

# ESPI Insights

Space Sector Watch



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# THE EU SPACE SUMMIT, KEY OUTCOMES AND CONSIDERATIONS



Dear Friends of ESPI,

Under the French EU Council presidency, the city of Toulouse hosted a major European space event on 16 - 17 February 2022, the so called "Space Summit", spearheaded by ESA Director General Josef Aschbacher. The summit provided a sound momentum to foster new space policy efforts in Europe, leading to some notable developments. Formally, the event consisted of an informal EU Competitive Council Meeting on Space, followed by an ESA Council Meeting at ministerial level. On this occasion, the European Commission finalised the development and presented two space policy initiatives as part of its new "space package":

- A legislative proposal for an EU Regulation establishing Union's space-based secure connectivity programme (for 2023-2027)
- Joint communication (non-legislative, with EU's HRVP) to outline future EU efforts in the increasingly critical policy domain of Space Traffic Management

In addition, the role of space was also underlined in the EC's "defence package". On ESA's side, the agenda of the meeting reflected the vision of accelerating the use of space in Europe, with European leaders reportedly reaffirming "their strong political support for the three accelerators identified by ESA". The Summit was also accompanied by a parallel Copernicus Horizon 2035 conference, to discuss the future of the Copernicus programme and its services. Overall, the political discussions and outcomes revealed two underlying trends, shaping the current evolution of European space policy:

**1) The increasingly prominent place of security in the European space policy agenda.** The major agenda items of the Space Summit addressed security-related activities and developments – both at ESA level with the three Accelerators and at the EC level with initiatives in space and defence domains. In addition, the speech of president Macron notably stressed that space is an essential component of Europe's sovereignty. Over the past few years, ESPI has continuously underlined that security is a growing theme in European space policy agenda and the outcomes of the Space Summit confirmed this trend. Finding an agreement on an effective and mutually agreed division of roles and responsibilities is one of the key challenges for the upcoming period.

**2) Continued debates on increasing the common European ambition in space.** At a time of accelerating space efforts in other parts of the world, the Summit highlighted the need to continue the political discussion on the fundamental role of space in Europe. In this regard, the periodically re-emerging suggestion for a European autonomy in human space transportation was put into spotlight again. The need for such capability was also underlined in a Manifesto written by a group of European astronauts. Discussions at the summit yielded a decision that an expert group tasked with advising on possible options in terms of space exploration and human spaceflight will be created. For now, it remains to be seen whether European leaders will confirm that there is a need for such capability.

While the reinvigorated political drive and ongoing discussions on the future of space in Europe are welcomed developments, the concerning geopolitical events, spurred by the Russian invasion of Ukraine, will serve as a harsh reality check for the European space community. As the conflict unfolds, any developments will likely put an intense spotlight on Europe's future space activities. European stakeholders will face the pressing need to initiate reflections among member states to set up an institutional framework at European level to develop and exploit security-oriented infrastructure and conduct operations.

Yours sincerely,

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

*Jean-Jacques Tortora*

*Director of ESPI*



## POLICY & PROGRAMMES

### Russia's war on Ukraine impacts the space sector

Russia's attack on Ukraine triggered severe reactions from the international community and raised questions regarding cooperation in space.

On February 24th, the **U.S. President Joe Biden declared** that the United States and its Allies' actions will "cut off more than half of Russia's high tech imports", and this "will strike a blow to their ability to continue to modernize their military" and "degrade Russia's aerospace industry, including their space program". The White House released



*Credit: Maxar Technologies*

then a fact sheet in which did not mention specific measures targeting the Russia's space program but rather critical technologies. The **UK government said they will** "ban the export of all dual-use items to Russia, including a range of high-end and critical technological equipment and components" in sectors such as aerospace, in addition to financial measures and in line with the U.S. and EU's actions.

On February 28th, **ESA released a statement** following a meeting with Member States and declared they "are fully implementing sanctions imposed on Russia by the Member States" and "assessing the consequences on each of their ongoing programmes", aligning decisions to the positions of the Member States "in close coordination with industrial and international partners".

Several areas of the cooperation in space are being affected by Russia's war against Ukraine.

- **International Space Station.** After President Biden's speech, the Director General of the State Space Corporation Roscosmos Dmitry Rogozin released a series of tweets threatening to pull back from the ISS, of which Russia controls orbit and location in space through its engines. NASA then issued a media release saying that "no changes are planned to the agency's support for ongoing in orbit and ground station operations". For instance, NASA astronaut Mark Vande Hei's flight back to Earth on a Soyuz spacecraft seems to remain scheduled for March.
- **ExoMars mission.** ExoMars is scheduled for launch from Russia's Baikonur Cosmodrome in September and preparations should start soon. On its February 28th statement, ESA declared that "the sanctions and the wider context make a launch in 2022 very unlikely" but ESA DG "will analyse all the options and prepare a formal decision on the way forward by ESA Member States".
- **Guiana Space Center.** Russia decided to interrupt operations at Guiana spaceport and withdraw its personnel. Two Galileo satellites were scheduled for launch on a Soyuz rocket in April. The Commissioner for the Internal Market Thierry Breton said that the EU excluded consequences for Galileo and Copernicus and stated the commitment of the EU and its Member States in protecting critical space infrastructures. ESA reported they will use "the appropriate launch service based on launch systems currently in operation and the upcoming Vega-C and Ariane 6 launchers".

Additional implications could affect the industrial space sector with companies such as OneWeb and Northrop Grumman which have strong ties with Russia or Ukraine, the rocket engines sector, the **supply chain** which has already suffered disruption during the COVID-19 pandemic.



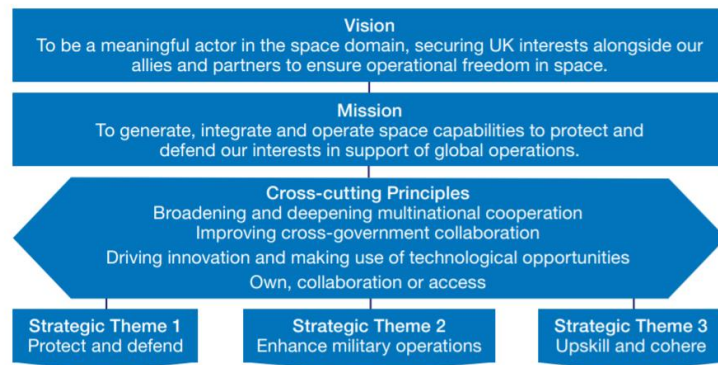
## Seven countries release the Combined Space Operations (CSpO) Vision 2031 statement

The US, Australia, Canada, France, Germany, New Zealand, and the UK co-drafted and released the **Combined Space Operations (CSpO) Vision 2031 statement**. The document defines the seven nations' ten-year vision of cooperation in national security space operations and commitment to lead as responsible actors. The statement outlines four shared objectives and related line of efforts: prevent conflicts; unity of effort; space mission assurance; defence and protection of space interests.

## National space strategies updates

### U.K. releases first ever Defence Space Strategy (DSS)

On February 1st, the U.K. Ministry of Defence (MOD) and Defence Science and Technology Laboratory released **the first ever Defence Space Strategy (DSS)**, pledging to invest £1.4 billion in cutting-edge technologies over the next 10 years to protect U.K. space-related interests. The DSS "directly supports the integrated U.K.'s first National Space Strategy" that was released in September 2021 and sets out the government's vision "for Defence as a global actor in the space domain".



*Credit: UK Ministry of Defence*

The U.K. Minister for Defense Procurement Jeremy Quin declared that part of the **£1.4 billion investment will be distributed** as follow:

- £968M for the delivery of the ISTAR1 Programme. ISTAR1 will be a global LEO satellite constellation which "will provide surveillance and intelligence for military operations".
- £61M to investigate the use of laser communications technology in the delivery of space-to-Earth data at a speed equivalent to superfast broadband.

### Wales unveils its National Space Strategy "Wales: A Sustainable Space Nation"

On February 21st, the Welsh Government released its **National Space Strategy "Wales: A Sustainable Space Nation"**, which highlights the country's vision of becoming "the world's first sustainable space nation leading the way to a greener space" by 2040, including the development of greener fuels and reusable technology. The strategy sets out several areas in which Wales aims to grow, including spaceflight, in-space manufacturing and recovery of space vehicles, test and evaluation ecosystem, advanced manufacturing capability and emerging clusters, EO, research and teaching facilities. During a visit to Cardiff University, Welsh Economy Minister Vaughan Gething reported that "Wales hopes to secure 5% of the UK's market by 2040 **boosting its economy by £2 billion per year**".

### French government supports the development of Maia and other French micro launchers

On February 2nd, CNES President Philippe Baptiste testified before the French Senate Economic Affairs Committee and reported that the **French government will subsidise the development of ArianeGroup's Maia** to accelerate on its development and face competition in Europe. Baptiste outlined the role that mini launcher will play for future satellite missions, such as replacement of constellation satellites or faster response to launch requests. The French government also aims to financially support mini- and micro-launcher start-ups, which are at an early stage of development in France. Additionally, CNES President invited developers of small launchers to consider using the Guiana Space Center as spaceport.



## NASA updates the International Space Station Transition Report

NASA published an updated version of the “**International Space Station Transition Report**”, which outlines the next-decade ISS’ comprehensive plans and goals. NASA’s objective is to ensure the persistence of human presence in LEO through a smooth transition to commercial space stations after the ISS’ decommissioning planned in 2031. According to the Report, the transition will take place in two phases:

- A first phase, currently underway, in which NASA contracts space companies to “spur the development of commercial LEO destinations (CLD)” through 2025. NASA signed agreements with Blue Origin, Nanoracks, Northrop Grumman, and Axiom for the building of private space stations.
- A second phase in which NASA “intends to certify for the Agency crewmember use CLDs from these and potential other entrants, and ultimately, purchase services from destination providers for crew to use when available”. NASA aims to be one among the CLDs customers.



Credit: NASA

Additionally, the Transition Report states that NASA’s yearly savings when switching from the ISS to commercial outposts is “estimated to be **approx. \$1.3 billion in 2031, ramping up to \$1.8 billion by 2033**”.

On February 23rd, the head of ESA’s Washington office Sylvie Espinasse expressed **concerns regarding the applicability of current models of cooperation** between the ISS partners to future private space stations. Particularly, ESA will not be able to buy commercial services from U.S. providers. Therefore, Espinasse said that while a short-term solution could involve NASA becoming a broker between ESA and U.S. providers, a long-term solution will have to be found. Particularly, Espinasse suggested a “fully European solution for a commercial station or industrial partnerships” that might involve U.S. and European companies to jointly operate a station.

## NASA selects companies to provide spacecraft systems

NASA awarded contracts to Lockheed Martin, QinetiQ Space, and the University of Toronto Institute for Aerospace Studies’ Space Flight Laboratory (SFL) for the provision of small satellites in support of NASA centres and other federal agencies. The three contracts have been awarded under the on-ramp feature of NASA Rapid Spacecraft Acquisition IV contract and have a **total potential maximum value of \$6 billion**. NASA’s objective is to periodically reopen the call and enable other companies to propose spacecraft designs to potentially interested institutions. Delivery orders will be decided by August 2025.

## NASA selects Lockheed Martin for the development of the Mars Ascent Vehicle



Credit: NASA/JPL-Caltech

NASA awarded a six-year contract to Lockheed Martin for the development of the Mars Ascent Vehicle (MAV). The MAV is a small rocket that will be employed in the NASA-ESA Mars Sample Return campaign to transport samples collected by the rover Perseverance into orbit around Mars. Under the contract, which has a **potential value of \$194M**, Lockheed Martin will be responsible for the design, development, testing and evaluation of the MAV, as well as its ground support equipment. NASA and Lockheed Martin did not release further details regarding the design of the MAV. In March 2021, Northrop Grumman won a **\$84.5M contract** from NASA to provide first- and second-stage solid-fuel motors for the MAV.



## India allocates €1.6 billion of the annual budget to the Department of Space

On February 1st, India's Ministry of Finance released the Union budget and allocated approx. **€1.6 billion to the Department of Space**, increasing its budget of 3.5% over 2020, as follows:

- Approx. €81.8M to the new ISRO's commercial arm NewSpace India Limited (NSIL) which aims to increase cooperation between the government and industry.
- Approx. €1.2M to the new Indian National Space Promotion and Authorization Centre (IN-SPACe) which will permit and oversee Non-Government Private Entities' activities, such as satellites and launch vehicles manufacturing, provision of space-based services, and so forth.
- Approx. €32.8M to the Space Science Programmes, including ISRO's missions such as the Sensor Payload Development/Planetary Science Programme, the Indian Lunar Mission (Chandrayaan-III), Space Docking Experiment Mission, and so forth.



*Credit: NSIL*

The rest of the budget, which also represents the main portion, went to Space Technology, and the Indian Institute of Space Science & Technology (IIST) saw a 24% increase in budget over 2020.

## China moves forward in mega-constellation, reusable launchers and deep space exploration

Shanghai local government signed a **strategic cooperation framework agreement** with China Satellite Network Group (SatNet), the state company in charge of China's broadband mega-constellation, but neither disclosed information regarding their cooperation plans. Additionally, Shanghai partnered with several Chinese cities aiming to foster commercial space hubs in numerous fields, including reusable rockets and satellite mass production.

On February 17th, the president of the China Academy of Launch Vehicle Technology (CALT) Wang Xiaojun **presented a new concept of reusable launchers** during its keynote speech at the International Symposium on Outlook and Cooperation on Near-Earth Orbit Human Space Flight. CALT's president said China is researching on a fully reusable and low cost two-stage liquid oxygen-methane propellant manned launch vehicle, which appears to be inspired by SpaceX's Starship system concept. According to Wang Xiaojun, China's goal is to develop a launcher capable of launching around 20 tons to LEO. No information was released regarding the timeline.

On February 26th, the China National Space Administration (CNSA) reported the official inauguration of **China's deep space exploration laboratory**. The new laboratory will be in charge of deep space exploration science and technology research and will promote the transformation of research results. The CNSA, which co-established the laboratory, will support its activities and foster international cooperation.

## Australia's Federal Government boosts spaceports and spaceflights



*Credit: Gilmour Space Technologies*

On February 25th, Australia's Federal Government disclosed information about a **€42.3M investment** in the national space industry through a new Space Infrastructure Fund. Particularly, €20.8M will be used to develop up to three new or existing spaceports. Currently, the orbital launch sites in South Australia at Whaler's Way and at Abbot Point in Queensland have received launch permits. Additionally, €21M will be given to the Australian Space Agency (ASA) for the procurement and provision of spaceflights and services for the Australian space sector, to support the local sector in gaining "flight qualifications", and to fund a national student space challenge.





### In other news

**ESA hosts new international office to coordinate global climate modeling efforts alongside ECSAT:**

The new office will coordinate the Climate Model Intercomparison Project (CMIP) of the World Climate Research program (WCRP), coordinating efforts in global climate modeling for a minimum of five years, and will support the new WCRP strategy. The Netherlands-based firm HE Space Operations, contracted by ESA, appointed Eleanor O'Rourke as the office's incoming director.

**The UK Space Agency will co-host the 4th global Summit for Space Sustainability:**

The Summit will be hosted with the Secure World Foundation in London on June 22nd and 23rd and will address new ways to ensure safety, sustainability, and security of the space environment and of space operations.

**Russia's objections delay first UN meeting addressing norms of responsible behaviors in space:**

The first-ever UN meeting that was scheduled to consider norms for possible limitations on military activities in space was delayed due to Russia's procedural complaints. The UN meeting was originally planned for February 14th.

**The UAE government extends partnership with Yahsat for operations and maintenance services:**

Under the agreement signed between the UAE government and Yahsat, alongside other services, the Abu Dhabi-based company will also provide technology management support for five years. The contract has a value of €220.8M.

**CNES selects Thales Alenia Space to develop a Dual Frequency Multi Constellations SBAS prototype:**

In the framework of a next generation of SBAS, the DFMC SBAS prototype will complement the GPS and the Galileo systems and will benefit from multiple frequencies signals to improve performance for any application requiring highly reliable and accurate positioning information.

**ATLAS becomes the first survey capable of searching the entire dark sky every 24 hours:**

The Asteroid Terrestrial-impact Last Alert System searches the dark sky for potentially Earth-threatening near-Earth objects (NEOs). In February, the South Africa's Higher Education, Science and Innovation Minister Blade Nzimande reported that the new ATLAS' telescope in South Africa had started operations.

**NASA offers up to \$200M to support space technologies through a Tipping Point opportunity:**

NASA's objective is to advance space exploration through public-private technological development. NASA will award the funding to multiple companies using Space Act Agreements, as well as incentives to small businesses enabling smaller companies to contribute to technological development.

**A Democratic-Republican coalition seeks to reform FCC satellite licensing rules:**

the top Democrat and Republican on the House Energy and Commerce Committee discussed a bipartisan draft legislation that aims to upgrade FCC's license process. Additionally, the FCC and the National Telecommunications and Information Administration launched a Spectrum Coordination Initiative to improve coordination of the U.S. government on spectrum management and relate policy issues.

**China declares it is open to establish formal lines of communication with the U.S. on space safety:**

The proposal arrived after the U.S. refuted China's diplomatic allegations regarding a risk of collision between a SpaceX's Starlink satellite and China's crewed space station. The U.S. stated that Beijing did not communicate any collision risk.

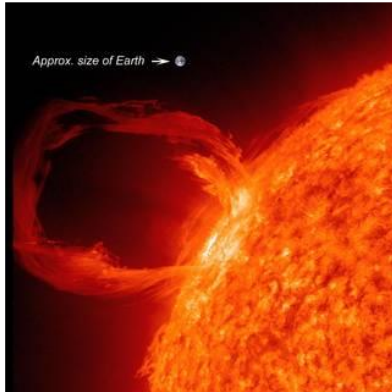
**Singapore Government invests \$150M in R&D of space capabilities for key industrial sectors:**

The Space Technology Development Programme (STDP), which was launched by the Office for Space Technology and Industry (OSTIn) and the National Research Foundation, aims to fund researchers and spur local space innovation in crucial sectors, such as aviation and maritime.



## INDUSTRY & INNOVATION

### 38 Starlink satellites deorbit due to geomagnetic storm



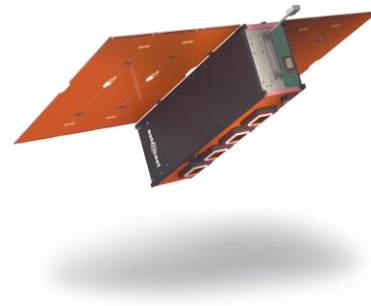
Credit: NASA/SDO

A geomagnetic storm, associated with a coronal mass ejection, led to the de-orbiting of up to 38 out of 49 satellites SpaceX had previously launched. **According to the company**, the resulting increase in the atmospheric density, caused drag to be 50% higher than during any other launch of Starlink satellites. This led the team in charge to give the order to put the satellites in “safe-mode” and minimize drag, however, the “increased drag at low altitudes prevented the satellites from leaving safe-mode to begin orbit raising manoeuvres”. SpaceX further stated that all satellites burn upon re-entry.

The Solar Maximum, which is the regular period of greatest solar activity, is estimated to reach its peak by 2025 and is expected to make geomagnetic storms more powerful and frequent. Starlink’s malfunction **raised the debate** on how satellite operators around the world will adapt their launches and satellites to this upcoming gradual change in the space environment. Indeed, in SpaceX’s subsequent Starlink launch, the satellites were **placed at a higher altitude**, where atmospheric drag was reduced.

### Astrocast makes new satellite IoT service commercially available

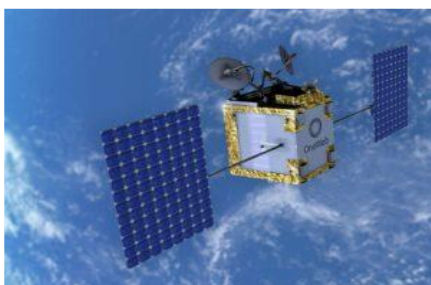
According to Astrocast’s CEO Fabien Jordan, previous IoT services “were too complex, costly, or simply unavailable” due to the difficulty in making them commercially viable on a global scale. The Swiss company stated that their **new satellite IoT service changes this** because it is bidirectional, enabling its users to directly send instructions to satellites, rather than just receive information, therefore allowing new user cases such as remote management of equipment. Furthermore, instead of continuously transmitting data, the devices only do it when other satellites are in range. According to Astrocast, this increases their satellites’ lifecycle and decreases the price of data for end-users.



Credit: Astrocast

### Marlink partners with OneWeb, SES and extends cooperation with Eutelsat

The Norwegian-based company partnered with **OneWeb** to “deploy, test and demonstrate several types of user terminals and LEO connectivity services” across the energy, maritime, enterprise, and humanitarian sectors. The companies will start the project this year focusing on the energy sector, and from January 2023 onwards, they will expand to include other sectors on a global scale. Moreover, **SES and Marlink signed a multi-year and multi-million euro deal** to allow Marlink’s customers access the O3b mPower MEO constellation. Marlink also announced the **extension** of a multi-year contract concerning the Global Maritime Partnership, originally signed in 2019 with Eutelsat. According to Marlink, this agreement will increase its VSAT network coverage.



Credit: Marlink



### Northrop Grumman awarded contract for deep-space tracking

The American company was awarded by the U.S. Space Force a **\$341M contract** to develop and test a radar site for the Deep Space Advanced Radar Capability (DARC) until September 2025. The site, located in the Indo-pacific region, will be one of three dispersed throughout the globe and is designed to provide enhanced space domain awareness for the geostationary orbit. DARC is meant to surpass current ground-based systems by operating during both day and night times and regardless of weather conditions.

### Rocket Lab receives largest spacecraft bus order to date in partnership with MDA

On February 24th, Rocket Lab USA **received an order worth \$143M in a subcontract** with the Canada-based MDA, a provider of technology and services to the space industry, to lead the design and manufacture of 17 spacecraft buses for the commercial satellite IoT provider Globalstar. MDA, the prime contractor, **was awarded a total of \$327M** and will focus on the production of Globalstar's satellites as well as lead the development of the payload. The satellites, expected to launch by the end of 2025, will restock Globalstar's LEO constellation, ensuring the continuity of its operations.

### Elon Musk updates Starship's development status

On the 10th of February, during a long-awaited event about the Starship, **Elon Musk stated** that the rocket would get a new engine called Raptor-2, which will help streamline production and build around one per day. Musk also said the launch capacity for a LEO orbit is around 100 tons, and that he is "highly confident" the launch cost will be less than \$10M. Four days later, the Federal Aviation Administration **announced the delay of its regulatory approval** for Starship to launch from Boca Chica, Texas, from the 28 of February to the 28 of March. During the abovementioned event, Elon Musk stated that in the worst-case scenario, if a full environmental assessment was needed, SpaceX would shift its Starship program to the Kennedy Space Centre.



Credit: SpaceX

### Satellopic establishes partnerships with Palantir, URSA, and Kleos Space

The new **partnership with Palantir** aims to enhance Satellopic's capabilities in AI, data integration, image product delivery, among other uses, by sharing access to their platforms Foundry and Aleph, respectively. Additionally, **Satellopic agreed** to make its images available for purchase on URSA's image service platform. Moreover, the company **will combine its satellite imagery with Kleos' radio frequency** data to enhance space situational awareness.

### Isotropic Systems successfully demonstrates satellite terminal to support U.S. and NATO forces



Credit: Isotropic Systems

Isotropic Systems' terminal established link connections in operational conditions with a SES GEO satellite and an O3b MEO satellite **simultaneously and at full performance**. The UK-based company aims to use a single antenna to enable access to full satellite capacity across military and commercial satellites for U.S. and NATO forces and to improve defence and security capabilities.



### In other news

**ABB is awarded contract worth \$30M:** The Swiss company signed an agreement with the Canada-based EarthDaily Analytics to supply multispectral imaging systems for 10 satellites. The fleet of satellites, equipped with ABB's technology, will then allow the monitoring of Earth's ecosystems, climate change, crops health and forest fires trajectories.

**Orbex applies for a launch licence in Scotland's Space Hub Sutherland:** Having already passed through the pre-application phase, the company has become one of the first to reach this stage of the process for launch authorisation. This is the last step to begin commercial space launches.

**Cobham supplies landing stations to Telesat:** The Danish supplier will produce, integrate and install its landing terminals for Telesat's Lightspeed Low-Earth Orbit network. There will be around 30 of these stations to be set up in Canada, with plans to ramp up the capacity if needed.

**OneWeb adopts LeoLabs Collision Avoidance service:** The companies signed a multi-year agreement to give OneWeb real-time data of satellites and space debris trajectories, enhancing the company's space situational awareness.

**Leaf Space enables communications with 13 new satellites:** The Italian-based company supported five different companies (D-Orbit, Nanoavionics, Kepler Communications, Sen and Fossa Systems) to operationalize their payloads. Leaf Space stated that its clients could communicate with their assets in a matter of hours.

**Five Organisations join DIFI Standards Group:** ViaLite Communications, Swedish Microwave AB, Cobham Satcom, Science Applications International Corporation, and Taiwan's National Space Organisation joined the Digital IF Interoperability Consortium (DIFI). DIFI's objective is to bring companies to produce interoperable satellite and ground system networks.



## ECONOMY & BUSINESS

### Iceye raises €119.7M in Series D round

Iceye, Europe's first space unicorn, raised €119.7M in a Series D round led by Seraphim Space, which included the participation of Tokio Marine Holdings. The Finnish company will use the investment to expand its natural catastrophes monitoring system, its satellite constellation, and further develop its artificial intelligence and machine learning capabilities. Tokio Marine Holdings secured its investment as part of a collaborative partnership, where it will use Iceye's data to develop new insurance products that address the impact of climate change.

# ICEYE

*Credit: Iceye*

### New start-up E-Space raises €45M

E-Space raised €45M in what is to date the largest seed funding round in a space startup. The new company, led by Greg Wyler, founder of OneWeb and O3b Networks, is composed of two independent entities: E-Space SAS, based in France, and E-Space Inc., based in the U.S. E-Space aims to provide communications services while maintaining space sustainability at the centre of its operations. The company filed for a constellation of 300,000 satellites through Rwanda, which will not only provide communication services but are also planned to "capture and deorbit small debris". With the amount raised, the company is funded until "early to mid-next year", however, Wyler also said that he expects there will be another funding round before that. The investment will be directed to the production and launch of the start-up's first two satellites, "Beta 1" in March 2022 and "Beta 2" in an undisclosed date later in 2022.

### Aerospacelab closes €40M Series B

On February 16, the Belgian start-up satellite manufacturer and operator Aerospacelab closed a €40M series B, led by Airbus Ventures and XAnge, bringing the total amount of raised funds to €60M, since it was founded in 2018. After successfully launching its first satellite in 2021, the company aims to use the capital influx to increase satellite production capacity, deploy multiple constellations for Earth observation and implement geospatial data fusion analytics capabilities.

### Lockheed Martin terminates deal to acquire Aerojet Rocketdyne



*Credit: Aerojet Rocketdyne*

Lockheed Martin's termination of the planned \$4.4 billion acquisition of Aerojet Rocketdyne follows the Federal Trade Commission (FTC) decision to sue the company due to concerns surrounding national security. Aerojet is a U.S. supplier of advanced power, propulsion, and armament systems, which are key components for contractors in the defence domain. The FTC argued that with the acquisition, Lockheed Martin would control the supply of key components since Aerojet is the last independent supplier of such systems.

### Descartes Underwriting raises Series B

The insurance technology company raised €107M in its Series B round, led by growth equity firm Highland Europe. The funding will be used to scale up its technology platform, expand its lines of business and target larger deals, to reach the leadership in corporate insurance worldwide.



### Sateliot completes €10M in Series A round

On February 9th, Sateliot, a Spanish satellite operator focusing on IoT connectivity, **closed a Series A funding round of €10M**, which it will invest in the development of technology to merge satellite and mobile networks. The round was led by Indra, a Spanish consulting and technological partner for business operations, acquiring approx. 10.5% of Sateliot, while Cellnex now owns 3.5%. As Sateliot's industrial partner, Indra **will develop a new segment** related to IoT communications in the defence and security market and will integrate Sateliot's capacity in its services. Additionally, Indra secured a mutual exclusivity clause with its new industrial partner for the field of satellite communications in the security market.

### Space Foundation creates Space Commerce Institute

The Space Commerce Institute is a program established by the Center for Innovation and Education, a division of Space Foundation. It aims to help university students, entrepreneurs, businesses and professionals have the tools they need to navigate the expanding space sector market. The program, led by Kelli Kedis Ogborn, Space Foundation's new Vice President of space commerce and entrepreneurship, has four main pillars: Space Foundation University, Professional Development, Consulting Services, and Special Programming.



#### In other news

**iQPS raises \$9.1M in Series B:** After raising \$33.5M in December 2021, the Japanese company announced it received an investment of \$9.1M in the second round of its Series B, closing it with a total of approx. \$42.6M. iQPS stated that it will use this second round to fund the development and operation of satellites for a projected constellation of 36 small SAR satellites.

**Intelsat completes financial restructuring process:** Following the decision by the Bankruptcy Court in December to cut the company's debt by more than half, Intelsat has now stated that it has finalized the financial restructuring process, emerging from it as a private company. Consequently, this has allowed the company to obtain \$6.7 billion in term loans, revolving credit facility, and secured notes.

**Aurora Insight receives investment from Maxar:** Aurora, a provider of radio frequency (RF) data and analytics about wireless connectivity, received an undisclosed amount of capital to enhance its capabilities in the measurement of the global RF environment. Moreover, the companies will combine their RF and geospatial services to develop more accurate geospatial insights.

**Speedcast closes \$350M in debt financing:** The satellite telecommunications service provider, secured of \$300M Term Loan B and a \$50M Priority Revolving Credit Facility. PSP Investments Credit USA led the transaction.

**EMCORE Corporation acquires L3Harris Space and Navigation Business:** The acquisition, settled for approx. \$5M, will strengthen EMCORE's inertial navigation product portfolio, expand the its market reach into launch vehicle and space satellite markets, and make it the preferred supplier to L3Harris divisions for future business opportunities.

**Seraphim Space Investment Trust invested £135M in space-tech companies since Summer:** As a result, its net asset value grew more than 43 per cent, reaching £250.6M, with a portfolio comprising of around 10 industry players such as ICEYE, Astroscale and Spire Global. The CEO, Mark Boggett, expressed confidence in the company's strategy and anticipated "a strong pace of investment throughout 2022".

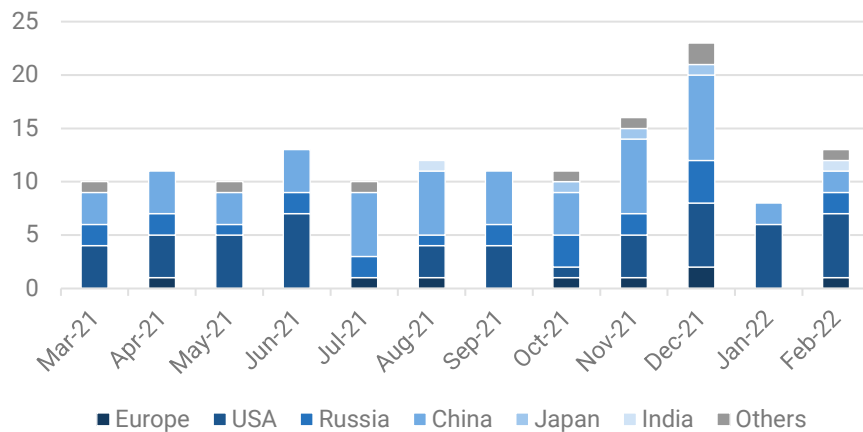


# LAUNCHES & SATELLITES

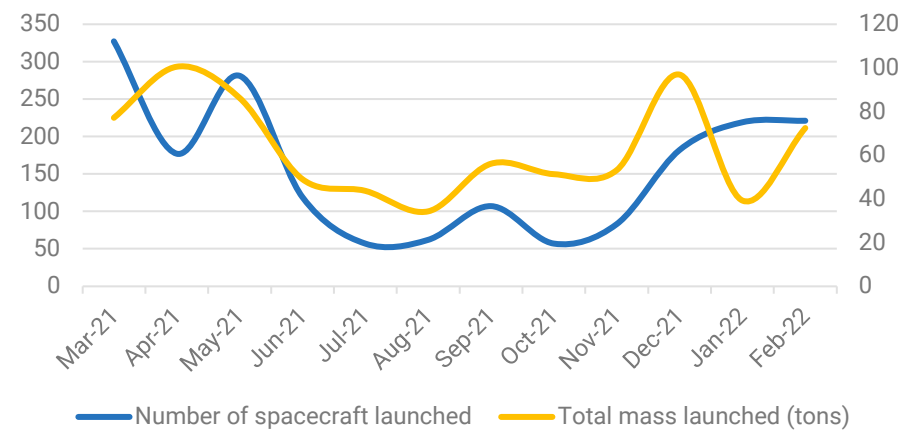
## Global space activity statistics

December 2021-January 2022	Europe	USA	Russia	China	India	Others	Total
Number of launches	1	6	2	2	1	1	13
Number of spacecraft launched	34	153	7	23	3	1	221
Mass launched (in kg)	4998	52 300	8304	4823	1884	150	72 459

## Launch activity over the year



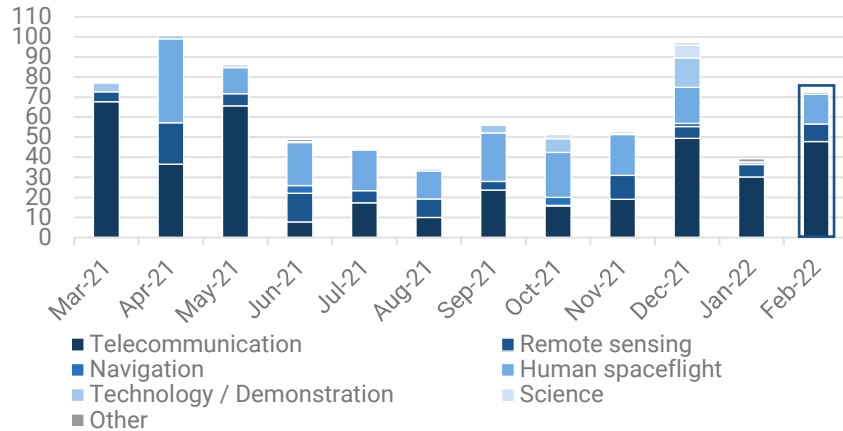
Evolution of the number of launches per launch country



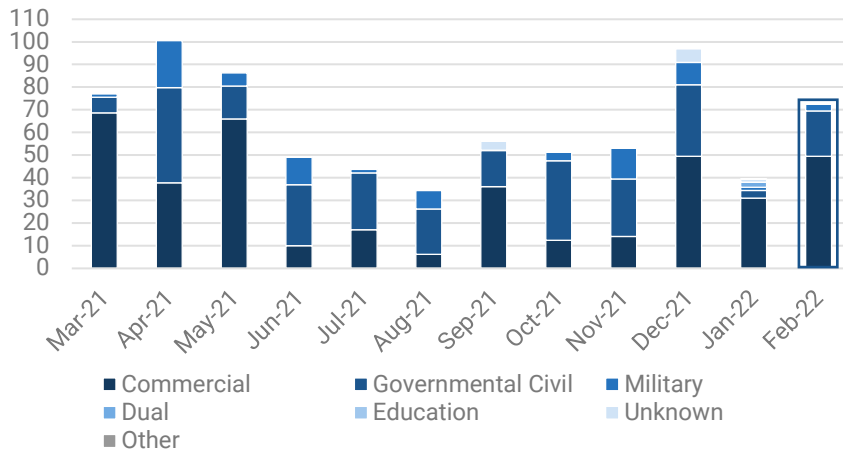
Evolution of launch activity over the year 2021-2022



Satellite missions and markets



Evolution of the total mass launched (tons) per mission (Mar. 2021-Feb. 2022)



Evolution of the total mass launched (tons), per market (Mar. 2021-Feb. 2022)

February 2022	Telecom	Remote sensing	Human Spaceflight	Technology/ Demonstration	Science
Europe	4998				
USA	42 775	2000	7492	15.25	3.8
Russia			7280	1024	
China	50	4709		64	
Japan	14	150			
India		1858		18	8

Total mass (kg) launched by mission and customer country

February 2022	Commercial	Governmental Civil	Military	Education
Europe	4998			
USA	42 775	7501.25	2000	9.8
Russia		7304	1000	
China	1491.5	3312.5		19
Japan	150	14		
India		1884		

Total mass (kg) launched by market and customer country





## Launches & Satellites

### Launch Log

Launch date	Launch country	Launcher	Spacecraft name	Main customer	Customer country	Prime manufacturer	Manufacturer country	Mass (kg)	Mission	Market
02/02/2022	USA	Falcon-9 v1.2 (Block 5)	USA 326	NRO	USA	NRO	USA	2000	Earth Observation	Military
03/02/2022	USA	Falcon-9 v1.2 (Block 5)	Starlink (49 satellites)	SpaceX	USA	SpaceX	USA	295 (each)	Telecommunication	Commercial
05/02/2022	Russia	Soyuz-2-1a Fregat	Kosmos 2553 / Neutron 1	Ministry of Defense	Russia	NPO Mashinostroyeniya	Russia	1000	Technology / Demonstration	Military
10/02/2022	USA	Astra Rocket-3	BAMA 1	University of Alabama in Tuscaloosa	USA	University of Alabama in Tuscaloosa	USA	3	Technology / Demonstration	Education
			INCA	New Mexico State University	USA	New Mexico State University	USA	3,8	Earth Science	Education
			QubeSat	University of California Berkeley	USA	University of California Berkeley	USA	3	Technology / Demonstration	Education
			R5-S1	NASA	USA	NASA	USA	3	Technology / Demonstration	Governmental Civil
10/02/2022	France	Soyuz-ST-B Fregat-M	OneWeb (34 satellites)	OneWeb Ltd.	United Kingdom	OneWeb Satellites (USA)	USA	147 (each)	Telecommunication	Commercial
14/02/2022	India	PSLV-XL	INS 2TD	ISRO	India	ISRO	India	18	Technology / Demonstration	Governmental Civil
			INSPIRESat 1	IIST	India	IIST	India	8	Earth Science	Governmental Civil
			RISAT 1A / EOS 04	ISRO	India	ISRO	India	1858	Earth Observation	Governmental Civil
15/02/2022	Russia	Soyuz-2-1a	Progress-MS 19	Roscosmos	Russia	RKK Energia	Russia	7280	Cargo Transfer	Governmental Civil
15/02/2022	Russia	Soyuz-2-1a	YuZGU-55 (5 satellites)	Southwestern State University	Russia	Southwestern State University	Russia	4,8 (each)	Technology / Demonstration	Governmental Civil
19/02/2022	USA	Antares-230+	Cygnus CRS-17	NASA	USA	Northrop Grumman	USA	7492	Cargo Transfer	Governmental Civil
			KITSUNE	Kyushu Institute of Technology	Japan	Kyushu Institute of Technology	Japan	14	Telecommunication	Governmental Civil
			NACHOS	Los Alamos National Laboratory	USA	Los Alamos National Laboratory	USA	6,25	Technology / Demonstration	Governmental Civil
21/02/2022	USA	Falcon-9 v1.2 (Block 5)	Starlink (46 satellites)	SpaceX	USA	SpaceX	USA	295 (each)	Telecommunication	Commercial
25/02/2022	USA	Falcon-9 v1.2 (Block 5)	Starlink (50 satellites)	SpaceX	USA	SpaceX	USA	295 (each)	Telecommunication	Commercial
26/02/2022	China	CZ-4C	Ludi Tance 1-01B	CNSA	China	CAST	China	3200	Earth Observation	Governmental Civil
27/02/2022	China	CZ-8(2)	Chaohu-1	Spacety Co.	China	Spacety Co.	China	325	Earth Observation	Commercial
			Chuangxing Leishen / Thor Smart Satellite	Spacety Co.	China	Spacety Co.	China	14	Technology / Demonstration	Commercial



## Launches & Satellites

			Hainan-1 (01 & 02)	Hainan Westar Remote Sensing Technology Application Service	China	Shenzhen Aerospace Dongfanghong HIT Satellite Ltd.	China	60 (each)	Earth Observation	Commercial
			Jilin-1 Gaofen-03D (9 satellites)	Chang Guang Satellite Technology	China	Chang Guang Satellite Technology	China	42 (each)	Earth Observation	Commercial
			Jilin-1 Mofang-02A	Chang Guang Satellite Technology	China	Chang Guang Satellite Technology	China	32	Earth Observation	Commercial
			Qimingxing 1 / Phosphorus 1	Wuhan University	China	Wuhan University	China	19	Earth Observation	Education
			Taijing-3 01	MinoSpace Technology	China	MinoSpace Technology	China	240	Earth Observation	Commercial
			Taijing-4 01	MinoSpace Technology	China	MinoSpace Technology	China	250	Earth Observation	Commercial
			Tianqi 19	Guodian Gaoke	China	Shandong Institute of Aerospace Electronics Technology	China	50	Telecommunication	Commercial
			Wenchang-1 01	Sanya Institute of Remote Sensing	China	MinoSpace Technology	China	62,5	Earth Observation	Governmental Civil
			Wenchang-1 02	Hainan Westar Remote Sensing Technology Application Service	China	MinoSpace Technology	China	62,5	Earth Observation	Commercial
			Xidian-1	Shaanxi Silk Road Tiantu Satellite Technology	China	MinoSpace Technology	China	50	Technology / Demonstration	Governmental Civil
			Xingshidai 17 / Star Era 17	ADA Space	China	ADA Space	China	20	Earth Observation	Commercial
28/02/2022	New Zealand	Electron KS	Strix-β	Synspective	Japan	Synspective	Japan	150	Earth Observation	Commercial



## Launch Highlights

### China conducts a major rideshare launch



Credit: Ourspace/CNSA

On February 27<sup>th</sup>, China **launched 22 satellites** from the Wenchang spaceport, on the Hainan Island, with a Long March 8 rocket. This was the second launch of this launcher's family, which is expected to become reusable in the future (although an expendable version was used here). The launch used a different configuration from the first flight's one, this time not using side boosters. The launch, of which most of the payloads were Earth observation satellites sent to SSO, was also the **second commercial rideshare flight** performed by the China Great Wall Industry Corporation, a subsidiary of CASC providing launch services.

### Astra fails its first launch from Cape Canaveral



Credit Astra/John Kraus

On February 10<sup>th</sup>, the launch company Astra attempted its first flight from Cape Canaveral, Florida (the company used to conduct its previous launches from Kodiak, Alaska). The launch occurred with the smallest orbital rocket to do so from the Cape. It was also the first time that Astra was carrying functional satellites (four CubeSats for NASA's ELaNa programme) to orbit, its single successful launch so far having transported a dummy payload for the U.S. Space Force. Unfortunately, an issue occurred during the separation of the first and second stages, **leading to a launch failure** and the loss of all four payloads. This concluded a tough week for the company, as a few law firms announced a day before the launch that **they would conduct class actions** against it, arguing that it had overstated several major elements (size of the addressable market, reliability of its launcher...) when it went public.

### Northrop Grumman will contribute to the ISS reboost

On February 19<sup>th</sup>, Northrop Grumman **delivered** another Cygnus cargo vehicle to the International Space Station, carrying more than 3600 kg of supplies and scientific experiments. This specific Cygnus capsule will also provide the United States with the capability to perform a reboost to change the altitude of the station, while this service has exclusively been into Russia's hands since the retirement of the space shuttle in 2011, through the use of their Progress spacecraft.

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