ESPI
European Space Policy Institute

ESPI Insights

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THIS MONTH IN THE SPACE SECTOR...

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IMPLICATIONS OF THE CZECH PRESIDENCY FOR EU SPACE PROGRAMMES

Dear Friends of ESPI,

On July 1st, the **Czech Republic took over the 6-month rotating Presidency of the Council of the EU** under the motto "Europe as a task: rethink, rebuild, repower", succeeding France who held the Presidency from January until July. During hearings which took place from July 11th until 13th, 12 Czech ministers presented their ministries' priorities for the Czech EU Presidency to the European Parliament. In the light of rising security issues, especially with regards to the ongoing war in Ukraine, as well as in line with European ambitions to foster security and increase Europe's strategic autonomy, the Czech Republic announced its will **to make security a key priority, including Ukraine's post-war recovery and energy security, and cyber resilience**. The Czech Republic underlined that the **EU Space Programme has a key role to realise security ambitions and tackle security challenges** - which is not surprising, as Czech Republic is the host country of the EUSPA. In particular, the Czech EU Presidency will focus on strengthening the EU's defence capabilities and cybersecurity – with capabilities from the EU Space Programme.

One of the major new planned security-related space activities is the **EU Secure Connectivity Initiative**, supposed to run from 2023 until 2027. The €1.6B initiative aims to provide secure communication services to the EU and its Member States and enhanced connectivity solutions to citizens, private companies and governmental authorities. The EU seeks to build a resilient, secure space- and ground-based system which will offer high-speed broadband for Europe and some areas of Africa.

In February, the **Commission released a proposal for a regulation of the Parliament and the Council for the programme**, followed by an **opinion of the Parliament's Committee on Budgets** for the Committee on Industry, Research and Energy published in April. In June, Iceland, Liechtenstein and Norway submitted a **joint EEA EFTA Comment on the Commission proposal**, suggesting to open the programme for participation of EEA EFTA States based on the EEA Agreement and proposing amendments to ensure their participation. Also in June, the Council of the EU adopted a **negotiating mandate,** which paves the way for further negotiation with the Parliament. The **Council text** clarifies that the Commission is the programme's owner and clearly distinguishes between ownership and use - clarifying that the COM will be entitled to use the frequencies, but ownership of these will remain with the Member States. Moreover, the text makes a distinction between "hard gov" (governmental services provided by government infrastructure) and "light gov" (services provided through a commercial infrastructure). The proposed partnership scheme for the implementation of the programme is still subject to discussion and negotiation, mainly because of the funding model and because the programme was not foreseen in the current MFF 2021-2027.

According to the Czech EU Presidency's work programme and statements by the Czech Transport Minister Martin Kupka**, the Czech EU Presidency will focus on negotiations with the European Parliament on the regulation for establishing the EU secure connectivity programme**. The ambitions of the Czech Republic in the domain of security will certainly contribute to drive forward EU plans for the secure connectivity initiative, whose development is highly time-sensitive.

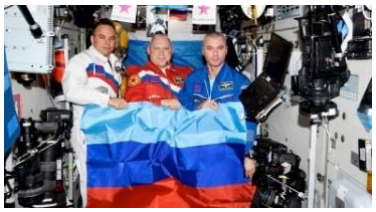
Jean-Jacques Tortora

Director of ESPI

Yours sincerely,

POLICY & PROGRAMMES

War continues to affect space cooperation, Roscosmos changes leadership



Credit: Roscosmos

On July 4th, Russian cosmonauts Sergey Korsakov, Oleg Artemyev and Denis Matveev **displayed a flag of the disputed Luhansk People's Republic,** a region of Ukraine occupied by Russian forces, on the ISS. ESA and **NASA** criticised Russia for using the ISS to promote the war in Ukraine. **ESA DG Josef Aschbacher stated on Twitter**: "It is unacceptable that the ISS becomes a platform to play out the political or humanitarian crises happening on the ground."

On July 12th, ESA DG Josef Aschbacher announced that the **ESA Council formally decided to terminate the cooperation with Russia on the ExoMars mission**, which had been on hold since March in response to Russia's invasion in the Ukraine. ESA is currently looking for alternative partners, such as NASA, to replace Russia in the ExoMars mission.

ESA DG's announcement was followed by a **post from Dmitry Rogozin on Telegram**, stating that Russia would seek the return of the Kazachok platform which was in Europe for launch preparations, and to command Russian Cosmonauts to no longer use the European robotic arm on the ISS. The instrument was prepared for operational use during a **spacewalk performed by ESA astronaut Samantha Cristoforetti with Artemyev on July 21st**, which also included installing platforms and workstation adapter hardware to the Nauka laboratory module.

On July 15th, **Russian President Vladimir Putin dismissed Roscosmos DG Dmitry Rogozin from his duties**. Rogozin's successor will be Yuri Borisov, former Deputy Prime Minister and Deputy Minister of Defense. On the same day, **Roscosmos and NASA finalised and signed a long-anticipated seat barter agreement**. The agreement allows Russian cosmonauts to fly on commercial crew spacecraft and U.S. American astronauts to go on Soyuz spacecraft. This marks a necessary step for **two missions launching in September**: **Roscosmos cosmonaut Anna Kikina will go to the ISS on the Crew-5 Crew Dragon spacecraft** and NASA astronaut Frank Rubio will launch on the Soyuz MS-22 spacecraft. Roscosmos cosmonaut Andrei Fedyaev was assigned to the Crew-6 mission, and NASA astronaut Loral O'Hara will fly on Soyuz MS-23 – both launching in spring 2023.

In the meantime, **ESA is still studying options to ensure a continued supply of upper stage engines for the Vega-C rocket**, affected by the war in Ukraine. Among the options are, if possible, keeping the Ukrainian supplier Yuzmash. But if the company loses the ability to deliver its engines, ESA could accelerate the development of Avio's M10 engine, or procure two other undisclosed engines in the near term in case the supply of Ukrainian engines stops. Nevertheless, ESA assured that in the medium-term there is no risk of launches being paused, as Avio has a stockpile of AVUM engines.

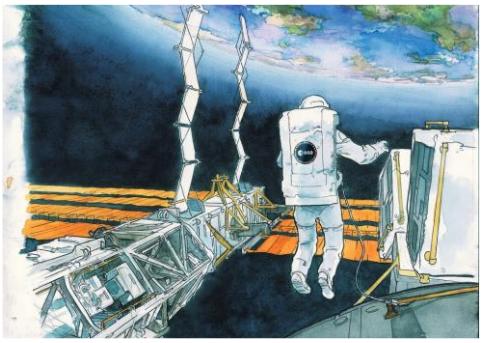
UKspace appoints new President

Dr Alice Bunn, CEO of the Institution of Mechanical Engineers, was named **new President of the trade association of the British space industry**, UKspace. Dr Bunn's mandate will formally start in early September, at the UK's first domestic satellite launch event, at Spaceport Cornwall.

Credit: UKspace

ESA advances its space exploration and human Spaceflight plans

ESA published Space Exploration Roadmap "Terrae Novae 2030+"



Credit: ESA

ESA publicly released its new Space Exploration Strategy Roadmap **"Terrae Novae 2030+"**, following its presentation to the ESA Council. The **roadmap document** lays the groundwork for Europe to maintain and ensure its leading role in space exploration and aims to guide decision-makers making the choices on Europe's future in deep-space exploration. The roadmap is comprised of ESA's vision for space exploration, destination goals and notional strategy roadmap, including LEO/ISS, Moon and Mars, and strategic roles for ESA.

The roadmap's objectives are threefold:

- to create new opportunities in LEO for a sustained European presence after the ISS.
- to enable the first European to explore the Moon's surface by 2030 as a step towards sustainable lunar exploration in this decade.
- to prepare the horizon goal of Europe being part of the first human mission to Mars.

ESA officially launched the High-Level Advisory Group on European human spaceflight

Following the decision of the ESA Council during the space summit in February, the **high-level advisory group comprised of 12 advisors was officially launched** to "provide ESA's decision-makers with an independent and objective assessment regarding the geopolitical, economic and societal relevance of human and robotic space exploration for Europe, and recommended options for a way forward". The group will meet this year in September and November - before the ESA Ministerial Council Meeting – and again in January 2023. The objective of the work is to publish a report in March 2023.

Meanwhile, **ESA astronaut selection proceeds as planned**. Selection Phase 3, which includes psychometric testing, group and individual exercises and tests of over 400 applicants, **ended in June.** In May, the astronaut selection entered Phase 4 of the selection process - which is still ongoing -, where the applicants' physical and mental abilities against international medical standards for spaceflight missions are measured. Further, ESA will issue invitations to the final phases later this summer, which include panel interviews and the final interview with ESA DG Aschbacher.

The United Arab Emirates (UAE) plans radar satellite constellation

On July 17th, the UAE announced that it plans to **develop a radar satellite constellation "Sirb" (Arabic: flock of birds) over the next 6 years, as part of a new $817M National Space Fund**. The first satellite of the constellation is scheduled for launch in three years. The Sirb satellites will be small satellites operating in X-band.

The project will be open to UAE and international companies and the UAE will seek bids for the development of satellite components, operations, launch as well as a commercialisation plan. The envisaged plan would make the UAE the first Arab country to develop a synthetic aperture radar (SAR) satellite constellation.

European Commission selected ArianeGroup to boost development of Europe's reusable launchers

Credit: ArianeGroup

The European Commission selected ArianeGroup to lead the SALTO and ENLIGHTEN projects from the Horizon Europe programme, aiming to accelerate the development of reusable and eco-friendly European launchers and to continue the development of the Themis reusable booster demonstrator and Prometheus reusable rocket engine projects. ArianeGroup will lead two consortia with European partners for the two projects:

- **The 2-year €39M SALTO ("reuSable strAtegic space Launcher Technologies & Operations") project** aims to test the vertical landing of a reusable launcher. The full-scale demonstrator will carry out a number of low-altitude flights from Sweden. The test preparations are made in cooperation with ESA's Themis reusable stage program and the Callisto project of CNES, DLR, and JAXA. The consortium is comprised of 26 partners from 12 countries.
- **The €17.4M ENLIGHTEN ("European iNitiative for Low cost, Innovative & Green High Thrust Engine") project** aims to advance additive manufacturing and AI which are necessary for monitoring and maintaining applications for reusable engines. As part of the project, production and deployment technologies for reusable rocket engines will be developed and tested, and a series of reusable propulsion systems powered with bio-methane or green hydrogen will be created. The consortium comprises 18 partners from 8 countries.

The Canadian Forces will create a Canadian Space Division

The Canadian Forces will create a **new division** to focus on the growing importance of space to military operations for Canada's security, expected to be in place by September. The initial idea has been circulating at the National Defence HQ since 2019. The new space division is supposed to be responsible to the Royal Canadian Air Force (RCAF) commander for space capability generation for missions. The RCAF is in charge of the protection and defence of military space capabilities as well as for the development of space-based capabilities to be provided for the Canadian Forces.

ESA, CNES and MT Aerospace cooperate in Hyguane project to reduce launch ghg emissions

Credit: ESA

ESA, CNES and the subsidiary of OHB SE MT Aerospace leading a Consortium of European industrial and academic partners, **signed a letter of interest** for the project Hyguane (HYdrogène GUyanais A Neutralité Environnementale), aiming to reduce CO_2 emissions of orbital launches, by creating an infrastructure (a pilot plant) for a hydrogen ecosystem supporting Europe's Spaceport in French Guiana.

The pilot plant within the spaceport is planned to be capable to produce 130 tons per year of renewable green hydrogen. The innovative co-financing concept which is envisaged pools funds from ESA, industrial partners and France's national economic stimulus programme.

U.S. Department of Homeland Security publishes new space policy

The U.S. Department of Homeland Security published a new space policy with a focus on cybersecurity and resilience. The policy was developed through an interagency process coordinated by the National Space Council and was signed in April by Secretary of Homeland Security Alejandro Mayorkas. The three-pager policy document identifies three roles for the DHS in space:

Credit: U.S. Department Of Homeland Security

- Protection of commercial and government space-based systems and their supply chains from threats, such as cyberattacks.
- Resilience: Impact-minimization of natural or human-made disruptions on the homeland and to DHS mission execution.
- Creation of contingency plans for operating in a "degraded" space environment and development of plans which include "potential vulnerabilities, likely targets, and mitigation measures that may be unique to adversarial military actions in the space domain".

In addition, the policy suggests other roles for DHS in space, particularly in coordinating impacts of space launches on maritime traffic and security. The policy document does not offer details like timetables or assignments of responsibility on DHS's implementation of the policy.

China selects new space science missions for its New Horizons Programme

Credit: Chinese Academy of Sciences

According to a new paper in the Chinese Journal of Space Science, the **Chinese Academy Sciences (CAS) committee is preparing the selection of 5-7 new space science missions** from 13 proposals for candidate missions to study the Earth, the Sun and solar system and the deeper universe. The missions will be part of CAS's third Strategic Priority Programme project "New Horizons Programme". The mission selection will depend on the available budget, technological readiness and manufacturing schedule, since the missions are planned for launch between 2026-2030. The four areas where the proposals are assigned to are:

- **Space astronomy and astrophysics:** (1) Enhanced X-ray Timing and Polarimetry (eXTP) mission, (2) DArk Matter Particle Explorer-2 (DAMPE-2), (3) Discovering the Sky at the Longest Wavelength (DSL) mission.
- **Exoplanets:** (1) Closeby Habitable Exoplanet Survey (CHES), (2) Earth 2.0 (ET) missions.
- **Heliophysics:** (1) SOlar Ring (SOR), (2) study of poles of the Sun by the Solar Polar-orbit Observatory (SPO), (3) Earth-occulted Solar Eclipse Observatory (ESEO), the Chinese Heliospheric Interstellar Medium Explorer (CHIME) candidate spacecraft.
- **Planetary and Earth science:** (1) E-type Asteroid Sample Return (ASR), (2) Venus Volcano Imaging and Climate Explorer (VOICE), (3) LEO Climate and Atmospheric Components Exploring Satellites (CACES), (4) Ocean Surface Current multiscale Observation Mission (OSCOM).

In addition, China unveiled new details on a **combined near-Earth asteroid defense system demonstration and verification test scheduled to launch in 2026** on a Long March 3B rocket for the deflection of the near-Earth asteroid 2020 PN1. The mission will include a separate impactor which will impact near-Earth object 2020 PN1 and an orbiter spacecraft making observations.

House of Representatives passes defence authorisation bill for 2023

On July 14th, the House of Representatives passed the **National Defense Authorization Act** (NDAA) for the fiscal year 2023. The bill approved by the White House, authorising $839B for military spending which was $37B more than the administration requested, **includes space-related amendments**, adopted on June 23rd by the House Armed Services Committee:

Credit: cspan

- Increasing funding for space launch and requirements for the Pentagon to stand up a tactically responsive space programme focused on rapid launch of small satellites.
- NDAA urging the U.S. DoD to use commercial space services for communications, space domain awareness and space debris removal.
- Establishing a Space National Guard – which is opposed by the Biden administration.

In addition, with regards to responsive space, the U.S. launch and space systems company Rocket Lab USA, Inc (Nasdaq: RKLB) announced in the beginning of July **its upcoming responsive space missions launches of two Electron rockets for the U.S. NRO**, from the its launch complex in New Zealand. The **twin missions** were launched within only 10 days of each other: NROL-162 ("Wise One Looks Ahead") was launched from Rocket Lab Launch Complex 1's Pad A on July 13th and NROL-199 ("Antipodean Adventure") from Pad B on July 22nd.

With the two missions, NRO demonstrated responsive launch under its Rapid Acquisition of a Small Rocket (RASR) contract for launching small satellite through a commercial approach. Both carried national security payloads (satellites), developed and operated by the NRO in partnership with the Australian DoD, which aim to support the NRO in providing critical information to U.S. government agencies and decision makers. The jointly operated NRO spy missions mark a **new level of cooperation between the U.S. and Australia** and are part of a broader effort by the NRO for having a more integrated space architecture to support the surveillance needs of the U.S. and its allies – for instance with the UK.

In May, the NRO announced a similar **partnership with the UK MoD, to launch a joint mission this summer** on Virgin Orbit's LauncherOne rocket from Spaceport Cornwall, which will fly government and commercial payloads, including two UK MOD Prometheus 2 cubesats which is a cooperation between the UK MoD and international partners, such as i.a. the NRO. Currently, U.S. and U.K. space officials are discussing the next steps to **further strengthen their partnership**.

Furthermore, **The U.S. Space Force is considering a strategy for procuring national security launch services.** Later this year, the Space Force launch procurement command will send a strategy proposal to the Pentagon for selecting national security launch services providers for the next round of contracts to be awarded in 2024.

The launch office at the Space Systems Command will draft a proposed Phase 3 strategy in the upcoming month which will then go through the approval cycle. Alternative options to the current two-vendor approach are welcome – one possible option is the selection of multiple vendors to compete for task orders –a method used by the Space Force to buy smallsat launch services under the Rocket Systems Launch Program (RSLP).

U.S. Office of Space Commerce will start developing STM architecture

Credit: U.S. Office of Space Commerce

The **U.S. Office of Space Commerce will start to develop an architecture for STM,** according to Chirag Parikh, executive secretary of the National Space Council. The STM initiative was thwarted due to funding lack - but the budget increase for 2023 (the Biden administration requested $87.8M for the Office of Space Commerce for 2023) provides the office with an 800% increase over the previous budget. In February, the Commerce Department **unveiled a first space catalog and traffic software platform prototype** providing basic SSA and STM services. According to Parik, the architectural reviews will be conducted and abilities to build out a prototyping capability explored.

Australia selects Airbus as partner for Resilient Multi-mission Space STaR Shot programme

Australia Defence signed $40M deal with Airbus Defence and Space for the the Australian Defence Force (ADF)'s research programme Resilient Multi-mission Space (RMS) STaR Shot, which aims to develop future space capabilities for the ADF. Selected by a panel of experts from Australian Defence and the Australian Space Agency as strategic partner, Airbus will team-up with Austrialia Defence and with the three Australian industry companies Inovor Technologies, Shoal Group and Deloitte, to ensure the resilient and assured access of the Australian war to satellite services. Australian Defence has already purchased two Airbus Arrow 150 satellite buses and two experimental satellite missions are in the planning phase.

CNES selected Isar Aerospace to operate from Guiana Space Centre

CNES selected Isar Aerospace to launch conducting commercial and institutional launch operations from Guiana Space Centre in Kourou. First launches will be conducted from 2024. Isar Aerospace plans to build facilities in support of its launch operations at Guiana Space Centre.

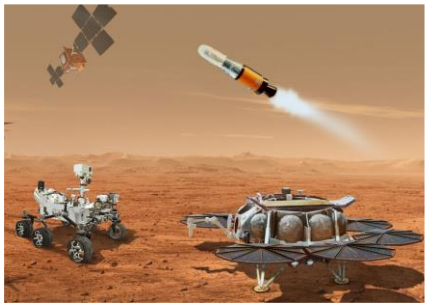
Avio receives €340M to develop green liquid propulsion launchers

Credit: Avio

Avio **signed two contracts totaling €340M** with ESA as the "Contracting Authority", while the capital comes from the Italian Government's NextGenerationEU funds. As per the first contract, amounting to €217,5M, the company will develop an in-flight demonstrator of a two-stage-to-orbit liquid propulsion small launcher with green LOX (Liquid Oxygen)-methane engines until 2026.

Regarding the second contract, valued at €120M, Avio commits to develop a new LOX-methane green engine with high thrust, to be tested on the ground by 2026. To achieve these targets, the company plans to leverage its ongoing research on LOX-methane propulsion, namely its M10 engine prototype under testing for the upper stage of the rocket Vega E.

ESA and NASA revise Mars Sample Return mission



Credit: NASA

On July 27th, **ESA and NASA revised the Mars Sample Return mission** concept by replacing one of the two planned rovers and its lander with two helicopters similar to Ingenuity. The new architecture builds on the possibility to use the rover Perseverance to bring the samples of Mars soil to the Mars Ascent Vehicle, capable of bringing them back to Earth. The two helicopters would constitute a backup solution to grab sample tubes.

On its end, ESA is progressing in the development of the mission, recently **awarding a contract** for the design, manufacturing, integration and testing of the Sample Transfer Arm to a consortium led by Leonardo. The 2.5-metre-long robotic arm will identify the tubes and insert them into the final container before lift-off.

European Defence Fund selects space-related projects

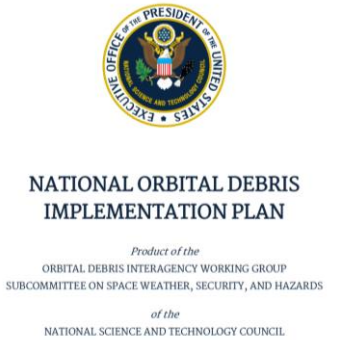
The European Commission has **selected several projects** that use space technologies in the framework of the € 1.2B call for proposals under the European Defence Fund. The initiative "is today delivering concrete results towards a more integrated European defence industry", as stated by Commissioner T. Breton. Among the list of 61 funded projects, the selected space-based initiatives aim at strengthening the Galileo PRS resilience (**Navguard**), starting the development of a secure waveform for future satellite communications (EPW), developing an integrated solution for automated response to threats to military space systems (**SPRING**), GEO orbit surveillance (NAUCRATES), protecting SatCom services (**RFSHIELD**).

UK Space Agency releases its Corporate Plan for 2022-2025

The Corporate Plan, published on July 18th, sets out the main priorities for the work of the UK Space Agency (UKSA) for the next three years, giving an overview of the agency's strategy and role, as well as a list of key targets and milestones. In particular, UKSA aims at delivering the first small satellite launch from the UK in 2022, as the first step of a sustainable commercial UK launch market, to be established by 2030. Some of the priorities in the Plan are space sustainability, the development of LEO capabilities across all space applications, and ensuring long-term value for money access to EO data constitutes a key objective.

U.S. releases the National Orbital Debris Implementation Plan

The document, released by the National Science and Technology Council as a product of the Orbital Debris Interagency Working Group, aims at **guiding the U.S. Government in addressing the orbital debris issue**. Building on the 2021 National Orbital Debris Research and Development Plan, the document of 2022 identifies 44 tangible actions for agencies, distributed across three main pillars: debris mitigation, tracking and characterization of the debris population, and active remediation. The Plan is consistent with the interagency work on implementing the Space Policy Directive-3, the U.S. National Space Traffic Management Policy.



Credit: United States Government

In other news

New Zealand formally joins US-led ASAT testing ban commitment: On July 1st, Foreign Minister Nanaia Mahuta announced in a **speech** at University of Otago the plan to join the US' declaration from April. Succeeding Canada, New Zealand is the second country to formally join the initiative.

U.S. President Biden selects Saltzman to succeed Raymond in leading the Space Force: The White House submitted Saltzman's nomination to the Senate for its final confirmation as chief of space operations.

Saudi Arabia signs the Artemis Accords: The signing took place in a virtual ceremony on July 14th. Saudi Arabia is the 21st country to join the Accords.

U.S. DIU awards contracts to Anduril, Aalyria Technologies, Atlas Space Operations and Enveil to build to hybrid space network: the project has 4 areas: (1) secure software defined network to integrate telecom systems across LEO, MEO, GEO and cislunar space; (2) common data standards and interfaces for combining data from multiple sources, and common command and control interfaces to manage data collection; (3) cloud-based analytics using AI and ML; and (4) a variable trust protocol to protect information.

Indian Space Research Organisation (ISRO) postpones Gaganyaan mission until at least 2024: According to a statement of the ISRO, the reason for the delay is that ISRO needs to ensure that all safety systems are in place.

NASA delays the launch of its ice-prospecting lunar Volatiles Investigating Polar Exploration Rover (VIPER) by one year: the mission scheduled to launch from November 2023 was postponed to November 2024. The reason for the delay is that more testing will be performed.

The Turkish Space Agency, Sierra Space and the ESEN sign 5-year MoU: as part of the MoU the parties will team-up on Sierra Space's LEO, lunar and astronaut/human spaceflight programmes. The cooperation includes the Dream Chaser spaceplane and the LIFE (Large Integrated Flexible Environment) inflatable module

ISPL and ESPI sign MoU on strategic collaboration: the collaboration comprises joint research and publications, events and other activities, research visits, as well as knowledge exchange, establishing a broad research network and engagement.

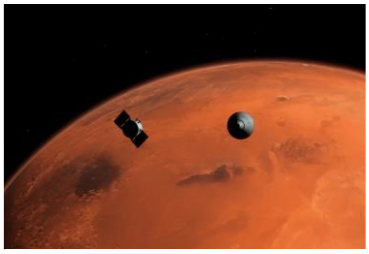
The German Space Agency at DLR announced and awarded the winners of the 2022 INNOspace Masters competition: The overall winning project was "AeroMulE" of the Institute for Aerospace Technology at the TU Dresden and the Christian-Albrecht University in Kiel – selected out of 337 participating organisations from 28 countries that took part in the competition. The next round of the competition will start in 2023.

NASA biological and physical science division seeks funding starting in 2023 for programme to fly scientists to the ISS and future commercial space stations: The vision is that scientists should be able to fly to the ISS and future commercial space stations on private missions to conduct research independently from NASA astronauts.

NASA awards launch contract for Nancy Grace Roman Space Telescope to SpaceX: NASA awarded a $255M launch contract for SpaceX to launch the Nancy Grace telescope aboard a Falcon Heavy rocket in 2026. The telescope will focus on the exploration of exoplanets and will target relevant questions in cosmology.

INDUSTRY & INNOVATION

Relativity Space reveals Mars mission and signs launch agreement



Credit: Relativity Space

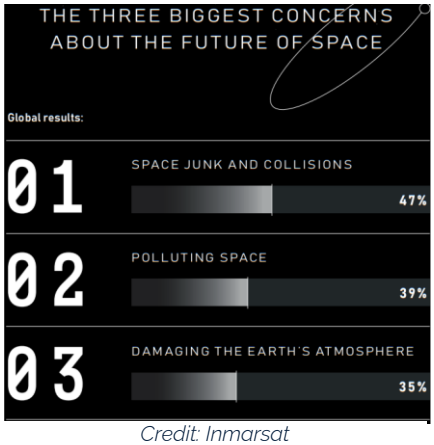
Relativity and Impulse Space, an in-space transportation company, agreed to collaborate on a Mars lander mission to **deliver the first commercial payload to Mars**. Under the partnership, Relativity will launch Impulse's Mars Cruise Vehicle and Mars Lander with Terran R in 2024, to deliver them to a trans-Mars injection orbit. From there, Impulse Space's Mars Lander will land on the red planet with its payload to support the research and development needed to establish a future industrial base on the planet. Beyond this first mission, the partnership between these companies is set as an "exclusive arrangement until 2029".

Additionally, Relativity Space reached **a multi-year and multi-launch services agreement** with OneWeb. Accordingly, the U.S.-based company will use its Terran R reusable 3D printed rocket to place OneWeb's Gen 2 satellites in LEO. With the latest deal, Relativity reached a total of five clients, with a backlog of more than 20 launches, representing over $1.2B in launch agreements.

Inmarsat releases report on public perception of space industry

Inmarsat released the **report "What on Earth is the Value of Space?"**, consisting of a survey of 20.000 people across 11 countries, which inquired about their opinions and perceptions on various space-related matters. Some of the key insights:

- 46% of the surveyed associate space with satellites and 37% with going to the Moon and Mars. An interesting outlier regards tourism, which was associated with space by 60% of the polled Chinese in comparison with a 20% global average.
- In general, the survey reports, older generations are more likely to associate space with research, exploration, rockets and satellites, while younger generations associate it more with aliens and Star Wars. Older generations remember the great achievements of the XX century, while for new generations space innovation became more ubiquitous and ordinary.



Credit: Inmarsat

- In general, people's knowledge of space is mostly based on popular culture and there is a lack of understanding of the space sector's role in everyday lives.
- Some sectors consider space to be essential to their functioning, including aviation (38%), TV, broadcasting and IT (34%) and defence (32%). On the other hand, sectors considering they could largely function without space are retail (66%), supply chain and logistics (48%) and shipping (47%).
- 38% of the poll wish they knew more about space and 35% are hopeful about the possibilities it may bring.

Skyrora opens new factory in Scotland

Credit: Skyrora

On July 14th, the UK-based launch startup Skyrora **opened a new production facility in Cumbernauld, Scotland**. The facilities will allow the company to conduct a wide range of tests in-house, namely full-stage structural and pressure testing and full-stage functional and cold flow testing. Skyrora stated that this will lead to savings in time and costs and that the rocket Skyrora XL will be tested using Skyrora's new facilities. Moreover, the production facilities can assemble, integrate and launch up to 16 Skyrora XL vehicles per year. Accordingly, the company already started the production of two vehicles at the new facilities.

Chinese companies develop capabilities to launch liquid propellant rockets from the sea

Reportedly, Chinese state-owned as well as commercial companies, including Orienspace and the state-owned China Academy of Launch Vehicle Technology (CALT), are **developing capabilities for the launch of liquid propellant rockets from sea platforms** – an ability that China has already demonstrated with the launch of the Long March 11 solid rocket from sea platforms facilitated by a new spaceport near Haiyang. The project received backing from the city and province. A "New-type rocket launching vessel" is under construction and expected to facilitate its first launch in 2022.

Virgin Galactic builds new factory in Arizona and contracts two additional motherships

On July 14th, Virgin Galactic announced it will **build a new line of Delta-class suborbital spaceplanes at a new spaceplane factory** in Mesa, Arizona, which is scheduled to be operational by late 2023. The spaceplanes are planned to fly private astronauts in 2026. According to the company, the new factory is supposed to produce up to six spaceplanes per year. Virgin Galactic further stated it will contract with suppliers to produce Delta-class vehicles' main components, which will be assembled in the new factory.

Moreover, Virgin Galactic contracted Aurora Flight Sciences, a subsidiary of Boeing, to build **two additional "mothership" carrier aircrafts**. The motherships are used as part of the launch procedure of its spacecrafts, carrying them up to approx. 15.240 metres. The new motherships will be able to support 200 launches a year each and are planned to enter service in 2025. Currently, Virgin Galactic only has one mothership called "VMS Eve", which is under refurbishment. Virgin's CEO stated that the next generation of motherships are integral to scale the company's operations.

Airbus Defence and Space contracts Anywaves to equip its satellite platforms


Credit: Anywaves

Airbus selected Anywaves, a French-based manufacturer of space applications and satellite constellations equipment, to **supply more than 70 products to equip over 15 satellite platforms**. Airbus will deliver the platforms to Loft Orbital, under a contract signed in January with the company.

ISS successfully disposes of waste with new technology by Nanoracks

Credit: Nanoracks

Nanoracks, a U.S.-based company, successfully cycled the Bishop Airlock aboard the ISS, disposing of approx. 78kg of waste. Currently, the waste disposal method aboard the ISS starts by storing it in the station for months and then loading it into the Cygnus cargo vehicle, which then leaves the station to burn in its entirety upon re-entry into Earth's atmosphere. In contrast, Nanoracks's Bishop Airlock has a waste container mounted on it with a capacity of approx. 272kg. The container can be continuously loaded until the waste bag is released and the Bishop Airlock is then remounted empty. The bag burns up on re-entry like the Cygnus spacecraft.

The company states that the new mechanism, developed in collaboration with NASA, is a more efficient and sustainable way of dealing with waste from a space station and can be applicable to other future stations, including Nanoracks' Starlab. Accordingly, the company later stated that it reached an **agreement with Gitai**, a Japanese space robotics start-up company, to perform a second Bishop Airlock mission, key in delineating how commercial activities could be conducted on Starlab.

Northrop Grumman receives $22M Space Force contract to build small-satellite carrier bus

Northrop Grumman received a $22M Space Force contract to build a small-satellite carrier bus. The bus will be able to carry many small payloads used for the demonstration of on-orbit refueling in GEO. The contract sets the delivery date of the rideshare satellite ROOSTER "Rapid On-orbit Space Technology Evaluation Ring" (previously named "Long Duration Propulsive ESPA" (LDPE)) to 2026. The ROOSTER will be based on the Northrop Grumman ESPAStar payload adapter, a ring-shaped bus designed to ride as a secondary payload on national security space missions launched by United Launch Alliance and SpaceX.

In addition, **Northrop Grumman selected Airbus U.S. Space and Defense** to be its satellite bus supplier for the U.S. Space Development Agency's LEO constellation, planned to launch in late 2024. Accordingly, Airbus will build satellite buses for the small satellite network Transport Layer Tranche 1, dedicated to support military communications, surveillance and tracking.

SpaceX announces Starlink Maritime and receives regulatory approvals

Credit: SpaceX

Starlink's new service to the maritime market focuses on merchant vessels, oil rigs and yachts. Starlink Maritime has a $5.000 a month subscription, while the kit itself costs an extra $10.000. SpaceX argues that these prices, while "premium", are still below the market. This announcement came days after the **U.S. Federal Communications Commission's authorisation** to SpaceX to offer its Starlink internet services on moving vehicles such as boats, planes and trucks. Moreover, the U.S.-based company also received **approval from Georgia's National Communications Commission** to provide its services in the country.

Astraius contracts suppliers for its launch vehicle

Astraius, a UK-based horizontal launch company for small satellites, stated it **contracted two suppliers for its launch vehicle**. Northrop Grumman will provide its Orion rocket motors to the first and second stage, while Exquadrum was contracted to supply the upper-stage motor. The company is scheduled to conduct the first launch in Spring 2024 from Prestwick Spaceport in the UK.

Credit: Northrop Grumman

In other news

RocketLab provides solar power units to U.S. Space Force: The U.S.-based launch provider will provide solar cells and radiation-hardened assemblies for three GEO Next-Generation Overhead Persistent Infrared satellites, which Lockheed Martin is building for the U.S. Space Force.

ICEYE opens new line of business aiming to deliver full satellite missions: The Finnish EO company unveiled a new service where it provides a fully operational satellite mission to customers, meaning that clients would purchase the satellites and not just the imagery. The satellites can then be used independently from ICEYE or with the company's exclusive management on their behalf.

GomSpace receives contract from DLR: The Danish-based manufacturer and supplier of CubeSats and small satellite solutions was awarded a contract worth approx. €1.2M to deliver 12U CubeSats to DLR in January 2023.

D-Orbit provides last-mile services to Kepler Communications: The Italian company's ION orbital transfer vehicle will provide in-orbit transportation services to place the satellites Kepler-20 and Kepler-21 in a sun-synchronous orbit.

ThrustMe grows production capacity: The French-based start-up dedicated to in-space propulsion and satellite orbital manoeuvring strategies is renovating a 900-square metre building to accommodate a new production line for its propulsion systems and an increase in employees.

Ericsson, Qualcomm and Thales test 5G for space: The three telecom companies formed a consortium to develop a satellite network for smartphone users to connect to 5G from space. The consortium is now testing the 5G network at a Thales site, emulating the space environment, and the companies plan to launch their first LEO satellites in the "next few years".

Neuraspace releases space debris and satellite collision avoidance system: The Portuguese software as a service startup announced the release of its automated system, which enables greater accuracy in the detection of high-risk collisions while reducing human intervention by 75%.

ECONOMY & BUSINESS

Eutelsat Communications in discussions for merger with OneWeb

Credit: Eutelsat

On July 25th, French satellite operator Eutelsat revealed that it was in **negotiations to merge** with broadband satellite communications OneWeb. In 2021, Eutelsat had already acquired 21% of the British company.

The UK and French governments would have 11% and 10% the shares, respectively, and a seat on the board, while the **UK would also maintain its golden share in OneWeb**, giving it veto power on questions related to sales and national security, technology transfer and the location of the headquarters. Additionally, Barthi Global, OneWeb's largest shareholder with 30% of the shares, will keep a 23% stake in the new company.

The deal is part of Eutelsat's growth strategy to offset the declining demand for its video business and target new demand for broadband solutions. It also serves OneWeb's need for capital to complete and update its constellation (so far it launched 66% of the planned network) with a €2.9B injection.

Eutelsat Chief Executive Eva Berneke confirmed that the merger also has the objective of addressing the EU Commission's Secure Connectivity Initiative. Nevertheless, Christophe Grudler, member of the European Parliament and rapporteur for the Commission's constellation on the Parliament's Industry, Research and Energy Committee (ITRE) **already voiced his opposition to this idea**. The main concern revolved around the ownership and sovereignty of the proposed constellation, which would be eroded by the UK government's golden share rule.

The news sent Eutelsat shares down by nearly 20%. According to analysts, **this drop is not necessarily related to a negative opinion of shareholders** on the business relevance of the merger but rather to a change in the investment case of Eutelsat. Although Eutelsat's video business has been waning, the company still generates considerable profits and generous dividends. The perspective of **the merger would reportedly affect dividend pay-outs** in the short to medium term.

Italy's new investment fund to reach €250M

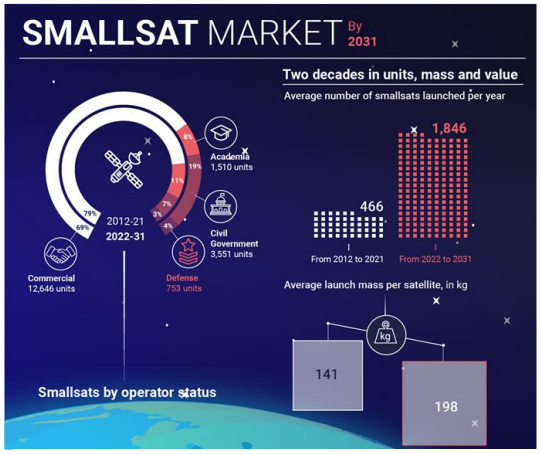
On July 26th, the General Manager of CDP Venture Capital, the Italian Minister for Technological Innovation and Digital Transition and the Head of the Digital Transformation Department signed an agreement **establishing the "Italia Space Venture" Fund**.

Credit: MITD

So far, the fund raised €90M from CDP Venture Capital and €90M from the Italian government's Recovery and Resilience Plan, which aims to help the economy mitigate the effects of the COVID-19 pandemic. The Italian government expects that other private co-investments will invest alongside the Fund, to bring its total investment capacity to €250M.

The Fund will support companies, especially start-ups and those in a growth phase, and private venture capital funds committed to space. To that end, the Fund will count on the input from specialists at ASI, ESA and the support of CDP Venture Capital.

Euroconsult releases 8th edition of the "Prospects for the Small Satellite Market" report



Credit: Euroconsult

The **Euroconsult's market intelligence report** delves into the global supply and demand satellites weighing up to 500kg. Overall, the consulting firm projects that the smallsat manufacturing and launch markets are set to increase between 2022 and 2031. from $16B to $56B and $8B to $28B, respectively. It is also estimated that approx. 18.500 smallsats will be launched between 2022 and 2031, representing 365 tons per year, or 1 ton per day.

Putting in perspective, the yearly average number of launches between 2012-2021 was of 466 smallsats, and according to these projections, the number would rise to 1,846 yearly. The projected growth is mainly driven by LEO broadband and EO constellations (forecasted to represent 81% of the smallsat demand) and the necessity for replenishment launches. Moreover, the LEO constellations from U.S.-based Starlink and China-based GuoWang are set to represent more than half of the demand (53%), nevertheless, 73% of the tonnage will be of North American origin, followed by Asia with 18% and Europe with 8%. 69% of the smallsats will be owned and operated by the commercial sector, 19% by civil governmental programmes, 8% by the academia and 4% by the military.

Despite the predicted growth, Euroconsult also notes that the sector faces several challenges such as high inflation, disrupted supply chains, the risk of the concentration of the market, difficult profitability, and market addressability. Therefore, depending on the runway of the stakeholders, there will probably be scope reductions, such as cancelled projects and smaller constellations, and consolidation of the market.

OECD publishes second edition of the Handbook on Measuring Space Economy

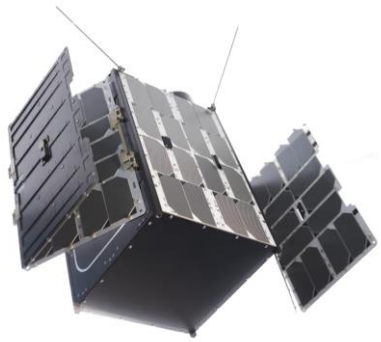
The **new edition of the OECD Handbook on Measure Space Economy** aims to reflect the changes in the space environment, noting the increasing diversity of actors and the difficulties measuring the space economy derived from the increasingly complex task of deciding its perimeter. Therefore, the report revises definitions, and principles for space economy surveys, and summarises existing studies on the impacts of the space economy. Additionally, it also provides recommendations on improving assessments of the space economy.

Safran Electronics & Defence acquires Orolia

With the agreement, the French company Orolia, dedicated to positioning, navigation and timing (PNT) solutions, **was acquired by the France-based Safran Electronics & Defence**, which focuses on inertial navigation systems, from the global investment company Eurazeo. The transaction **generated €189M in proceeds** for the latter. Safran plans to augment the PNT capabilities with its accurate time or inertial references, thus improving reliability, performance and safety operations in various markets, including space.

Credit: Safran

Kongsberg Defence & Aerospace enters acquisition agreement with NanoAvionics



Credit: NanoAvionics

Kongsberg Defence & Aerospace, a Norwegian supplier of defence and aerospace-related solutions, **agreed to acquire** 77% of the Lithuanian smallsat bus manufacturer and mission integrator NanoAvionics. The deal values NanoAvionics at €65M. AST SpaceMobile, which bought 51% of NanoAvionics' shares in 2018, will divest all its shares, while NanoAvionics will retain a 23% stake.

The companies will leverage their complementary solutions, namely Kongsberg's spacecraft subsystems and Kongsberg Satellite Services (KSAT) network of ground stations with NanoAvionics smallsat manufacturing expertise, international footprint and client base. Therefore, with the acquisition, Kongsberg establishes itself across the entirety of the value chain. Moreover, the company opened on the same day new 6.000 square meter specialised facilities for the development and production of products to be launched into space.

Federal Trade Commission reviews Northrop Grumman merger with Orbital ATK

On July 22nd, the U.S. Federal Trade Commission (FTC) revealed that it was **reviewing Northrop Grumman's merger with Orbital ATK in 2018**, for alleged violations of the merger agreement. Before being acquired by Northrop Grumman, Orbital ATK was one of only two suppliers of solid rocket motors in the U.S, and at the time other aerospace companies objected to the merger, including Boeing.

The FTC suspects that although Northrop Grumman promised fair treatment for all contractors of Orbital ATK rockets, it is deliberately slowing down negotiations to supply Boeing. Since President Joe Biden took office, the FTC has been more pressing into antitrust issues. As an example, in February it stopped a defence merger between Lockheed Martin and Rocketdyne.

Providence Equity Partners completes acquisition of Marlink

On July 1st, Marlink, a Norwegian-based company, disclosed that Providence Equity Partners, a U.S.-based private equity firm closed the **acquisition of a majority stake** in the company. The transaction was **first announced in September 2021** with a value of $1.4B, but the value of the final agreement was not disclosed. With the investment, Providence aims to accelerate Marlink's growth strategy.

Credit: Marlink

The acquisition took place between Providence and Apax Partners, a French private equity firm and former majority stakeholder, which will still keep a "significant minority shareholding in Marlink and the current management team".

Mynaric post-IPO equity agreement with L3Harris

Credit: Mynaric

On July 5th, **Mynaric agreed to sell €11.2M in shares**, placing their value at 27.37 per share, to the U.S.-based L3Harris Technologies, bringing its stake to 7.2% of Mynaric. Moreover, the German and American companies decided to further their cooperation in laser communication products, which was already taking place for the past two years.

Accordingly, Mynaric will become the favoured provider of laser communications solutions to L3Harris, while the latter will be granted certain collaboration privileges such as the future laser communications assets to be deployed by Mynaric on the ISS.

Stellar Ventures establishes new €22.5M investment fund

On July 7th, the U.S.-based venture capital firm Stellar Ventures **established a new €22.5M investment fund**. The investment vehicle, called SV Andromeda Fund LP, will focus on early-stage space-related start-ups, namely constellations, space communications products, positioning, navigation and timing services, among other segments of the space market. To that end, Stellar Ventures will collaborate with Stellar Solutions, an engineering company also based in the U.S, for due diligence opportunities, deal flow and facilitating introductions with the government.

Helios raises €5.9M seed round

On July 13th, the Israelite start-up dedicated to extra-terrestrial in-situ resource exploitation **secured €5.9M in a seed round**, led by At One Ventures and Doral Energy-Tech Ventures. Helios revealed that during the research process to develop a way to extract oxygen from lunar regolith, it discovered a new chemical process to extract 99% pure iron ore from iron ore, in a method which the company claims require half the energy that is currently used in the industry. Accordingly, with the investment, the company is now designing a module that can be integrated into Direct Reduction of Iron (DRI) furnaces and demonstrate the technology on a larger scale.

Boeing and AE Industrial Partners partner in investment fund

Boeing and the investment fund AE Industrial Partners are partnering for the second time to invest in the aerospace sector through the AEI HorizonX Fund, which mainly focuses on early-stage companies. The Fund was created as Boeing's venture capital arms in 2017 and is managed by AE Industrial Partners.

Credit: AE Industrial Partners

The new fund, **AEI HorizonX Fund II**, will expand its investments into future mobility, sustainability, digital enterprise applications and networks and security. To that end, the fund plans to raise $250M, with $50M already committed by Boeing.

Masten Space Systems files for bankruptcy

On July 28th, the U.S.-based space company focused on end-to-end mission solutions to the Moon, **filed for Chapter 11 bankruptcy protection**. Masten stated that a $75M NASA contract signed in 2020 to deliver 8 scientific payloads to the Lunar South Pole swelled its costs. In particular, the pandemic made it difficult to have commitments from suppliers on certain technologies necessary to advance the project. Consequently, the company tried to raise $60M in additional funds but was unable to do so, forcing it to file for bankruptcy.

In other news

EU Commission assesses the Viasat acquisition of Inmarsat: The EU Commission stated that the proposed acquisition of UK-based Inmarsat by U.S.-based Viasat needs its approval to be completed. The Commission decided to examine the case after Spain and several other EU member states requested for the institution to do so.

Raytheon Intelligence & Space reveals intention to acquire Northern Space and Security (NORSS): The U.S.-based Raytheon is planning to acquire the UK-based startup NORSS. NORSS is a company dedicated to space domain awareness, the main reason for Raytheon's interest in the deal. On the other hand, for NORSS it can represent an opportunity to enter the U.S. market.

Dawn Aerospace receives €1.4M through the European Innovation Council (EIC): The New Zealand-based manufacturer of reusable launch vehicles and propulsion systems received a €1.4M grant from the EIC Accelerator. The funds come after Dawn Aerospace was first selected in December 2021. The company will use the investment to continue developing its hydrazine-replacement propulsion technology.

Thales Group reaches acquisition agreement with OneWelcome: Thales Group entered an agreement to acquire OneWelcome, a Netherlands-based cloud identity and access management company for €100M. With the acquisition, Thales intends to leverage OneWelcome's expertise to strengthen Thales' position in the cybersecurity market.

Yuri secures additional €2.2M in seed funding: The German start-up, which offers microgravity experiments in the ISS, raised an additional €2.2M seed round, making the total seed funding €4.3M. With the funds, Yuri aims to develop its products in a microgravity environment. The investment round had the participation of Fifty Years and APEX Ventures.

Dark receives €1.9M in seed funding: The French start-up launch company raised an additional €1.9M from BpiFrance, which it will use to further develop its active debris removal technology. Since its inception in July 2021, the company has raised approx. €6.3M in seed funding.

Spotlite closes €1.5M seed round: The Portuguese start-up, which provides a software-as-a-service platform for risk analytics and recommendations to infrastructure based on satellite imagery, received a seed investment of €1.5M, led by Indico Capital and EDP Ventures.

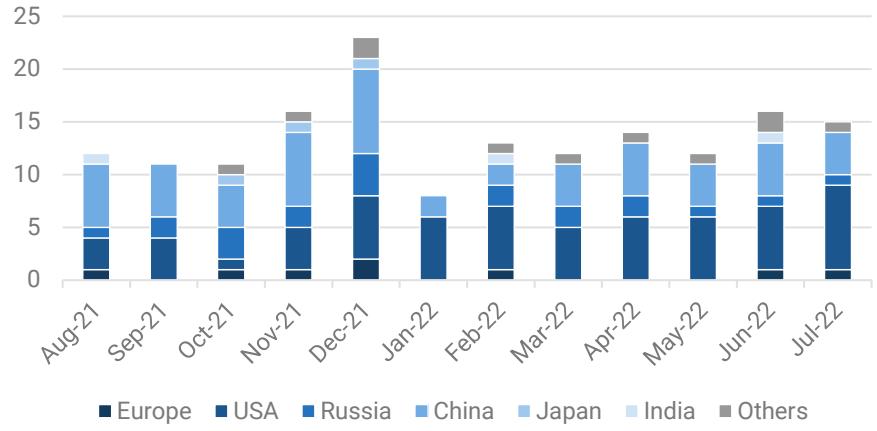
Picosats raises €1M in seed round: The Italian company dedicated to the development of telecommunication systems for CubeSats raised €1M in a seed round to perform in-orbit testing of its Radiosat technology. The investment round had the participation of the venture capital funds Progress Tech Transfer and Liftt.

LAUNCHES & SATELLITES

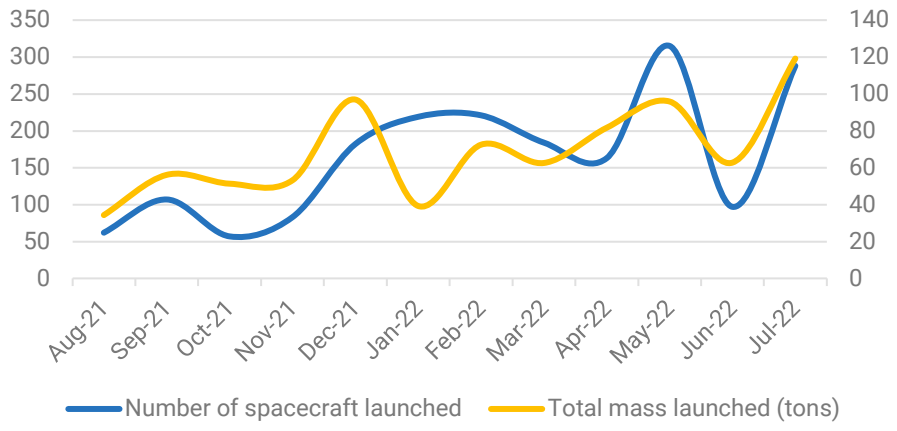
Global space activity statistics

July 2022	Europe	USA	Russia	China	Others	Total
Number of launches	1	8	1	4	1	**15**
Number of spacecraft launched	7	269	1	10	1	**288**
Mass launched (in kg)	312	89 325	962	28 495	80	**119 174**

Launch activity over the year

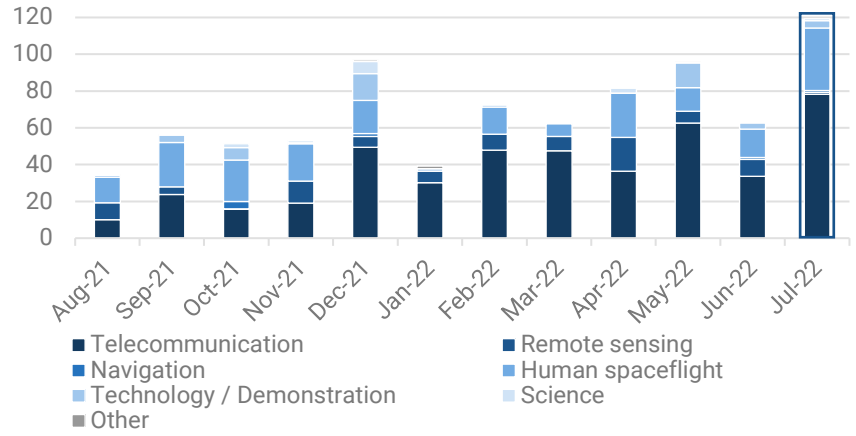


Evolution of the number of launches per launch country



Evolution of launch activity over the year 2021-2022

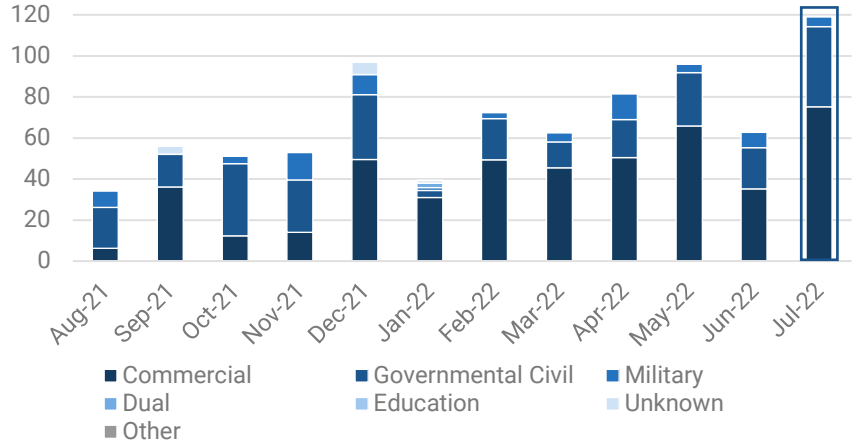
Satellite missions and markets



Evolution of the total mass launched (tons) per mission (Aug. 2021-Jul. 2022)

July 2022	Telecom	Remote sensing	Navigation	Human Spaceflight	Tech/ Demo	Science
Europe					3	309
USA	74 045	80		11 000	3775.65	503
Russia			962			
China	4100	1080		23 000	100	215
Others					1	

Total mass (kg) launched by mission and customer country



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

July 2022	Commercial	Governmental Civil	Military	Education
Europe	1	309		2
USA	74 045	11 512.4	3838.25	8
Russia			962	
China	1080	27 395		20
Others				1

Total mass (kg) launched by market and customer country

Launch Log

Launch date	Launch country	Launcher	Spacecraft name	Main customer	Customer country	Prime manufacturer	Manufacturer country	Mass (kg)	Mission	Market
01/07/2022	USA	Atlas-5(541)	USSF-12 Ring	US Space Force	USA	Northrop Grumman	USA	500	Tech/ Demo	Military
01/07/2022	USA	Atlas-5(541)	WFOV-T / USA 332	US Space Force	USA	Millennium Space Systems	USA	3200	Tech/ Demo	Military
02/07/2022	USA	LauncherOne	CTIM-FD	University of Colorado Boulder	USA	University of Colorado Boulder	USA	6	Tech/ Demo	Governmental Civil
			GPX-2	NASA	USA	NASA	USA	3,4	Tech/ Demo	Governmental Civil
			Gunsmoke-L (1 & 2)	US Army SMDC	USA	Blue Canyon Technologies	USA	6 (each)	Tech/ Demo	Military
			MISR B	US Special Operations Command	USA	Blue Canyon Technologies	USA	6	Tech/ Demo	Military
			NACHOS 2	Los Alamos National Laboratory	USA	Los Alamos National Laboratory	USA	6,25	Tech/ Demo	Military
			Recurve	Air Force Research Laboratory	USA	Air Force Research Laboratory	USA	15	Tech/ Demo	Military
			Slingshot 1	The Aerospace Corporation	USA	The Aerospace Corporation	USA	19	Tech/ Demo	Military
07/07/2022	USA	Falcon-9 v1.2 (Block 5)	Starlink (53 satellites)	SpaceX	USA	SpaceX	USA	295 (each)	Telecom	Commercial
07/07/2022	Russia	Soyuz-2-1b Fregat	Kosmos 2557 / Glonass-K 16L	Roscosmos	Russia	ISS Reshetnev	Russia	962	Navigation	Military
11/07/2022	USA	Falcon-9 v1.2 (Block 5)	Starlink (46 satellites)	SpaceX	USA	SpaceX	USA	295 (each)	Telecom	Commercial
12/07/2022	China	CZ-3B/G3	TianLian 2C	CASC	China	CAST	China	4000	Satellite Data Relay	Governmental Civil
13/07/2022	France	Vega-C	ALPHA	ARCA Dynamics	Italy	ARCA Dynamics	Italy	1	Tech/ Demo	Commercial
			AstroBio Cubesat	ASI	Italy	La Sapienza University of Rome	Italy	5	Biology	Governmental Civil
			Celesta / Robusta 1D	CERN	Europe	University of Montpellier	France	1	Tech/ Demo	Education
			Greencube	ENEA	Italy	La Sapienza University of Rome	Italy	4	Biology	Governmental Civil
			LARES 2	ASI	Italy	National Institute for Nuclear Physics	Italy	295	Space Science	Governmental Civil
			MTCube-2 / Robusta 1F	University of Montpellier	France	University of Montpellier	France	1	Tech/ Demo	Education
			Trisat-R	University of Maribor	Slovenia	Skylabs	Slovenia	5	Space Science	Governmental Civil
13/07/2022	New Zealand	Electron KS	USA 334	NRO	USA	NRO	USA	80	Earth Observation	Military
15/07/2022	USA	Falcon-9 v1.2 (Block 5)	BeaverCube	MIT	USA	MIT	USA	3	Earth Science	Education
			CapSat 1	The Weiss School	USA	The Weiss School	USA	1	Tech/ Demo	Education

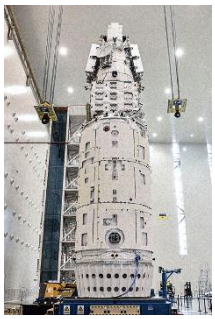
			CLICK A	MIT	USA	Blue Canyon Technologies	USA	3	Tech/ Demo	Governmental Civil
			D3	University of Florida	USA	University of Florida	USA	2	Tech/ Demo	Education
			Dragon CRS-25	NASA	USA	SpaceX	USA	11000	Cargo Transfer	Governmental Civil
			EMIT	NASA	USA	NASA	USA	500	Earth Science	Governmental Civil
			JagSat-1	University of South Alabama	USA	University of South Alabama	USA	2	Tech/ Demo	Education
			TUMnanoSAT	Technical University of Moldova	Moldova	Technical University of Moldova	Moldova	1	Tech/ Demo	Education
15/07/2022	China	CZ-2C(3)	Siwei Gaojing 2 (-01 & -02)	China Siwei Survey and Mapping Technology	China	CAST	China	540 (each)	Earth Observation	Commercial
17/07/2022	USA	Falcon-9 v1.2 (Block 5)	Starlink (53 satellites)	SpaceX	USA	SpaceX	USA	295 (each)	Telecom	Commercial
22/07/2022	USA	Falcon-9 v1.2 (Block 5)	Starlink (46 satellites)	SpaceX	USA	SpaceX	USA	295 (each)	Telecom	Commercial
24/07/2022	USA	Falcon-9 v1.2 (Block 5)	Starlink (53 satellites)	SpaceX	USA	SpaceX	USA	295 (each)	Telecom	Commercial
24/07/2022	China	CZ-5B	Wentian	CNSA	China	CASC	China	23000	Space Station Infrastructure	Governmental Civil
27/07/2022	China	Zhongke-1A	Dianci zuzhuang Shiyan (1 & 2)	Unknown (China, Public)	China	CAS	China	50 (each)	Tech/ Demo	Governmental Civil
			Diguidao Liangzi Mishifenfa Shiyan / Jinan-1	Hefei National Laboratory	China	CAS	China	100	Telecom	Governmental Civil
			Guidao Daqimidu Tance Shiyan	Unknown (China, Public)	China	CAS	China	75	Earth Science	Governmental Civil
			Huawan-Nanyue Kexue	Huawan Huayuan	China	SAST	China	20	Earth Science	Education
			SATech 01	Unknown (China, Public)	China	CAS	China	120	Space Science	Governmental Civil

Launch Highlights

Vega-C performs its inaugural launch

On July 13th, Europe and Arianespace launched for the first time one of their new rockets: Vega-C. The original date of this inaugural launch had to be postponed due to the COVID-19 pandemic and a previous accident with a Vega launcher, which occurred in November 2020 and triggered investigations. The launcher, whose prime manufacturer is the Italian company Avio, is an **improvement** of the small-lift rocket Vega and can carry 2300 kg to SSO. Moreover, the first stage of Vega-C will be used as a booster on Ariane 6. For this launch, Vega-C sent seven spacecraft, mostly Cubesats, to an unusual orbit 6000 km away from Earth. This orbit was selected to fulfill the mission of the primary payload, the Lares-2 satellite, which aims at measuring the distortion of space-time cause by the rotation of the Earth.

Figure 1: Credit: NASASpaceflight.com


Credit: Xinhua

China launches a new module for the Tiangong space station

On July 24th, China launched its most powerful rocket, the Long March-5B, to send in orbit one of the **main segments of its space station**. The module, called Wentian, has a mass of 23 tons and will be a laboratory allowing to conduct in-orbit experiments. It will also be used as a backup life support and propulsion for the core module of the station, Tianhe, and will provide more living space for taikonauts onboard the station. Wentian also carries a robotic arm that is more precise than the one installed on Tianhe.

The launch was also noticeable because of the safety concerns that it created. Indeed, like previous launches of the LM-5B, the first stage of the orbit, weighing more than 20 tons, **was not actively deorbited**. It therefore performed an uncontrolled re-entry to Earth, thus potentially putting at risk people and goods on the ground, before **crashing** into the Indian Ocean on July 31st.

A new Chinese solid rocket successfully flies for the first time


Credit: Zhongke Aerospace

On July 27th, the company CAS Space, a spin-off of the Chinese Academy of Sciences, performed the **first launch of its Zhongke-1A** (also called Lijian-1) rocket. The launcher is a four-stage vehicle, all of them making use of solid propulsion, and has been developed based on the DF-31 ICBM. It can launch up to 1500 kg to SSO, making it appropriate for both small- and medium-mass payloads. A new launch pad at Site 130 in Jiuquan was built specifically for the Zhongke rockets, which launch from an erector launcher. Six satellites were onboard the inaugural flight, including the second quantum communications satellite launched by China.

Virgin Orbit reaches a new step in its operations

On July 2nd, Virgin Orbit conducted its fourth successful launch, which was also its **first launch during nighttime**. Moreover, the rocket reached an inclination of 45 degrees, which had never happened through a launch from the West Coast. The launch, procured by the U.S. Space Force, carried seven satellites to low-Earth orbit that will conduct experiments and demonstrate innovative technologies for several U.S. governmental agencies.

About ESPI

Policy & Strategy

Economy & Business

Security & Defence

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ESPI is the European think-tank for space. The Institute is a not-for-profit organization based in Vienna, World capital of space diplomacy, providing decision-makers with an informed view on mid to long-term issues relevant to Europe's space activities since 2003.

ESPI is supervised by a General Assembly of member organizations and supported by an Advisory Council of independent high-level experts.

ESPI fulfils its objectives through various multi-disciplinary research activities leading to the publication of books, reports, papers, articles, executive briefs, proceedings and position papers, and to the organisation of conferences and events including the annual ESPI Autumn Conference.

Who we are	What we do
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