

ESPI Insights

Space Sector Watch



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October 2021

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SPACE IN SUPPORT OF KEY NATIONAL POLICY OBJECTIVES



Dear Friends of ESPI,

Several European countries recently issued new space strategies including Hungary, the United Kingdom, and Scotland. In October 2021, it was the turn of Austria, home of ESPI, to **release its new Space Strategy 2030+**. The document updates the previous Space Strategy of 2012 and defines Austria's vision for space until 2030. It was published by the Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology (BMK) and the Austrian Research Promotion Agency (FFG), the two main actors responsible for Austria's space affairs.

The new strategy takes stock of the rapid evolution of the space sector since 2012 and of the emergence of trends that create new opportunities and challenges for the future of space affairs. It also underlines the growing importance of space to support key national policy objectives. In this context, the strategy addresses both the future of Austria's space activities within the broader international and European landscapes, as well as the future role of space for Austria's sustainable economic growth. Austria's strategic vision for space is structured around six goals:

- Sustainable development on Earth and in space,
- Competitive space sector with high added value and sustainable jobs in Austria,
- Scientific excellence for space and Earth exploration,
- Space for all areas of life,
- Talent and diversity for space,
- Space dialogue with the population.

With climate action at the top of Austria's political agenda, it is not surprising that the concept of sustainability is central to the Austrian Space Strategy 2030+. Space is tied to Austria's climate action and to the country's goal of being climate neutral by 2040. In particular, the strategy highlights the role of space-based data and services to achieve climate policy targets. The strategy also underlines Austria's commitment to space sustainability and to the UN long-term sustainability guidelines which were adopted by the UN COPUOS in Vienna.

The strategy also focuses on the benefits of space-based data and services for society. This includes measures to foster cross-sectoral cooperation and innovation across areas such as renewable energy, mobility, and digital transformation. It also includes awareness-raising actions to highlight the pervasive reliance on space-based technologies in all areas of life, show the importance of a continued investment in space, and attract new talents to the space sector.

Austria's new Space Strategy 2030+ is another important milestone in a trend of renewed national space ambitions in Europe. In addition to the new space strategies of the UK, Hungary, and Scotland, France also announced in October **a 1.5B€ investment in space** as part of its national France 2030 plan.

These major developments on the European national scenes underline the growing importance given to space, not only as an industrial sector to support but also as an enabler of innovative solutions to address pressing policy challenges. New plans from Austria and other European countries show a clear ambition to further integrate space activities in the broader national landscape to achieve cross-sectoral and multifaceted national policy objectives.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'JJ Tortora'.

Jean-Jacques Tortora

Director of ESPI



POLICY & PROGRAMMES

ESA Council appoints three new directors

On October 21, the ESA Council appointed three new ESA directors:

- **Géraldine Naja as Director for Commercialisation, Industry and Procurement.** The goal of the newly established Directorate is to help European businesses thrive in the space industry. The new Director will contribute to make European space companies “the biggest and best, strongly contributing to a greener and more digital economic recovery”. Naja has been acting Director since June and will begin her new mandate on November 1st.
- **Simonetta Cheli as Director of Earth Observation Programmes.** Cheli is currently Head of the Strategy, Programme and Coordination Office in the Directorate of Earth Observation and will take up duty on January 1, 2022. Cheli succeeds Josef Aschbacher who became ESA Director General in March 2021.
- **Francisco-Javier Benedicto Ruiz as Director of Navigation.** Ruiz will start his mandate on February 16th, 2022. Currently, he is Head of the Galileo Programme Department within the Directorate of Navigation at ESA.



Credit: ESA

ESA DG proposes three new accelerators to tackle societal, economic & security challenges

ESA DG Josef Aschbacher presented **three proposed ESA accelerators** to the ESA Council in order to tackle societal, economic and security challenges, in line with the recommendations of the High-Level advisory group. These include:

- Rapid and resilient crisis response, focusing on interconnectivity in space to respond quickly to crises on Earth.
- Space for a green future, increasing the emphasis on space-based data and services for climate change mitigation.
- Protection of space assets, through developing operational, real-time systems to enable the detection, identification, and avoidance of natural and human-made space hazards with accurate and timely warnings when threats are presented.

In addition to the accelerators, the ESA DG also proposed two “**inspirators**”. These are missions to promote space technology, innovation, and deep space exploration, as well as careers in STEM.

ICEYE to contribute to Copernicus Programme



Credit: ICEYE

On October 12, ICEYE became the first European New Space company to be **named as a Contributing Mission** to the Copernicus Programme. The Copernicus Contributing Mission Activity is an initiative of the European Commission to integrate very high resolution commercial optical and SAR satellite imagery in Copernicus services. The Mission is managed by the European Space Agency as a part of the Copernicus programme. On the basis of the agreement, Copernicus services will now have access to ICEYE’s SAR imagery which will then be used to improve awareness in public safety, border control, security, and maritime domains. Specifically, it will offer enhanced assessment and planning capacities of Copernicus services.



France commits €1.5 billion to space as part of “France 2030” investment plan

On October 12, French president Emmanuel Macron announced the €30 billion “**France 2030**” long-term investment plan. The plan sets 10 goals among which New Space was included to support innovation and industrialisation in the country with a particular focus on the enhancement of green and sustainable growth and the support to small and medium enterprises. Regarding the New Space objective, the president highlighted the importance of collaboration between public actors, traditional space actors and New Space actors. France aims to “succeed in innovating in new space explorations, in the development of new practices, and everything that redefines the new terms of sovereignty and confidence in space”.



Credit: Government of France

To do so, president Macron set 3 short term objectives:

- The development of reusable small launch vehicles by 2026
- Innovation in microsatellites and future satellite constellations
- The development of technological and service innovations that will be at the heart of this New Space.

Specifically, **France is set to invest** €1.5B for space related technologies with €500M earmarked towards New Space actors, €200M towards reusable micro-launchers, and €500M towards the financing of a satcom constellation.

NASA budget: U.S. Senate Appropriations Committee releases FY2022 appropriations bill

The U.S. Senate Appropriations Committee **released the FY2022 appropriations bill** which will determine funding for NASA in the next fiscal year. The bill provides \$24.847 billion for NASA, a \$35.8 million increase compared to what was requested by the Biden-Harris administration. One of the major decisions taken in the bill was that of increasing the funding for HLS from the \$1.195 billion requested by the Biden Harris administration to \$1.295 billion. The \$100 million increase is seen as a mandate from the Senate to support two HLS contractors, although the appropriation still falls short of the \$4.3 billion asked by NASA in FY2022 for this purpose. SpaceX is so far the only company contracted to develop an HLS system for the agency. Other key outcomes provided by the bill include the Senate’s decision to fully approve all of NASA’s request for the development of commercial space stations in LEO for the first time, and its decision to increase the Space Force’s funding by \$500 million in FY2022.

In addition, a revised version of the “Build Back Better Act” was released by the House of Representatives, containing supplementary NASA appropriations for infrastructure, Earth science, and Aeronautics. The revised version significantly reduces the budget allocated to NASA by approx. \$3.3 billion, with the part allocated to upgrades of NASA infrastructure suffering the most. NASA had previously sought to receive more than \$5.4 billion in total through the bill to support infrastructure and a second HLS contract.

Scotland issues new Scottish Space Strategy



Credit: Government of Scotland

On October 20, the Scottish Government, the industry group Space Scotland, and the Scottish Space Academic forum **issued the new Scottish Space Strategy**. The overarching goals of the strategy include positioning Scotland as a leader in the commercial space sector, establishing launch and orbital services, transitioning towards an environmentally friendly space industry, and increasing economic opportunities. The strategy outlines specific plans for the development of multiple satellite launch sites, green technology initiatives, and continued investment in data analysis and research.



Poland signs Artemis Accords

On October 26, at the 72nd International Astronautical Congress (IAC), the president of the Polish Space Agency (POLSA) **signed the Artemis Accords** in the presence of NASA Deputy Administrator Pam Melroy. The signature offers Poland greater opportunity to partake in multilateral NASA programmes related to the exploration of the Moon, Mars and other celestial bodies. POLSA president Grzegorz Wrochna noted that signing the accords gave Poland ample opportunity to increase its coordination with the United States and allow of Polish space companies to expand their business outside of Europe.



Credit: NASA

NASA releases climate action plan

On October 7, NASA released its **climate action plan**, which aims to curb the impacts of climate change on its missions and ensure the resiliency of its assets and infrastructure. NASA's climate action plan was developed in line with the "whole-of-government approach" that U.S. President Biden is taking to face the climate crisis. The plan also includes the need to drive innovation through procurement and increase resilience against the disruptions of the supply chain, in line with the U.S. President's commitment to implement its **Justice40 Initiative**. Strategic priorities of the climate action plan include: 1) Ensuring access to space, 2) Integrating climate adaptation into NASA's master plans, 3) Integrating climate change into risk analysis and resilience planning, 4) Updating climate modelling to better understand threats and vulnerabilities, 5) Advancing aeronautics research to reduce contributors to climate change.

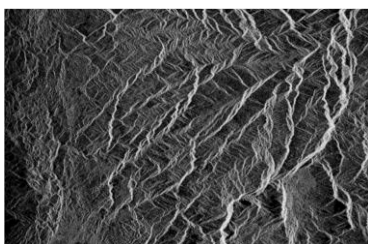
CNES partners with Orange for "space data lake"

The French Space Agency (CNES) has **partnered with Orange Business Services** to lead a new consortium to design, deploy and maintain a modern storage solution for scientific and spatial data. This endeavour is pursued to help CNES fully modernize its storage facility to facilitate the utilization of its satellite data. Orange Business Services will oversee the entire project and will design, install, and maintain the operations. The more cost-effective data cloud (data lake) will be capable of hosting 100 petabytes of spatial data is expected to facilitate in the utilisation of visualisations, cross-referencing and information sharing.

Rwanda files application with ITU to license 327,320 satellites

Rwanda **filed an application with the International Telecommunications Union (ITU)** to license two fleets of LEO satellites named Cinnamon 217 and 937, counting a total of 327,320 spacecrafts. Rwanda is planning to launch 27 of what they call "orbital shells", each comprising 12,960 satellites. The Rwanda Space Agency commented on the planned constellation saying that it is "a necessary step for any nation hoping to become operational in space". Rwanda's filing **has surprised some Heads of State** in the African Union as well as the South-African space agencies who were not solicited for support.

China Electronics Technology Group partners with Spacety to develop SAR constellation



Credit: Spacety

Private space company Spacety **has partnered with the 38th Institute** of the Chinese state-owned enterprise China Electronics Technology Group (CETG) to develop its 96-satellite large Tiaxian SAR constellation. The partnership represents a possible example of China's military-civil fusion national strategy, with the two parties having previously worked together on the development of Spacety's Hisea-1 satellite. The first batch of satellites is scheduled for launch in February 2022.



Starliner delays lead Boeing to take \$185 million charge to cover costs

Boeing has released its second quarter financial results, in which it outlines its decision to take an **additional \$185 million earnings charge** to cover the costs related to the delay of Starliner's second unmanned test flight. The Orbital Flight Test-2 (OFT-2) mission was originally scheduled to be carried out in early August but the company decided to cancel the test after the spacecraft's propulsion system failed to open due to valve corrosion. The OFT-2 mission is part of NASA's Commercial Crew Programme. The company had previously taken a \$410 million charge in January 2020 to cover the expected costs related to the completion of a second unmanned mission at the time, following the cancellation of the original OFT mission in December of 2019 due to software issues. The second unmanned test flight is now scheduled to take place in 2022.



Credit: Boeing

India's Prime Minister launches the Indian Space Association

On October 11, India's Prime Minister Narendra Modi **launched the Indian Space Association (ISpA)** - the premier industry association of government and space companies. Bharti Airtel, Larson & Toubro, Nelco (Tata Group), OneWeb, MapmyIndia, Walchandnagar Industries and Alpha Design Technologies are ISpA's founding members. The Association's objective is to further boost the development of the national space industry and to make India a global key player in the space sector, in line with the vision of India's Government.

Polish armed forces enlist local consortium to build three EO nanosatellites

On October 22, the Polish armed forces created a consortium **to build three nanosatellites** which will be equipped with Earth observation capacity, suitable to gather images with a 5m resolution. Leading the consortium is Creotech Instruments, one of the country's foremost space companies as well as Poland's military University of technology (WAT). The project is valued at \$18M and the small fleet will be operated by the country's armed service. It is expected to be deployed in orbit in 2024 in the framework of the Polish Imaging Satellites (PIAST) project.

KAI to invest approx. \$1.8 billion to expand its space industry operations



Credit: KARI

South Korean defence contractor Korea Aerospace Industries (KAI) recently **outlined its plan to invest roughly 2.2 trillion won (\$1.84 billion)** in order to expand its operations in the space industry in the next five years. The public company is in majority owned by the Korean State and played a crucial role in the development of the country's first homegrown rocket, the Korea Space Launch Vehicle-II (Nuri). KAI plans to use the new investment to expand its space activities beyond South Korea, by unlocking new partnerships and contracts from neighbouring

countries in Southeast Asia and the Middle East. Specifically, the company projects to collaborate with countries by offering launch solutions as well as by managing associated telecommunication operations. KAI's decision reflects the recent ambition and efforts demonstrated by South Korea in the field of space, with the country also planning **to commit approx. \$553 million from 2022 to 2027** to transfer state-owned space launch technologies to members of the industry.



In other news

ESA inaugurates the Near-Earth Object Coordination Centre (NEOCC) in ESRIN: The NEOCC will provide crucial information on asteroids such as orbital data, impact monitoring, risk analyses. Additionally, NEOCC will be the main hub for the daily observation data of ESA's future Flyeye telescopes data and is set to compile an Asteroid Risk List.

CNES and JAXA sign third Martian Moons eXploration mission (MMX) implementing arrangement: The implementing arrangement covers joint activities to be undertaken in the framework of the MMX mission. It was concluded in the scope of the 2015 inter-agency space cooperation agreement between the two agencies regarding French participation in the mission, which is scheduled for 2024.

Russia and the UAE sign intergovernmental space exploration agreement: The agreement covers a broad range of topics, including cooperation between the countries in the field of satellite navigation and remote sensing, space monitoring, satellite telecommunications and manned cosmonautics. The deal was signed between Roscosmos and the UAE space agency at the 72nd IAC in Dubai.

The principality of Monaco establishes an Office for Outer Space Affairs: The Office is established under the Digital Transition Office and aims to serve as a single-entry point to support the growth of businesses in the space sector that want to be based in Monaco.

Biden administration nominates Jessica Rosenwool as permanent Chair of the FCC: The nomination comes following Rosenwool's eleven months in office as the acting Chair of the Commission. During her time at the FCC, Rosenwool has played a significant role in advancing policy regarding the reduction of the digital divide. Her nomination makes her the first woman to Head the Commission.

Inauguration of the new Space Propulsion Test Facility (Sptf) takes place in Sardinia, Italy: The new center of technological excellence is funded by Avio in collaboration with the Ministry of Economic Development (MISE) and the Sardinia Region. It is dedicated to the development of new technologies in the space transport field and will also carry out tests to develop and qualify green space engines.

ESA and EDA agree to further collaboration aiming to protect critical space infrastructure: The two Agencies are planning to continue sharing information and capabilities, enhance tailored cyber-resilience training, facilitate access to their communities, expertise, and infrastructure, and expand cooperation with other key actors operating in the field in Europe.

UAE appoints Salem Butti Salem Al Qubaisi as new director-general of national space agency: President Sheikh Khalifa issued a federal decree appointing Al Qubaisi as the successor of Dr Mohammed Al Ahbabi. Dr Al Ahbabi was the Agency's director-general since its creation in 2014.

Italian region creates strategic forum to promote regional aerospace sector: The forum was created by the Italian Region of Emilia-Romagna with the aim to strengthen and structure the region's aerospace supply chain, promote its aerospace sector at a national, European and international level.

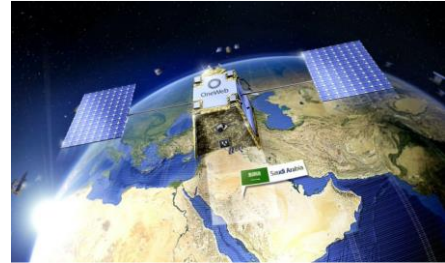
Spanish MoD invests in Galileo maritime receiver: The Ministry of Defense of Spain is set to invest €7M between 2021 and 2026 to develop a Galileo maritime receiver.



INDUSTRY & INNOVATION

OneWeb signs \$200 million agreement with Neom Tech & Digital Holding Company

On October 26, OneWeb signed a joint venture agreement valued at \$200 million with the Saudi Arabia-backed Neom Tech & Digital Holding Company. The objective of the agreement is to provide high speed space-based connectivity services to the Saudi Arabian megacity of Neom as well as neighbouring regions in the Middle East and East Africa. In the frame of their agreement, Neom Tech & Digital Holding will hold the exclusive rights over the distribution of OneWeb services in their target regions for seven years following the initiation of services. Neom Tech & Digital Holding is backed by Saudi Arabia's sovereign wealth fund and was created as a part of the Crown Prince's long-term project to invest \$500 billion in an effort to build a futuristic megacity in Neom.



Credit: OneWeb

Nanoracks, Voyager Space, and Lockheed Martin form consortium to launch Starlab by 2027

An industrial team composed of U.S. companies Lockheed Martin, Voyager Space and Nanoracks has formed a consortium aiming to launch a private space station by 2027. The private station will be called Starlab and is designed to be much smaller than the current ISS, with a capacity to host a crew of four astronauts at a time. The station will be small enough to be put in orbit in one single launch. Its primary component is projected to be an inflatable habitat designed and manufactured by Lockheed Martin.

In addition, Blue Origin also recently formed an industrial team with the objective of developing and launching private space station by the second half of the decade. The increase in number of private companies planning to build private space stations comes in the light of NASA's decision to invest up to \$400 million to help fund the development of commercial space stations in LEO by the end of the decade to replace the aging ISS, as part of their Commercial Low-Earth Orbit Destinations programme.

Leaf Space adds five ground stations to its global Leaf Line Network

Leaf Space adds five ground stations to its global Leaf Line Network to enhance its ground segment as-a-service (GSaaS) solutions and address growing customer demand. The new ground stations will be installed in West and South Australia, British Columbia, Iceland, and Bulgaria and will bring up to 15 the total number of operated stations by the Italy-based company. Through these developments, the Italian company aims to increase global coverage, capacity and decrease latency as well as decrease the risk of interference, band saturation and overlapping.

Consortium led by Airbus kicks-off project to study 5G communication services



Credit: Airbus

A consortium led by Airbus Defence and Space launched a project funded by ESA's Directorate of Telecommunications and Integrated Applications (TIA) to study the delivery of standards for consumers and industries' services that 5G and beyond-5G space-based infrastructure can provide. One of the outcomes of the project will be the proposal of a non-terrestrial network (NTN) infrastructure and deployment scenarios to deliver time and cost-efficient advanced communication services.



New position paper on European start-up financing from small satellite association

On October 19, the small satellite association ACCESS.Space Alliance (ASA) **released a position paper** addressing the state of space financing in Europe. The position paper is the result of a series of webinars organized by the association and attended by members of the industry as well as the European Commission, the EIB and ESA. ACCESS.Space was established in 2019 and is composed of companies such as Mynaric, Exotrail, Momentus Space, as well as the UK Space Agency. The position paper specifically highlights the need to take up concrete actions in order to finance space and space-related start-ups in Europe. In this regard, ASA proposes a series of policy actions such as the “adoption of an innovation strategy for New Space”, setting up a “dedicated space-related funds-of-funds and public funding instruments”, and stimulating demand through an increased number of PPPs among others.

SpaceLink chooses OHB as preferred tenderer to manufacture its initial constellation

SpaceLink has selected **OHB as preferred tenderer** to manufacture its initial fleet of four high-capacity optical relay satellites. SpaceLink’s MEO constellation which is **planned to launch in 2024** will provide connectivity in government and commercial space missions. Contract negotiations between SpaceLink and OHB are ongoing and are at an advanced stage. The predicted total value of the contract is over \$300M and OHB is also planning to act as cornerstone investor in the project through a \$25M investment.

Varda Space chooses SpaceX to launch its first in space manufacturing satellite

Varda Space Industries signed a launch services agreement with SpaceX to launch its first spacecraft in LEO orbit onboard a Falcon 9 in the first quarter of 2023. The U.S.-based company aims to demonstrate its ability to **produce different materials in microgravity**, which will then be brought back to Earth following three months spent in orbit. Varda space has raised \$53M and has yet to mention what exactly it plans to manufacture in space.

Geely produces first satellite of LEO mega-constellation to provide satellite navigation

The automotive conglomerate Zhejiang Geely Holding’s (Geely), China’s largest privately owned automaker, has **completed the production** of its first satellite. In February 2021, the Hangzhou-based company obtained permits to develop commercial satellites from China’s National Development and Reform Commission (NDRC). Geely’s satellite is the first of a future LEO constellation the company is planning to develop to support its future autonomous vehicles with satellite navigation. The company’s goal is to obtain a product offering high levels of safety and precision for its self-driving vehicles.

Planet introduces two new satellites at the Explore 2021 user conference

On October 12, Planet released **information about two new products**:

- Pelican will be the next generation of a satellite constellation for very high-resolution imagery with more frequent image revisit times and reduced reaction time and latency. The San Francisco-based company’s objective is to develop a fleet of satellites that will replenish and upgrade its existing high resolution SkySat fleet. The first satellites are scheduled to be operational in 2023.
- Planet’s second development is named Fusion Monitoring and will combine daily PlanetScope monitoring data with SAR data from Sentinel 1 providing improved sensing to customers. Planet’s goal is to enable a consistent data stream of continuous landscape monitoring in the agricultural sector, including in cloudy and bad weather conditions.



Credit: Planet



Verizon and Amazon team up to develop connectivity solutions

On October 26, **Verizon Communications and Project Kuiper (Amazon)** announced a **strategic collaboration** to develop connectivity solutions for unserved and underserved communities. Both companies have begun to develop technical specifications and initial commercial models for a wide range of connectivity services in the U.S and for the rest of the world. The partnership seeks to enlarge pre-existing coverage and deliver a customer tailored connectivity solution that will combine Amazon's ultra-modern LEO satellite system and Verizon's state-of-the-art wireless technology and infrastructure.

This partnership comes following the **AT&T and OneWeb strategic partnership** signed early September and during **ongoing talks between SpaceX and Vodafone** targeting similar partnerships.

In other news

Eutelsat CEO Rodolphe Belmer to step down: Belmer, who has been the CEO of Eutelsat since March 2016, notified the board of directors his intention to resign at the beginning of 2022. He is set to become the CEO of French IT company Atos.

Maxar Technologies challenged SDA's solicitation seeking bids for 126 new satellites: The call closed on October 8th and that same day Maxar filed the protest with the U.S. Government Accountability Office (GAO). The reason for the challenge is still currently uncertain.

Ovzon receives order from the U.S. DoD to provide fifty of its ultra-small mobile satellite terminals T6: The Ovzon T6 can support operational activities and teams on one single terminal. The U.S. Department of Defense (DoD) awarded a contract valued at approx. \$1.92M to the Swedish company to supply unnamed customers with its Ovzon T6.

SES and SnT create joint lab to study high-throughput satellite systems in next-generation networks: SES and the University of Luxembourg's Interdisciplinary Centre for Security, Reliability and Trust (SnT) expanded their long-established partnership to explore the potential of satellite systems and multi-orbit capabilities in networks such as quantum communications and cybersecurity.

AAC Clyde Space wins OHB Sweden contract to deliver Sirius command and data handling unit: Sirius' unit is valued at approx. €545K and will be delivered to ESA's Arctic Weather Satellite, for which OHB Sweden is prime contractor. AAC Clyde Space should deliver an engineering model in second quarter of 2022 and a flight model in first quarter of 2023.

OneWeb and NewSpace India Limited sign a Letter of Intent: OneWeb and NewSpace India signed a non-binding Letter of Intent to potentially use the Indian-built Polar Satellite Launch vehicle (PSLV) and the Geosynchronous Launch Vehicle (GSLV-MkIII) to launch OneWeb satellites from Indian starting 2022.

Consortium to use AI to increase maritime awareness capabilities: SmartSat CRC, Leonardo Australia, e-GEOS, and Deakin University partnered for the first phase of "Enhancing Earth Observation for Maritime Domain Awareness" (EO4MDA). Based on the agreement, the partners aim to build an Australian maritime domain awareness capability using artificial intelligence-enhanced satellite technologies, in line with national and civil security objectives.

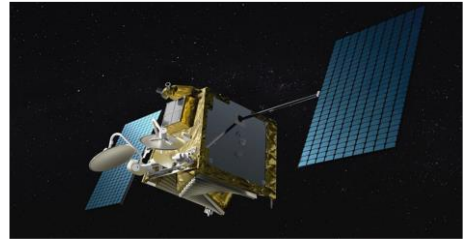


ECONOMY & BUSINESS

Eutelsat invests an additional \$165M into OneWeb and becomes second shareholder

On October 6, Eutelsat **invested an additional \$165 million** in OneWeb and raised its shareholding stake in the company. The investment was made through the exercise of a call option on a portion of the OneWeb funding round subscribed by Bharti last June. The finalisation of the transaction is expected to take place at the end of 2021 and will make Eutelsat the second biggest shareholder in OneWeb behind Bharti Global, with the companies holding 22.9% and 30% of shares respectively.

Eutelsat had already invested \$550 million in OneWeb in April for 24% of the company's shares. Further capital injections from Bharti Global in June and from Hanwha Systems, which poured an additional \$300 million in OneWeb in August, diluted its shares. Following Arianespace's October 14th launch, OneWeb now has **more than half of its constellation's** first-generation satellites in orbit.



Credit: OneWeb

Hiber pivots business operations after difficulties rolling out commercial services

The Dutch start-up Hiber recently addressed a letter to the FCC in order to surrender **the market access authorization** it had received to licence the operation of communication services from its planned 24-satellite constellation. The decision to abandon the development of its planned constellation comes after technical difficulties caused the company to lose the full serviceability of the four satellites it had in orbit. The company stated that, of the four satellites, two were no longer operational while the others suffered issues that prevented the deployment of commercial services. In the letter, Hiber also refers to the difficulties it found in generating revenue due to these obstacles as well as in raising the necessary capital to continue with its anticipated developments. In this regard, although the company recently raised €26 million in capital from the EIC fund, it asserted that the global pandemic has played a detrimental role in its capacity to obtain the additional investments it needed to move forward with its planned operations.

Following its pivot, Hiber **signed a strategic partnership** with Inmarsat. The partnership is part of the company's new strategy as it aims to transition to an IoT-as-a service business model. In this framework, Hiber will thus proceed with the roll-out of its Hiberband solution through Inmarsat's recently unveiled global satellite network for IoT, the ELERA network.

Space Data Marketplace is officially launched with support from CNES



Credit: Space Data Marketplace

The Space Data Marketplace **has been officially launched** with the support from CNES and the French government through the French Recovery Plan. The objective of the Space Data Marketplace is to foster greater access to space data and enhance the creation of value in the entire space industry. Dawex will lead the consortium of companies that will be responsible with the establishment and operation of the

Marketplace. Airbus Defence and Space, Thales Alenia Space, Dassault Systèmes and VisioTerra are amongst the companies making up the industrial consortium, which currently includes 10 space and data companies. The Space Data Marketplace aims to be a one-stop shop for the exchange and sharing of data amongst companies in different industries using spatial data, with the objective of facilitating the development of new and innovative data-driven services and solutions. Specifically, it will include innovative data exchange technology to streamline the circulation of data and will foster the development of future applications based on simulation, 3D and satellite imagery analytics technologies.

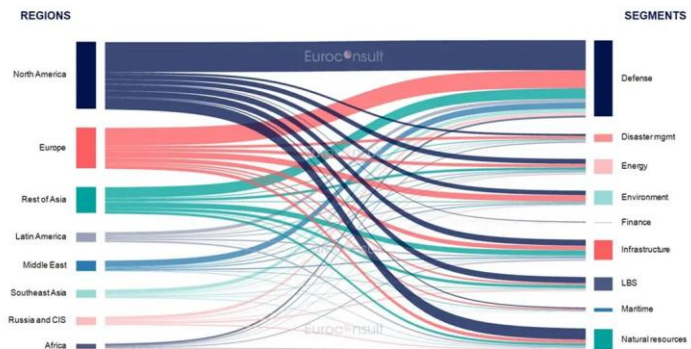


Euroconsult estimates Earth Observation market to reach \$7.5 billion by 2030

Euroconsult released its latest figures evaluating the state of the Earth Observation market in its 2021 Earth Observation: Data & Services Market report.

The report provides a yearly global assessment of the worldwide commercial demand for satellite-based imagery and value-added services. In the latest edition, Euroconsult estimates that the commercial demand for Earth Observation

data stood at \$1.6 billion in 2020. It estimates that this demand will continue on a path of accelerated growth, reaching \$2.5 billion by 2030 with a 5% Compound Annual Growth rate (CAGR). On the other hand, the demand for Value-added services is estimated to grow at a 7% CAGR through the decade, reaching approx. \$5 billion by 2030.



Credit: Euroconsult

European Innovation Council selects space start-ups for funding as part of EIC Accelerator

The European Innovation Council selected three space start-ups among the 65 companies part of the first batch of SMEs eligible for funding under the newly established European Innovation Council (EIC) Accelerator. The European space start-ups selected by the EIC are Veoware, Oledcomm and Segena. Each company was selected following a two-step process introduced in the framework of Horizon Europe and will be eligible to receive up to €17,5 million in funding in the form of blended finance. Blended finance is composed of a mix between equity investments going up to €15 million and grand financing. The EIC was launched in March 2021 with a budget of over €10 billion following a two-year pilot phase. Space companies such as Hiber previously received blended finance from the EIC as part of its pilot project. The EIC received over 4000 applications from European start-ups since its establishment and is currently reviewing new projects following an October 6th deadline.

Bpifrance and CNES-backed CosmiCapital closes €38 million fund



Credit: Bpifrance

On October 19, Karista-managed CosmiCapital closed its first fund, receiving a total a capital injection of €38 million to initiate its operations. The French Venture Capital firm Karista initially announced its participation in the creation of the CosmiCapital space-focused venture capital fund along with the participation of CNES and the French state-backed investment bank Bpifrance two years ago. The new fund was initiated by CNES and is also supported by the French Seed fund (Fonds National d'Amorçage 2) in partnership with ESA. CosmiCapital's main objective will be that of supporting French and European New Space start-ups through seed and Series A funding in the range of €1 to €5

million. The fund expects to invest about 75% of its investment capacity in downstream companies offering space services and the remainder in the upstream manufacturing sector. Bpifrance and CNES committed €15 million and €12 million respectively in the first closing, with the former planning to invest an additional €5 million upon arrival of additional limited partners.



European spaceports secure funding in October

Andøya Space secures approx. €38 million in funding from Norway to start building spaceport

Andøya Space secured NOK 365.6 million (approx. €38 million) from the Norwegian government on October 8, as Norway gives the green light to begin with the establishment of the Andøya Spaceport. The spaceport is projected to serve as a launch site in Norway for small satellites, with the first launch expected to be carried out in 2022. Two German small-launcher start-ups, Isar Aerospace and Rocket Factory Augsburg, have so far concluded multiple-launch agreements with Andøya Space. The government funding is composed of NOK 282.6 million in equity and NOK 83 million in grants and was part of a 2020 conditional commitment between the Norwegian parliament and Andøya Space.



Credit: Andøya Space

Swedish Space Corp. secures 12-year loan from the Nordic Investment Bank for Esrange Space Centre

The Swedish Space Corp secured a €12 million loan from the Nordic Investment Bank (NIB) on October 7 to finance the development of a spaceport in the Esrange Space Centre in Kiruna. The project is part of a broader upgrade of the Esrange Space Centre undertaken in the past decade, with the NIB having subscribed its first loan with the Swedish Space Corp. in 2014. The latest investment has the objective of enabling the start of construction of facilities that will add small satellite launching capabilities to the centre, which has been operational as a sub-orbital facility since the 1960s. Both Isar Aerospace and Rocket Factory Augsburg have established bases for the launch of their respective launch vehicles in Esrange, and the facility also became a test-bed for launchers in the scope of ESA's Themis programme.

SpaceX reaches \$100 billion valuation

On October 8, SpaceX became one of the few private companies to reach a \$100 billion valuation following a secondary sale of its shares made by existing investors. The sale of shares was made at a per-share price of \$560 and is part of an agreement the company holds with its investor to sell up to \$755 million in stock from insiders. SpaceX is now amongst the most valuable private companies in the world according to CB insights. The latest valuation represents a significant increase compared to the last estimate of \$74 billion, which was made in February when the company raised \$1.2 billion in new capital.

Terran Orbital to go public via a SPAC merger

Terran Orbital has signed a definite business combination agreement with Tailwind Two Acquisition Corp, becoming the latest space company set to go public via a SPAC merger. The combined company is projected to have a valuation of \$1.58 billion following the transaction and will provide the satellite manufacturer with \$470 million in cash, \$50 million of which is coming through a PIPE. Among the participants in the PIPE are AE Industrial Partners, Beach Point Capital and Lockheed Martin.

ABL Space Systems raises additional \$200 million in Series B funding



Credit: ABL Space Systems

ABL Space Systems have extended their \$170 million March Series B round of funding by raising an additional \$200 million. The latest round was led by existing investors including T. Rowe Price and increased the company's valuation to \$2.7 billion. The company aims to use the funds to scale up the production of its RS1 launch vehicle and to invest in R&D efforts aimed towards the development of a future system. ABL Space Systems expects to carry out the first launch of the RS1 in Alaska by the end of 2021. The company recently concluded a multi-launch agreement with Lockheed Martin and states to have a backlog of 75 contracted launches.



In other news

Minerva Space Technologies secures \$150 million for Space Data Network: The newly created space company secured the funds through a credit facility to develop its Space Domain Awareness solution. Among other things, Minerva aims to launch a Marketplace for “Space domain infrastructure non-fungible digital assets” and provide users with a unified ecosystem of authenticated “space resident object (SRO)” data. The company plans to raise approx. \$500 million in the next few years and aims to have its initial assets in orbit by the end of 2023.

Satellite Vu raises approx. €17.7 million in Series A funding: The UK-based company aims to use the funds to speed up its operations ahead of the planned launch of seven thermal and infrared imaging satellites starting in October 2022. The round was led by Seraphim Space Investment Trust and included the participation of firms such as Draper Esprit and E2MC Ventures. Satellite Vu raised approx. €6 million in Seed in April.

Venture Capital firm Embedded Ventures signs cooperative agreement with U.S. Space Force: The signed Cooperative Research and Development Agreement (CRADA) has the objective of accelerating innovation in the space sector through venture capital investments. The agreement was signed between the firm and SpaceWERX, the Space Force’s newly created organization with the aim of creating ties with members of the industry and space start-ups. It represents the first agreement between the Space Force and a venture capital firm.

White Hat and Magnetar invest \$100 million in Comtech Telecommunications: The company plans to use the new funds to develop new satellite technology centres in Arizona and the United Kingdom and to advance its merger and acquisition strategy amongst other things. Comtech recently acquired CGC Technology Limited.

Rocket Lab acquires Advanced Solutions for \$40 million: The acquisition strengthens Rocket Lab’s current Space Systems portfolio, which includes both its Proton launch vehicle line and its suite of space hardware solutions, with Advanced Solution’s software technology. Advanced Solution has over two decades of experience in developing end-to-end solutions flight software for space missions design and operation and has worked with prime contractors such as the USAF and the U.S DoD.

Bloomberg Philanthropies commits \$25 million Carbon Mapper Accelerator Programme: The programme represents the result of a partnership between various stakeholders including the State of California, Plent, and NASA’s Jet Propulsion Laboratory and aims to accelerate the deployment of emerging remote sensing technologies. Specifically, Carbon Mapper will provide support to initiatives such as the Global Methane Pledge in monitoring methane and carbon-dioxide emissions through space-based remote sensing technologies.

Softbank acquires 200 HAPS-related patents from Alphabet’s Loon: The acquired patents relate to services, aircraft, operations and network technologies for HAPS. Softbank and its subsidiary HAPSMobile are now have over 500 HAPS patents and are further consolidating their position as the leaders in effectively detained Intellectual Property in the industry.

Space Perspective raises \$40 million in Series A funding: The funding round was led by Prime Movers Lab and represents the largest capital injection in a Space Balloon company. Space Perspective successfully completed their first uncrewed test-flight in June, with their vehicle reaching the height of approx. 33km. The company aims to offer its first luxury spaceflight experience by late 2024.

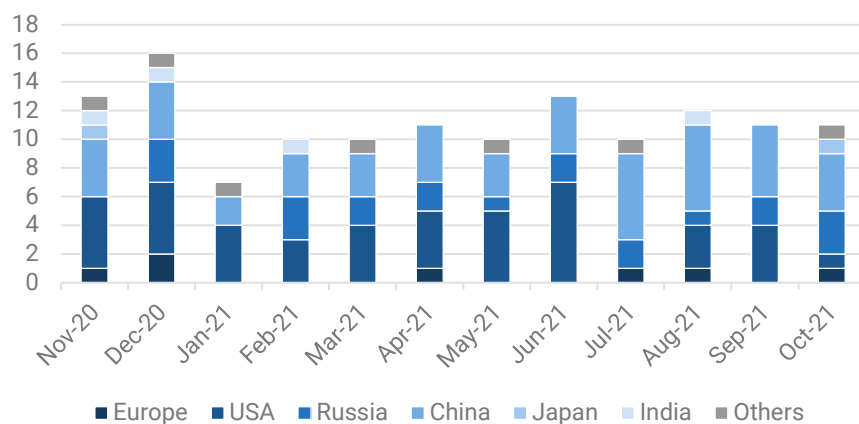


LAUNCHES & SATELLITES

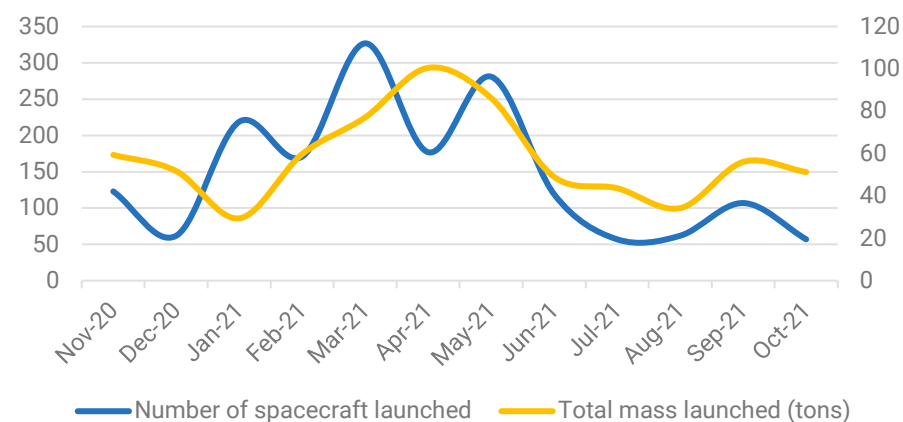
Global space activity statistics

October 2021	Europe	USA	Russia	China	Japan	Others	Total
Number of launches	1	1	3	4	1	1	11
Number of spacecrafts launched	2	1	38	14	1	1	57
Mass launched (in kg)	10 263	1550	19 652	14 367	4000	1500	51 332

Launch activity over the year



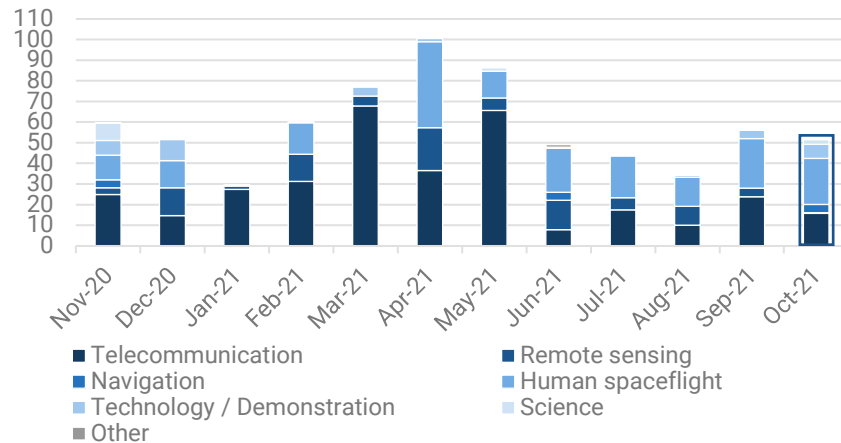
Evolution of the number of launches per launch country



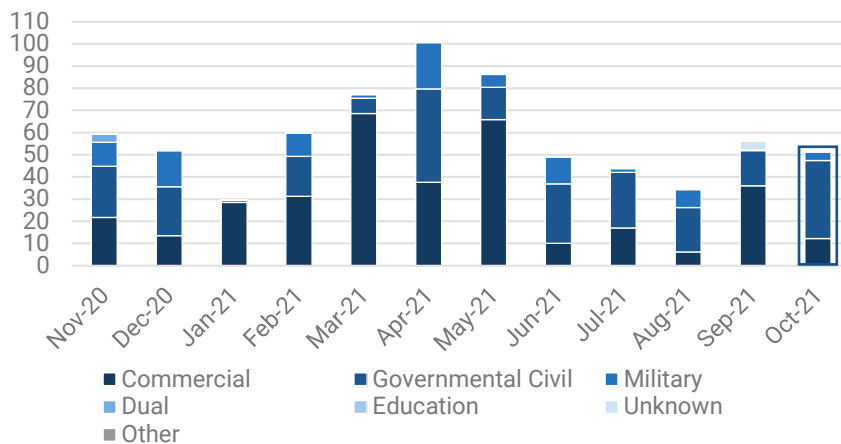
Evolution of launch activity over the year 2020-2021



Satellite missions and markets



Evolution of the total mass launched (tons) per mission (Nov. 2020-Oct. 2021)



Evolution of the total mass launched (tons), per market (Nov. 2020-Oct. 2021)

October 2021	Telecom	Remote sensing	Navigation	Human Spaceflight	Technology/ Demonstration	Science
Europe	15 555					
USA						1550
Russia				14 360		
China	237	230		8082	5268	550
Japan			4000			
Others					1500	

Total mass (kg) launched by mission and customer country

October 2021	Commercial	Governmental Civil	Military	Education
Europe	11 703		3852	
USA		1550		
Russia		14 360		
China	592	13 735		40
Japan		4000		
Others		1500		

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
05/10/2021	Russia	Soyuz-2-1a	Soyuz MS-19	Roscosmos	Russia	RKK Energia	Russia	7080	Crew Transfer	Gov. Civil
14/10/2021	China	CZ-2D(2)	CHASE / Xihe	CNSA	China	SAST	China	550	Space Science	Gov. Civil
			HEAD 2E & 2F	HEAD Aerospace	China	SAST	China	45 (each)	ALS	Commercial
			Jinzijing 2 / Golden Bauhinia 2	HKATG	China	ZeroG Lab	China	147	Telecommunication	Commercial
			JTSY / MOTS	SAST	China	Lizheng Satellite Application Technologies	China	103	Tech / Demo	Gov. Civil
			MD 1	Shenzhen Aerospace Dongfanghong HIT Satellite Ltd.	China	Shenzhen Aerospace Dongfanghong HIT Satellite Ltd.	China	25	Tech / Demo	Commercial
			QX 1	Shenzhen Aerospace Dongfanghong HIT Satellite Ltd.	China	Shenzhen Aerospace Dongfanghong HIT Satellite Ltd.	China	50	Tech / Demo	Commercial
			SSS 1	Beihang University	China	Beihang University	China	30	Tech / Demo	Education
			SSS 2A	Shanghai Jiaotong University	China	Shanghai Jiaotong University	China	4	Tech / Demo	Education
			Tianshu 1	Huoyan Digital Intelligence Technologies Service	China	Huoyan Digital Intelligence Technologies Service	China	50	Tech / Demo	Commercial
			Tianyuan 1	Nanjing Univ of Science and Technology	China	Nanjing Univ of Science and Technology	China	6	Tech / Demo	Education
14/10/2021	Russia	Soyuz-2-1b Fregat	OneWeb (36 satellites)	OneWeb Ltd.	UK	OneWeb Satellites	USA	147	Telecommunication	Commercial
16/10/2021	USA	Atlas-5(401)	Lucy	NASA	USA	Lockheed Martin	USA	1550	Planetary Science	Gov. Civil
16/10/2021	China	CZ-2F/G	Shenzhou 13	CMSA	China	CASC	China	8082	Crew Transfer	Gov. Civil
21/10/2021	South Korea	Nuri	Dummy payload	Unknown	South Korea	Unknown	South Korea	1500	Tech / Demo	Gov. Civil
24/10/2021	France	Ariane-5ECA+	SES 17	SES	Luxembourg	Thales Alenia Space	France	6411	Telecommunication	Commercial
			Syracuse-4A	DGA	France	Thales Alenia Space	France	3852	Telecommunication	Military
24/10/2021	China	CZ-3B/G2(2)	ShiJian 21	CASC	China	CAST	China	5000	Tech / Demo	Gov. Civil
26/10/2021	Japan	H-2A-202	QZS 1R / Michibiki 1R	JAXA	Japan	Mitsubishi Electric	Japan	4000	Navigation	Gov. Civil
27/10/2021	China	Kuaizhou-1A	Jilin-1 Gaofen-02F	Chang Guang Satellite Technology Co.	China	Chang Guang Satellite Technology Co.	China	230	Earth Observation	Commercial
28/10/2021	Russia	Soyuz-2-1a	Progress-MS 18	Roscosmos	Russia	RKK Energia	Russia	7280	Cargo Transfer	Gov. Civil



Launch Highlights

France launches a new military communications satellite



Credit: Arianespace

On October 24th, France launched the **first satellite** of the new generation of Syracuse satellites, which provide armed forces with secure communications all over the globe. The launch of this satellite responds to a growing need for data from the military. Following the Luch-Olymp spying event and in line with the announcements made in 2019, the satellite is equipped with cameras to monitor its close environment and will be able to perform small manoeuvres to escape a potential aggression. Moreover, it would be able to resist cyberattacks and jamming as well as an electromagnetic pulse resulting from a nuclear explosion in space. Two other satellites should be launched in the

upcoming years.

The satellite was launched with an SES communication satellite onboard the heaviest launch of an Ariane 5 to date. This launch was the latest of an Ariane rocket before the James Webb Telescope takes off in December.

Russia and China manned missions

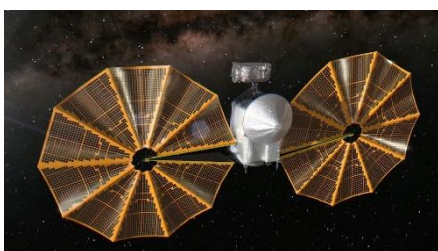
On October 5th, Russia launched a crewed Soyuz spacecraft to the International Space Station. This launch **was noteworthy** as it carried the actress Yulia Peresild and the film director Klim Shipenko, who filmed scenes for an upcoming movie called Vyzov ("Challenge"). They stayed 12 days in the station and recorded around 30 minutes of footage. A few additional scenes were filmed just after they came back to Earth on October 18th.



Credit: Roscosmos

In parallel, China launched **a new trio of taikonauts** to its space station. They will stay six months in orbit, the longest duration to date in the Chinese human spaceflight programme. Several spacewalks are planned and, among them, the first one for a Chinese woman. Shenzhou 13 is considered as the last mission of the "technology demonstration phase" of the Tiangong space station programme.

A new mission to study asteroids



Credit: NASA

On October 16th, an Atlas 5 rocket launched the Lucy spacecraft for NASA. The mission will, for the first time, study **Trojan asteroids**, which fly around Jupiter. More precisely, the spacecraft will fly by one main belt asteroid and study seven Trojans. Contact with these asteroids is planned for 2033. While the launch occurred without any major issue, it appeared that one of the solar panels **did not fully lock** after its deployment. However, it does not prevent it from generating power.

South Korea launches its first national rocket

On October 21st, South Korea launched the **first rocket fully developed domestically**, called Nuri. The development of the rocket cost around \$1.6 bn according to South Korean authorities. While most of the launch occurred normally, the rocket did not manage to reach orbital velocity and to deliver its payload (a dummy satellite) in orbit due to a premature shutdown of the third stage's engine. A second launch of Nuri is planned for May 2022, and will this time carry an operational satellite.

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