



After a relatively calm summer in the space industry, Ariane is starting the year strongly with multiple successful tests for its Ariane 6 programme. This comes as relief for Europeans, after a tumultuous year and a half, in which all but one European launchers were either delayed, decommissioned, or taken out of operations for testing following a failure. This edition will take a look at this shift in launcher prospects, including news about the European micro launcher industry, and will present an overview of the key news in the wider space industry.

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## The space launcher industry

### What happened to European and international launchers recently: an overview

The past year and a half has been under the sign of struggle and mishaps for the launch industry globally, and more specifically in Europe. The Russian space agency Roscosmos ended collaboration with the European Space Agency in response to western sanctions, **ending the European use of Soyuz, the Ariane 6 was delayed** significantly, and **VEGA C malfunctioned**, leading to an almost complete lack of European launch solutions. Abroad, **SpaceX's Starship maiden flight was a failure**, with the launcher having to be destroyed following a loss of control; and the plane launched satellite launcher company **Virgin Orbit filed for bankruptcy** at the beginning of the year, following multiple failed attempts.

But the dynamic appears to be shifting. In the past month, the Ariane 6 teams have successfully completed crucial tests, making an early 2024 maiden flight increasingly probable. The investigation of the Starship crash by the FAA was completed, and Space X is back on the path to launch its groundbreaking super heavy launcher, having already fixed most of the issues identified by the FAA.

## The launch industry globally, and specifically in Europe, went through one of its harshest year and a half, but seems to be bouncing back

### SPACE LAUNCH STRUGGLES IN 2022-2023



## Ariane 6 testing is speeding up: the finishing line in sight

As shown in the figure above, the Ariane 6 programme has been significantly delayed in the past few years. Its **original maiden flight was planned for 2020**, and delayed multiple times since then. Up until early August, the launcher was still announced to take-off in late 2023, although analysts throughout the sector were confident that a new delay would be announced. The **flight is now planned for early 2024**, with no specific date announced yet, and the Ariane 6 teams are speeding up to reach the finish line.

Since July, the launcher has undergone **two key tests**, which were successful (see above), and will go through another crucial one, the long firing test, at the end of this month. This **long hot-firing test**, planned for the 26<sup>th</sup> of September, is the key to announce or not a launch date, because it **simulates a complete mission** and, if successful, will reassure all stakeholders of the technological readiness of Ariane 6.

## The European Spaceport in French Guiana is preparing for the future

With the first flight of Ariane 6 getting closer by the minute, the European Spaceport in Kourou, French Guiana, is preparing its future.

Although the main use of this Space Centre is the launch of legacy launchers, the Spaceport is adapting to **accommodate European space startups** and their launch needs. The oldest launch pad of the Kourou facilities, used in the 70s for the Diamant launcher, is currently being rehabilitated to accommodate innovative launch solutions, namely European micro and mini launchers. Multiple companies have applied for access to this pad, and 3 of them, **PLD Space (Spanish)**, **Rocket Factory Augsburg (German)** and **ISAR Aerospace (German)** have **reached firm agreements with the Guiana Space Centre**.

The Centre is also working towards its digitalisation. On the 4<sup>th</sup> of July 2023, the European Space Agency presented its **CSG Digitalisation Initiative**, a project split into at least 18 digitalisation topics and call for tenders, including the **digitalisation of its infrastructures for increased safety and security**.

The calls for tenders can be found on the **esa.star platform** (The European Space Agency's dedicated platform for tenders).

## Micro launchers in Europe, the race to orbit

The European Union's access to space has been shaped by traditional launcher companies, mainly ArianeGroup and Avio, but emerging startups are disrupting this status quo, developing **micro launchers to send small satellites into orbit**. This is supported by the European Space Agency, which launched its **BOOST! programme** to support commercial launcher initiatives in Europe.

### Glossary

**Microlauncher:** a launch vehicle that can deliver a payload of up to 600kg to LEO

Micro launchers could answer the small-sat companies' need for more flexibility in their launches. Currently, the launch of small payloads is done through legacy launchers, using the leftover space from bigger payloads such as GEO satellites, or as a group with other small sat companies. Such **piggybacking** or **ridesharing** forbids small sat companies from controlling their launch dates. Using micro launchers would provide them with more independence.

Although micro launchers are attracting a significant amount of attention and funding in Europe, it is expected that out the **~40 projects under development**, only a few will reach commercial operationality (between 2 and 5), and that in the face of existing but limited demand for such launchers, a significant consolidation phase should happen in the coming years.

Out of the ~40 European micro and mini launcher projects in development, here is a presentation of 8 that are particularly advanced :

**Sirius 1 – Sirius Space Services**  
Launch date: 2025  
Capacity: 175 kg  
Launch Site: Guiana Space Centre

**OB1 MK1 – HyPrSpace**  
Launch date: 2025  
Capacity: 175 kg  
Launch Site: Guiana Space Centre

**SL1 - Hympulse**  
Launch date: end of 2023  
Capacity: 500 kg  
Launch Site: Guiana Space Centre

**Zephyr - Latitude**  
Launch date: end of 2024  
Capacity: 100 kg  
Launch Site: SaxaVord Spaceport and Guiana Space Centre

**Miura V – PLD Space**  
Launch date: 2024  
Capacity: 540kg  
Launch Site: Guiana Space Centre  
Commercial exploitation: Late 2025

**Maia – MaiaSpace**  
Launch date: late 2025  
Capacity: 500kg  
Launch Site: Guiana Space Centre  
Commercial exploitation: 2026

**RFA One – Rocket Factory Augsburg**  
Launch date: end of 2023  
Capacity: 1200kg  
Launch Site: Andoya and Esrange Space Centres  
Commercial exploitation: 2026

**SPECTRUM – Isar Aerospace**  
Launch date: end of 2023  
Capacity: 1000 kg  
Launch Site: Andoya and Guiana Space Centres  
Commercial exploitation: 2024

## Space investments and the space market in Europe

### Actia ambitions to be a NewSpace investor

Actia, the electronic components provider which is already recognised in the automotive and aeronautics industry, is turning towards the space industry, with its plan to **buy the space electronics components company STEEL Electronique**. The two companies entered into exclusive negotiations this month.

Actia's president Jean-Louis Pech had last April expressed the company's ambition to create an **aerospace division generating €100M revenues per year by 2028**. Actia had a €500M turnover in 2022, with the current aerospace activities (without STEEL) representing about €60M.

This acquisition would bring into Actia's perimeter a small company (€7M in 2022), with strong ties with space agencies and a guaranteed credibility in terms of space expertise, as STEEL has contributed to key CNES and ESA programmes.

### Eutelsat's strategic partnership with Karista

On the 10<sup>th</sup> of September, the satellite operator Eutelsat announced a **strategic partnership with Karista**, the early stage VC firm behind the **SpaceTech fund CosmiCapital**. This partnership makes Eutelsat a new subscriber to the CosmiCapital fund, which should allow Karista to maintain its dynamic in the space sector.

CosmiCapital has, since its creation in 2021, invested in **8 NewSpace companies** with varying applications, including Look Up Space (space situational awareness), Constellr (Earth resources monitoring from space), Exotrail (electric propulsion and space logistics), and others.

### Away from the public eye: OHB goes private

The German satellite group's controlling family, the Fuchs, has decided with private equity firm KKR to **withdraw from public markets**, as Marco Fuchs, CEO, considers that **public market investors fail to accurately value the space company's worth**.

**KKR should hold 34,1%** of the company following the issuance of new shares and a buyback operation from public markets, in which KKR offers €44 a share. The **Fuchs family will retain its 63,4% share** after the operation. Fuchs stated that this move away from public markets is not definitive, and that **OHB could go public again in about 5 years**.

The private equity firm KKR displays a strong interest in European space companies, and will soon **invest €30M in the German NewSpace company Rocket Factory Augsburg**, according to the Financial Times.

## Space in 10 years: zoom on one commercial space station project

By 2030, the **International Space Station will have to be decommissioned**, and plans for its replacement are heavily underway. The ISS transition plan does not include the replacement of the station by another institutional one, but rather the use of commercially owned space stations by institutions and companies alike. In March 2021, NASA presented its *Commercial LEO Destinations Programme (CLD)*, aiming to support the development of low earth orbit commercial space stations, of which NASA would only be a client, instead of an operator.

Before looking at an ISS replacement project, let's present the deorbiting plans. **The ISS is the size of a football field**, and includes several components added over the 32 years of operation by the time of deorbiting. NASA and international partners plan to use the Earth's gravitational forces as much as possible to start the deorbiting process, and save up fuel, and to **aim for the area in the Pacific Ocean around point NEMO** for the ISS remains to come back to Earth. Given the size and complexity of components of the Space Station, it is **not a possibility to deorbit it without losing most of the hardware**.

Multiple space station projects have started, aiming to be operational before the deorbiting of the ISS, to ensure the continuity of space science activities. Here is a zoom on two prominent projects that recently made the news.

### The Axiom Space modules and station

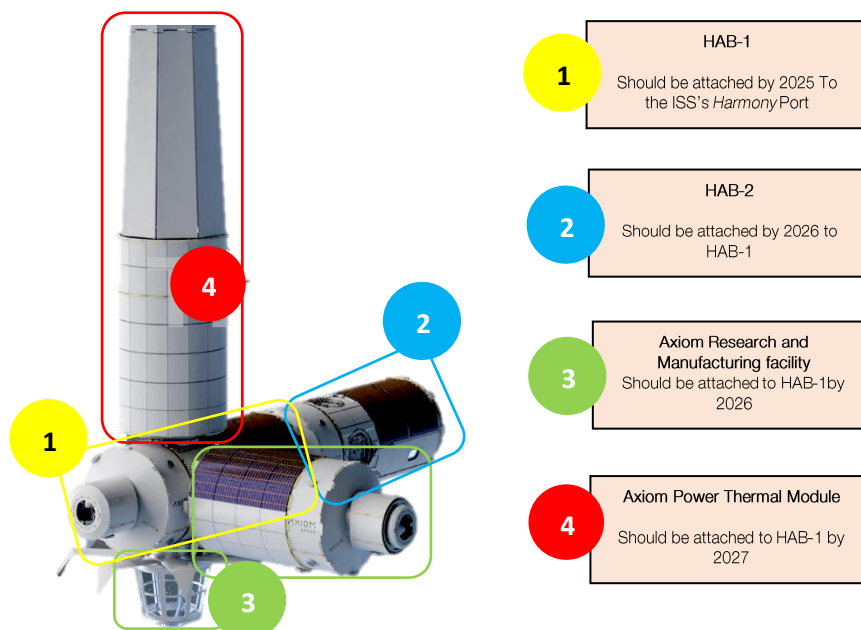
Axiom Space, a US company, is one of the most mature project leads in terms of commercial space stations. In fact, the company signed in 2020 an agreement with NASA for **its space modules to be attached to the ISS starting in 2025**, and operate jointly with it until it is decommissioned, at which time the Axiom modules will become an **independent space station, Axiom Station**.

This agreement allows Axiom to assert its credibility early on, before the ISS's decommissioning, and to be viewed as a future partner of choice for institutional missions in commercial space stations.

The *Axiom Station* will be composed of **four key modules to provide a fully operational space station**: Hab-1 and Hab-2, providing quarters and a research space for 4 astronauts each, AxRMF, a research and manufacturing facility, and AxPT, the Power and Thermal module which will allow Axiom Station to support itself energetically once it disconnects from the International Space Station.

On top of the core modules, the Axiom Station will host additional modules for specific applications, most notably AxSEE-1, an inflatable module commissioned by the British company Space Entertainment Enterprise to be the **first content and entertainment studio in space**.

Axiom Station's key components:



Axiom not only prepared its implantation and credibility building, but has addressed the topic of bringing its supplies to space. It recently signed a contract with the Franco-German startup **The Exploration Company**, to use its reusable capsule **Nyx** to bring freight to the commercial space station, as early as 2027. The Exploration Company should test a small size version of its capsule in space next month.

## Airbus is heading to a space station

Although Axiom Station has gained significant advance by planning to have modules in orbit as early as 2025, other projects are advancing significantly, around some of the aerospace leaders. The **Starlab Space Station**, developed by Nanoracks, Voyager Space and Lockheed Martin, was announced in 2021, and aims at an entry in operations in 2028.

In January 2023, **Airbus Defense and Space** joined the project, expanding it from the US to Europe, and bringing its technical expertise, notably for the **living quarters module**. At the beginning of August 2023, it was finally announced that **Airbus and Voyager Space** had formed a **strategic partnership** to bring the space station project to the next level, in the form of a **joint venture**.

This news is a positive for Europe, as such a partnership should facilitate the **European access to the Starlab Station**. This station, contrary to the Axiom one, will be **focused on research and technology** purposes, and will not host any space tourism nor entertainment missions.

The advances of this project will be monitored and reported in this newsletter.



## Fast facts

- **Boeing'** spaceship *Starliner* should be ready for take-off by **March 2024**
- **India** reached the Moon on the **23<sup>rd</sup> of August**, officially entering the small club of moon farers (USA, Russia, China)
- British defence company **BAE Systems** invests in space, and plans to buy the US company **BALL Aerospace** for **\$5,6Bn**, its biggest deal to date. The deal is expected to be completed in the **first half of 2024**.
- **HyPrSpace** (micro launcher) and the French **DGA** signed an agreement for HyPrSpace to test its hybrid (Oxygen and Polyethylene) engines on the DGA missile testing site of St-Médard en Jalles in **2024**
- In early August, **Virgin Galactic** sent its first tourists to orbit. It plans to perform one trip per month, with tickets worth **\$450K each**. Although its sister company, Virgin Orbit, collapsed earlier this year, Virgin Galactic is sending positive signals as of the health of Sir Richard Branson's group.