobile books Blue Origin rockets for satellite deployment

On November 14<sup>th</sup>, AST SpaceMobile announced it had booked rocket launches from Blue Origin and other companies to ensure enough satellite deployments between 2025 and 2026. Such deployments would allow the provision of full text, voice, and 5G data services to standard mobile phones across the U.S. and other key markets. According to the company, it has contracts to launch up to 45 Block 2 BlueBird satellites, with options for around 15 more, with SpaceX launches also being involved in the future. Blue Origin's New Glenn rockets would allow the company to deploy double the satellites at one time. AST SpaceMobile also said it expects to spend between \$19 million and \$21 million to build and deploy each of its Block 2 Satellites.



Credit: AST SpaceMobile





## Chinese Starlink challenger SpaceSail to enter Brazilian market

On November 20<sup>th</sup>, China's SpaceSail, operating a LEO constellation that aims to challenge Elon Musk's Starlink one, finalized an agreement enabling it to enter the Brazilian market. Under the memorandum signed with Brazilian state telecom Telebras, the company will be able to provide satellite communications and broadband Internet services to the country. The agreement took place during Xi Jinping's trip to Brazil for the G20 summit and is one of many signed between the two countries. Starlink, which already has over 6,000 satellites, is already operating in Brazil since gaining authorization in 2022 for exploitation through 2027.



### In other news

**ABL Space Systems exits commercial launch market:** The six-year-old startup will focus on missile defence programmes for the Pentagon. The move comes after the company was struggling to gain traction against companies like SpaceX and Rocket Lab.

**SES renews deals with major European broadcasters:** On November 6<sup>th</sup>, the Luxembourgish company signed broadcast renewal agreements with Austrian public broadcaster ORF, Warner Bros. Discovery in Germany and Austria, and Telekom Srbija.

**Quadsat and CUSP partner for Satellite Network Emulation Across Africa:** The companies expect to support customers and the civil and defence industries' ability to efficiently use radio spectrum availability.

**iSpace's Resilience Mission 2 lander arrives in Florida ahead of January launch:** The Japanese space exploration company will attempt a second attempt at a Moon landing after its first attempt failed in April 2023. The lander will also carry a small rover developed by the company's Luxembourg-based subsidiary.

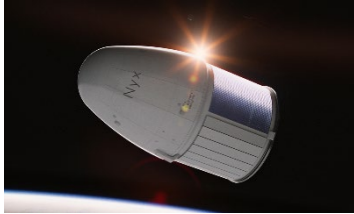
**Chinese commercial Lijian-1 rocket sends 15 satellites into orbit:** The satellites launched include Chinese Academy of Science's first international payload as a launch service provider, as well as others such as the classified experimental Shiyan satellites, of which no information is provided.

**UAE-based Madari plans to build LEO Data Centres:** The startup, currently in the research and development phase, hopes to position itself as a pioneer in the sector, providing services both for corporations and governmental organisations.



## INVESTMENT & FINANCE

### The Exploration Company raises \$160 million for Nyx capsule



*Credit: The Exploration Company*

The Franco-German company has secured **\$160 million in Europe's largest space Series B** round to date, co-led by Balderton and Plural. The Exploration Company develops Nyx Earth, a reusable spacecraft able to transport up to four tons of cargo to LEO.

A first demonstrator, Nyx Bikini, was launched on Ariane 6's inaugural flight but could not perform re-entry due to a failure in the launcher's final deorbit burn. A second flight, Mission Possible, is planned for next year aboard a Falcon 9.

The Exploration Company is developing two other versions of its capsule: Nyx Gateway, meant to service future commercial space station operators like Axiom, Vast, and Starlab, whom it has contracts with, and Nyx Moon, destined for the lunar surface. The funding will help further develop the spacecraft, scale capabilities, and grow the team.

### Kpler to acquire Spire Maritime for enhanced vessel tracking

Belgian-based analytics firm Kpler has reached an agreement to **acquire the maritime division of satellite operator Spire Global for \$241 million**. Kpler, which provides trade intelligence through commodities and vessel tracking, will leverage this acquisition to enhance its maritime coverage capabilities. The transaction grants Kpler exclusive rights over the sale of Spire's data and gives it access to its existing U.S. government customer base. Spire will retain ownership of its intellectual property and infrastructure. The transaction is expected to be completed by Q1 2025.

### Firefly secures \$175 million for responsive launch capabilities

The U.S.-based launch company Firefly has raised **\$175 million in a Series D** round led by RPM Ventures. Firefly has set its focus on providing responsive space capabilities for government missions, with a successful demonstration in September 2023 of an Alpha launch for the Space Force within 24 hours of notification. Firefly has also recently sought to expand its services by developing Elytra, an in-orbit service platform, and Blue Ghost, a lunar delivery lander. The capital will be deployed across three areas: increased production of the Alpha launch vehicles, market expansion for the Elytra spacecraft, and expedited qualification of new vehicle systems under development.

### BlackSky buys Thales Alenia Space stake in LeoStella

The American remote sensing company **Blacksky has taken total control of the joint venture LeoStella** after purchasing Thales Alenia Space's half for an undisclosed fee. The joint venture was set up in 2018 to expand satellite production capabilities in view of BlackSky's EO constellation. LeoStella currently manufactures the small imaging satellites Gen-3, with Blacksky as primary customer. The acquisition will allow Blacksky greater control and integration of its operations.



*Credit: LeoStella*



## Inversion raises \$44 million for autonomous re-entry vehicle



Credit: Inversion Space

The start-up from California has secured **\$44 million in a Series A** round led by Spark Capital and Adjacent. Inversion develops Arc, an autonomous spacecraft designed to deliver cargo from orbit on-demand. The first demonstrator, Ray, has received approval from the FAA and will launch aboard a Falcon 9 Rideshare mission in Q4 2024. Inversion plans to use the investment to scale operations by building a new facility to manufacture

Arc and grow its team from 30 to 80 people.

## AeroVironment purchases BlueHalo for \$4.1 billion

AeroVironment, a manufacturer of uncrewed systems and munitions, has **purchased space defence company BlueHalo for \$4.1 billion**. BlueHalo develops spacecraft subcomponents and secure communication systems, including through directed energy. The company was awarded a \$1.4 billion contract in 2022 to replace the decades-old U.S. Space Force ground stations. The acquisition marks AeroVironment expansion in the space sector, after obtaining civil contracts with NASA for Mars' missions flight systems.

## Antares secures \$30 million for modular microreactors

The U.S. start-up has raised **\$30 million in a Series A** round co-led by Caffeinated Capital and AltCap. Antares develops nuclear microreactors deployable on Earth and in space, designed to provide power in remote locations, with a first demonstration unit expected by mid-2025. The company stated that prioritizing specialised applications over power generation for general commodities would enable faster progress in developing its small-scale reactors. The funding will be used to expand the workforce.

## Starfish raises \$29 million for in-orbit servicing

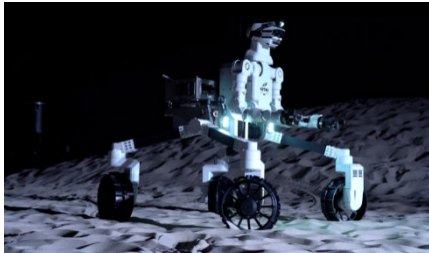
Starfish Space has secured **\$29 million in a Series A** round led by Shield Capital. The company develops Otter, an in-orbit servicing vehicle that can operate satellite life extension, disposal, and debris removal. Starfish recently signed a partnership with Intelsat for servicing GEO satellites in 2026 and has further contracts with the Space Force and NASA. To meet these commitments, Starfish will direct the investment towards the manufacturing of the first three Otter spacecrafts.



Credit: Starfish Space



## GITAI raises an additional \$15.5 million for space robotics



*Credit: GITAI*

The Japanese start-up has secured a **supplementary \$15.5 million, in a Series B extension led by Maezawa Fund**. GITAI develops a suite of robotic platforms designed to manufacture and service infrastructure in space and on the Moon. The company, which recently relocated to the U.S., operates an ISS-mounted, 1.5-meter-long robotic arm, and is in the process of testing a 2-meter-long version in conditions simulating the lunar environment. The fresh funding will assist GITAI in expanding its offer towards the in-orbit servicing

segment, with satellite demonstrators planned later this year and in 2025.

## Canadian Government invests CAD \$20 million in Kepler Communications

The Canadian Government has invested **CAD \$20 million through its Strategic Investment Fund in Kepler Communications**. Kepler had already received in September 2024 CAD \$2 million in funding from the Canadian Space Agency. The contribution will help Kepler develop its Aether constellation, designed to provide high-speed connectivity, and strengthen Canada's satellite communications capabilities.

## Wherobots raises \$21.5 million for spatial data analysis

Wherobots has secured **\$21.5 million in a Series A round** led by Felicis. The U.S. start-up develops a proprietary software to aggregate and analyse geospatial data, targeting insurance and logistics companies. Wherobots notably works with Amazon, which integrated the first iteration of the software in its delivery system. The investment will accelerate product development and market tailoring.

## SatVu secures £10 million for heat loss detection

SatVu has raised **£10 million in an equity round** co-led by Adara Ventures and Molten Ventures. The British start-up designed and operates HotSat-1, a high-resolution infrared thermal imagery satellite which tracks carbon emissions and urban heat loss. SatVu aims in particular at the industrial, environmental, and defence sectors, and will direct the capital towards accelerating operations to meet its objective of launching two more satellites, HotSat-2 and 3, by next year.

## Cosmoleap secures +100 million yuan for rocket recovery

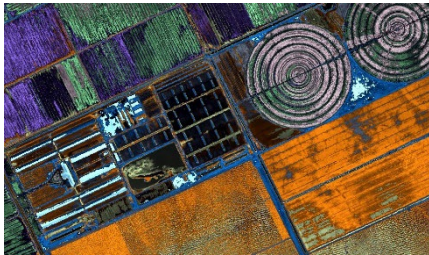
Cosmoleap has raised **more than 100 million yuan in funding**, with the participation of several investors like state-owned Shenergy Chengyi, investment firm Tiangchuang Capital, and VC firms Baiyan Fund and K2 Angel Partners. The Chinese company emerged in March 2024 and seeks to assemble low-cost, reusable rockets, as well as a SpaceX-inspired recovery system. Its launcher 'Yueqian' is designed to enable China's mega constellations, with a first test flight in 2025 or 2026.



*Credit: Cosmoleap*



## Matter Intelligence secures \$12 million for hyperspectral imaging



*Credit: Matter Intelligence*

Matter Intelligence has raised **\$12 million in a seed funding round** led by Lowercarbon Capital. The U.S. start-up develops sensors to capture hyperspectral and thermal imagery, leveraging the experience of its founders in building sensing instruments for NASA missions. Matter Intelligence plans to install its sensors on a first satellite, Earth-1, before moving to a constellation. The investment will go towards preparing the instrumentation for spaceflight and develop the supporting software.

## Kuva raises €8 million for hyperspectral observation

Kuva Space has secured **€8 million from private investors in a crowdfunding round**. The Finnish company aims to build a constellation of hyperspectral imaging microsattellites. Enabling sub-daily monitoring, the analytics would serve for environmental monitoring, insurance assessment, and risk mitigation. Kuva has launched its first commercial satellite Hyperfield-1A in August 2024 and plans on sending a twin model early 2025. The start-up has not detailed how it plans to use the funding.

## Lunar Outpost closes an undisclosed Series A round

Lunar Outpost has secured an **undisclosed amount of funding in a Series A round** co-led by Type One Ventures and Industrious Ventures. The company manufactures robotic platforms designed for lunar surface mobility and resources extraction. Lunar Outpost is one of the three companies bidding for a 13-year-long, \$4.6-billion-worth NASA contract for the initial phase of a lunar terrain vehicle (LTV) programme. The funding will serve to support this objective, as well as other commitments with the Australian Government and the Luxembourg Space Agency.

## Delos Insurance secures \$9 million to monitor wildfire risks

U.S.-based Delos Insurance has raised **\$9 million in a Series A round** led by HSBC Asset Management. Delos offers insurance coverage in fire-prone regions, using satellite data and AI algorithms to evaluate risk levels. The funding will be used to expand the geographical coverage beyond California and develop new products.

## General Galactic secures \$8 million for recycling reactors

General Galactic has raised **\$8 million in a seed round** co-led by Harpoon Ventures and Refactor Capital. The U.S. start-up develops its Genesis reactor, which recycles CO<sub>2</sub> emissions and converts them into methane and oxygen. Amid other potential industrial applications, General Galactic targets rocket manufacturers which use oxygen in producing methalox fuel. The technology could also enable settlements in space, the company claims. The investment raised will go towards hires and scaling production to lower costs.



*Credit: General Galactic*



## GalaxEye raises \$8 million for multi-sensor constellation

The Indian start-up has secured **\$8 million in a Series A** round led by MountTech Growth Fund – Kavachh. GalaxEye builds imaging satellites combining Synthetic Aperture Radar and Multispectral Imager sensors. The company targets various sectors and industries like defence, insurance, and agriculture to use its data. GalaxEye will deploy the funding towards its first satellite, set to launch in 2025, and aims for a complete constellation of micro-satellites by 2027.

## Databourg acquired by Komunidad

**The Singaporean company has acquired Luxemburg-based Databourg.** Both companies cooperated in developing RainVision, a rainfall monitoring system, building on Databourg's data analytic models and Komunidad's platform of environmental intelligence. The move will strengthen the offer and expand the reach of both companies.

## Vultus and Agdir merge for sustainable farming

The Norwegian farm management company **Agdir has agreed to purchase the majority of Vultus' shares** for an estimated €1.3 million. Founded in 2016, Vultus is a formerly VC-backed Swedish satellite imagery and data analytics company that debuted on the NASDAQ OMX Nordic in 2022. The companies started collaborating in early 2024 and will now aim to provide a more comprehensive approach to agricultural data analysis. The move will enable the merged company to reinforce its position in the Scandinavian market and expand globally. The transaction is subject to regulatory and shareholders' approval, with the latter representing 55% voting rights having pledged support for the deal.

### In other news

**Ursa Space Systems secures a \$10 million loan from Horizon Technology Finance:** The U.S. company provide SAR imagery intelligence.

**Warpspace completes an undisclosed Series B round:** As part of the round, the Japanese company has entered capital partnerships with Udom Co. and Kohoku Kogyo which will provide technical expertise on the software and the hardware sides. Warpspace will use the funding to develop its technology of optical space communication.

**ARKA acquires Maxar's Radar and Sensor Technology group:** Radar and Sensor Technology group has provided support for government-led SAR initiatives. The group will merge with ARKA's Advanced Communications and Mission Applications unit and reinforce its offer of information processing.

**MaC VC has secured \$150 million to establish its third fund:** Focusing on seed-stage support, MaC VC notably backs Stoke Space, Wyvern, or Starfish Space. The firm manages approximately \$600 million in assets, with ticket sizes ranging from \$2 million to \$3 million.

**Private Equity firm OceanSound Partners acquired Antenna Research Associates:** Antenna Research Associates provides antenna systems for commercial and military sectors, with applications in satcom. The acquisition will see both entities working to develop Antenna Research's portfolio of technologies and expand its reach on the aerospace and defence market.

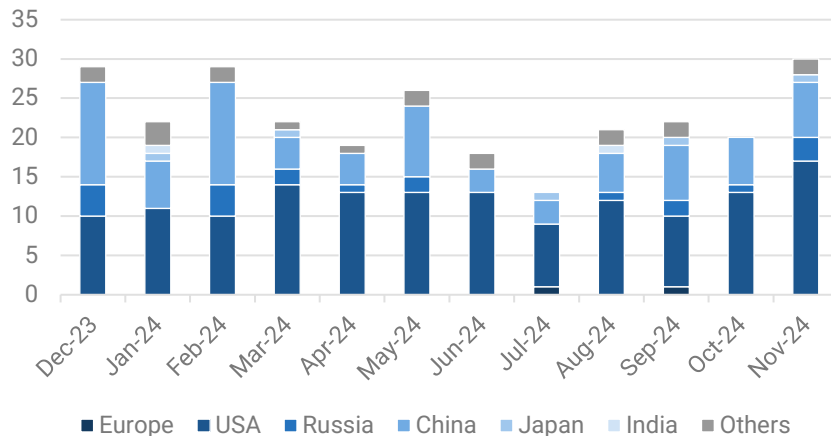


# LAUNCHES & SATELLITES

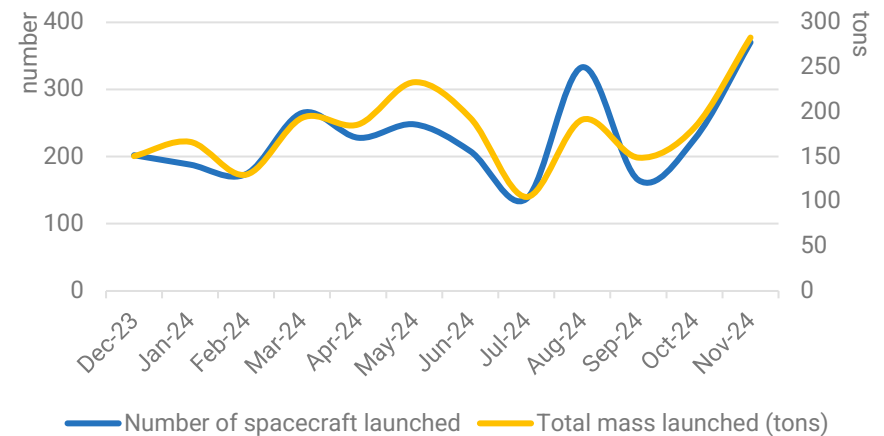
## Global space activity statistics

November 2024	USA	China	Russia	Japan	Other	Total
Number of launches	17	7	3	1	2	<b>30</b>
Number of spacecraft launched	279	27	57	1	6	<b>370</b>
Mass launched (in kg)	249 443	19 092	9563	4500	250	<b>282 848</b>

## Launch activity over the year



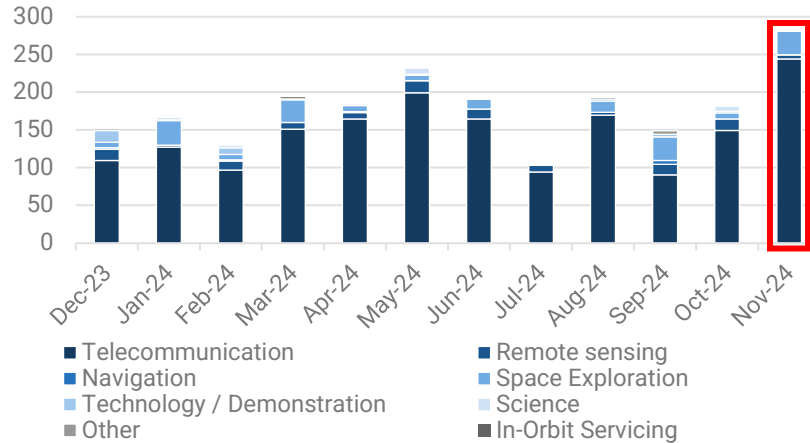
**Evolution of the number of launches per launch country**



**Evolution of launch activity over the year 2023-2024**

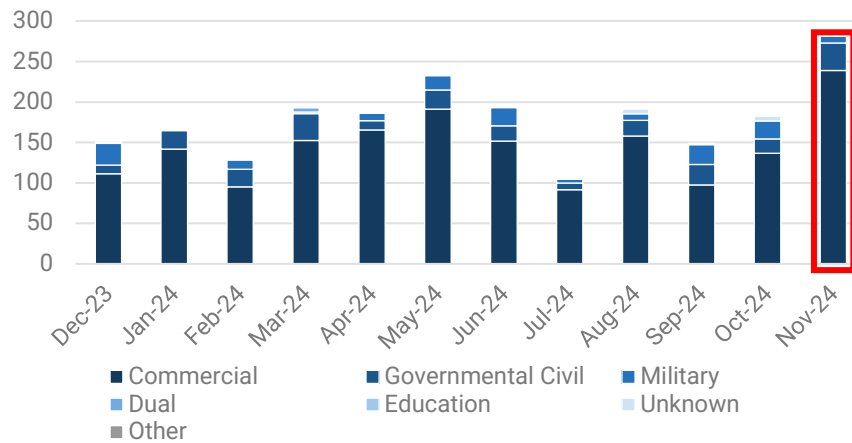


Satellite missions and markets



Nov. 2024	Telecom	Remote sensing	Nav.	Explo.	Science	Tech/ Dem	Other
Europe	150						
USA	226 420			11000	100	101	
China	1000	4252		12910		900	17
Russia			120	7280	908	85	5
Japan	4500	1108				10	
India	4700						
Others	7200	67				15	

Evolution of the total mass launched (tons) per mission (Dec. 2023- Nov. 2024)



Total mass (kg) launched by mission and customer country

Nov. 2024	Commercial	Governmental Civil	Military	Education	Unknown
Europe	150				
USA	224 121	11100	2400		
China	2677	14 675		17	1710
Russia	120	8236	1100	50	
Japan			4500	10	
India	4700				
Others	7233	49			

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

Total mass (kg) launched by market and customer country





## LAUNCH HIGHLIGHTS

### Starship test launch six, booster landing aborted



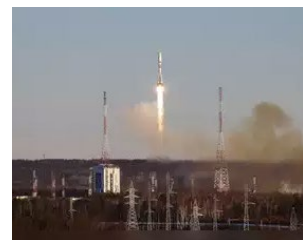
*Credit: SpaceX*

**On November 19, SpaceX launched its Starship vehicle on its sixth test flight**, but the company aborted a planned landing of the Super Heavy booster at the Starbase launch site. After stage separation, the Super Heavy booster initiated its return trajectory to the launch site. However, approximately a minute later, controllers issued a "booster offshore divert" directive, signalling that the booster would not land back at the pad. SpaceX has not disclosed specific details regarding the issue that led to the diversion. This event marks a minor setback for SpaceX, which

had previously succeeded in catching the Super Heavy booster with the launch tower during the preceding test flight on October 13. To date, all test launches have utilised the Starship Block 1 variant. Beginning with the next flight, SpaceX plans to transition to the upgraded Block 2 version, signalling the start of a new phase in the vehicle's development. The company has not yet announced a date for test flight 7. Among those present at the current launch was President-elect Donald Trump, who has maintained close ties with SpaceX CEO Elon Musk since the US general election earlier this month.

### Russia Sets Record with Satellite Launch, Including two Iranian spacecraft

**Russia successfully launched 55 satellites into orbit** on November 4th, showcasing its expanding cooperation with Iran and other international partners. The mission, carried out using a Soyuz rocket from the Vostochny Cosmodrome, set a new record for the highest number of Russian satellites deployed in a single launch. The payload comprised 51 satellites developed in Russia, a collaborative satellite created by Russian and Chinese teams, a Russian-Zimbabwean satellite, and two satellites designed and manufactured by an Iranian private company. The Iranian satellites are imaging and communication satellites intended to support environmental monitoring and provide connectivity in remote areas. This marks the first instance of Russia launching privately built Iranian satellites into space. The launch underscores the strengthening ties between Moscow and Tehran across political, economic, and military domains.



*Credit: Roscosmos*

### Long March 12 debut from new Chinese spaceport

**China achieved a significant milestone on November 30th with the maiden flight of its Long March 12 rocket, also inaugurating a new spaceport.** The payloads were two experimental spacecraft but no further details were provided. The **kerosene-fueled Long March 12** has a payload capacities of 12,000 kilograms LEO and 6,000 kilograms to SSO. This capability positions it as a potential workhorse for constructing China's planned LEO megaconstellations. Additionally, the mission debuted from a newly built commercial spaceport in Wenchang, Hainan. This facility, distinct from Wenchang's national spaceport, aims to alleviate launch pad congestion in China and support higher launch frequencies for both institutional and commercial missions.

## ESPI Insights Editorial Team

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<b>Investment &amp; Finance</b>	João Falcão Serra, Valentin Hoffmann
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