

D-Orbit Launches 13th Orbital Transportation Mission

The mission, called Beyond, was launched on December 1, 2023 hosting onboard 8 satellites and 4 hosted payloads.

Fino Mornasco, Italy, December 4, 2023 — On December 1st, **D-Orbit**, an industry leader in space logistics and orbital transportation, successfully **launched its 13th commercial mission, named Beyond**, using its cutting-edge Orbital Transfer Vehicle (OTV) **ION Satellite Carrier (ION)**.

Falcon 9 lifted off at **10:19 AM PT (6:19 PM UTC)** from **Space Launch Complex 4 (SLC-4E) at Vandenberg Space Force Base in California**. ION Satellite Carrier was subsequently deployed into an approximately 560-km Sun Synchronous Orbit .

Renato Panesi, PhD, Co-founder, and Chief Commercial Officer of D-Orbit, expressed, "*This mission, with its diverse composition, perfectly showcases the flexibility of our ION Satellite Carrier. This has been a remarkably intense year, filled with challenges and as many satisfactions. We are now truly looking forward to 2024, a year that will mark the acquisition of several new milestones, which we are eager to share with the industry at large.*"

ION Satellite Carrier can individually place satellites into specific orbital slots. Additionally, ION can host a variety of third-party payloads, including innovative technologies from startups, research experiments from academic institutions, and test instruments from established enterprises.

D-Orbit's mission control team is now conducting the Launch and Early Orbit Phase (LEOP), setting the stage for the upcoming operational phase.

Collaborating with new and recurring passengers

During the mission, ION will host onboard several satellites, third-party satellite deployers, and third-party payloads:

- **ALISIO-1, a 6U CubeSat by the [Instituto de Astrofísica de Canarias \(IAC\)](#) and [IACTEC Space](#)**, is the first Canary Islands satellite for Earth Observation. Its main instrument is a DRAGO-2 (Demonstrator for Remote Analysis of Ground Observations) camera, developed by the IACTEC-Space team, which was tested on a demonstration mission at the beginning of this year, during D-Orbit's Dashing Through the Stars mission. With a resolution of 50 m per pixel and a swath of 32 km for an orbit of 500 km, DRAGO-2 is capable of obtaining high-quality multispectral images in the short-wave infrared. The ALISIO-1 satellite will also include an optical laser communications module that will allow it to send its images to any optical station on Earth at higher speed than radio communication. ALISIO-1 aims at becoming a key factor in planning the prevention and response to natural catastrophes. This mission has been supported by Deimos space, D-Orbit's local partner in Spain.
- **NANO FF A and NANO FF B, two 2U CubeSats by [TU Berlin](#)**, are part of a project spearheaded with funding from the German Aerospace Center (DLR) by the Federal Ministry for Economic Affairs and Energy. The primary mission objective is the controlled formation flight of both satellites in a helix orbit, a pioneering feat for TU Berlin, as it will be the first-time satellites of such compact size from the university perform a formation flight in orbit. This features extensive, deployable solar panels, redundant GNSS receivers, three miniaturized star trackers, and four

optical cameras with 39 m ground pixel resolution, and over 160 km swath width and marks a significant milestone for TU Berlin.

- **LOGSATS, a 3U CubeSat by [Patriot Infovention](#)**, launched to demonstrate the first Thai space-based Internet-of-Things (IoT) communications system and aviation monitoring system of Thailand. While the IoT communications system aims at implementing the smart city model in the country, using information and communication technology to enhance and optimize the use the city's resources, the aviation monitoring system will support the control of both manned and unmanned air traffic in Thailand.
- **PONO 1, a 2U CubeSat by [Privateer](#)**, is a compact edge computing, storage, machine learning, and data transmission system built to be available to satellite operators as a hosted payload. Consisting of a high-speed SDR comms package, flight computer, and high-performance NVIDIA Orin-based GPU cluster, it will offer powerful on-orbit compute capabilities, radiation and thermal mitigation, and telemetry tracking. It is designed for upgraded precision in asset tracking and prediction, with retroreflectors attached to the hardware's exterior providing ultra-high accuracy orbit determination. PONO 1's integration will enable operators to perform AI tasking, image processing, and collision risk assessment and avoidance, while generating additional revenue through their data streams' integration into Privateer's developer marketplace.
- **Z01™ SuperTorquer, by [Zenno Astronautics](#)**, will demonstrate the effective operation of the world's first high-temperature superconducting electromagnets in space. Built on Zenno's proprietary superconducting magnet technology, the Z01 enables fully autonomous and fuel-free satellite positioning and is designed to control the attitude of a spacecraft by aligning it to the Earth's magnetic field, this is a world-first.
- **RECS, a hosted payload by [D-Orbit](#) and the [Space Propulsion Laboratory \(SPLab\) of the Politecnico di Milano](#)**, that aims at better understanding the behavior of nitrous oxide (N₂O), a propellant already used in D-Orbit's propulsion system, and its performance during refueling. This is the final PhD project of Simone La Luna, now Head of Propulsion and Thermal Engineering at D-Orbit, which focuses on in-orbit refueling and green propellants; the payload comprises two tanks (one full and one empty) with a valve designed to facilitate the transfer of N₂O from the full tank to the empty one, aiming to simulate the process of in-orbit refueling between two satellites. Pressure, temperature and fluid flow will be measured by the payloads' sensors during this entire process.
- **MI:1, a mission by [TRL11](#)** that will test in orbit a prototype of the company's Space Aware Edge Computer.
- **AlbaPod 6P, two 6P PocketQube satellite deployers by [Alba Orbital Ltd](#)**: AlbaPod 6P serves as a deployer for 6P PocketQube satellites. PocketQubes, which are typically cube-shaped with 5 cm sides and a maximum mass of 250 grams, leverage commercial off-the-shelf components for electronics. AlbaPod 6P aims to provide a reliable deployment platform for these diminutive satellites, enhancing the scope of what can be achieved with small-scale space assets. The deployer will host a variety of PocketQubes, each with its own unique research objectives.

As this new mission progresses, D-Orbit continues to push the boundaries of innovation in space logistics and orbital transportation, working to pave the way for a future of possibilities and enhanced accessibility to space.

About D-Orbit

D-Orbit is a market leader in the space logistics and transportation services industry with a track record of space-proven services, technologies, and successful missions.

Founded in 2011, D-Orbit is the first company addressing the logistics needs of the space market. ION Satellite Carrier, for example, is a space vehicle that can transport satellites in orbit and release them individually into distinct orbital slots, reducing the time from launch to operations by up to 85% and the launch costs of an entire satellite constellation by up to 40%. ION can also accommodate multiple third-party payloads like innovative technologies developed by startups, experiments from research entities, and instruments from traditional space companies requiring a test in orbit. The whole, fully redundant ION can be rented for edge computing applications and space cloud services to provide satellite operators with storage capacity and advanced computing capabilities in orbit.

D-Orbit's roadmap includes becoming a relevant player in the in-orbit servicing market, which is forecasted to become one of the largest, growing markets within the space sector.

D-Orbit has offices in Italy, Portugal, the UK, and the US; its commitment to pursuing business models that are profitable, friendly for the environment, and socially beneficial, led D-Orbit S.p.A. to become the first certified B-Corp space company in the world.

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