

D-Orbit Launches 12th Orbital Transportation Mission

Cosmic Wander, launched on November 11, 2023 aboard SpaceX's Transporter-9 mission, carries a diverse array of 18 payloads for satellite deployment and In-Orbit Demonstrations

Fino Mornasco, Italy, November 11, 2023 — [D-Orbit](#), an industry leader in space logistics and orbital transportation, successfully **launched its 12th commercial mission today, named Cosmic Wander**, using its cutting-edge Orbital Transfer Vehicle (OTV) **ION Satellite Carrier (ION)**.

Cosmic Wander lifted off at **10:49 AM PT (6:49 PM UTC)** from **Space Launch Complex 4 (SLC-4) at Vandenberg Space Force Base in California**. ION Satellite Carrier was subsequently deployed into a **sun-synchronous orbit at an altitude of 525 kilometers**.

Designed to revolutionize satellite deployment, **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.

Since its first commercial mission in September 2020, D-Orbit has successfully completed 11 missions.

"As we streamline our launch preparation and integration processes, we're setting a new standard for efficiency and reliability in the space industry," said Renato Panesi, PhD, D-Orbit's cofounder and Chief Commercial Officer. "Our aim is to make space more accessible and versatile for everyone, from startups to established space enterprises, and this new successful launch is a testament to that vision."

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 clients

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

- **LEMUR 2 NANAZ**, a 3U satellite by [SPIRE](#): designed to excel in data collection from both terrestrial and celestial sources, this satellite is part of Next-Generation Non-Geostationary Satellite Orbit (NGSO) broadband internet constellations. It aims to harvest data for in-depth analyses of Ku and Ka-band spectrum usage across diverse applications, regions, and markets, identifying specific activities and behavioral patterns.
- **Intuition-1**, a 6U EPIC VIEW Earth observation satellite by [AAC Clyde Space](#): equipped with an advanced hyperspectral instrument by [KP Labs](#), Intuition-1 is set to provide high-resolution, multi-band, hyperspectral data far surpassing the capabilities of the human eye's color detection. At its core is the novel data processing unit, Leopard, designed to utilize neural networks for in-orbit data processing, marking a significant leap in artificial intelligence applications within the space sector. KP Labs foresees the technology aboard Intuition-1 playing a pivotal role in diverse fields, including agriculture, forestry, mining, environmental protection, and defence. Primarily aimed at the agriculture sector, the hyperspectral data collected will be a powerful tool for optimizing crop yields, as well as for the early detection of invasive species, pests, and subtle changes in soil composition.

- **Ymir-1**, an EPIC LINK communications satellite by [AAC Clyde Space](#): designed and constructed by AAC Clyde Space, Ymir-1 carries an innovative VDES (VHF Data Exchange System) payload by [Saab](#), enabling two-way communications between the satellite and Earth. This Swedish-built satellite is a pioneering venture within the AOS project, a collaborative effort aimed at developing the next generation of space-based VDES technology. This partnership, which includes AAC Clyde Space, [ORBCOMM](#), and Saab, represents a significant advancement in maritime communications. The utilization of VDES by Ymir-1 promises to enhance current AIS-based Vessel Traffic Services (VTS) significantly, offering up to 32 times more bandwidth and enabling a wider range of maritime applications. These include advanced surveillance, encrypted communications, fisheries management, logistics, search and rescue operations, and comprehensive marine integrated applications. The space-based extension of VDES transforms the system, expanding its reach from mere shoreline coverage to comprehensive oceanic coverage.
- **EPICHyper-3**, an EPIC VIEW satellite by [AAC Clyde Space](#): EPICHyper-3, the third installment in the EPICHyper series, is an AAC Clyde Space satellite tailored for capturing hyperspectral imagery of Earth's surface with its advanced onboard imaging technology. This satellite is set to enable significant advancements across a spectrum of industries and applications, including climate change research, forestry, mining, energy, and defense sectors. Hyperspectral data is key to understanding the geochemical makeup of Earth's terrain, providing critical insights needed to tackle global challenges and opportunities. As part of the Space Data as a Service (SDaaS) agreement, AAC Clyde Space maintains ownership and operation of the EPICHyper series satellites, while [Wyvern](#) acquires the rights to the rich hyperspectral data collected by the satellites. Together, EPICHyper-1, EPICHyper-2, and now EPICHyper-3, launched earlier in 2023, form a robust constellation offering unprecedented detail of the planet's surface.
- **PiCo-IoT**, a 0.3U satellite by [Apogeo Space](#): set to be a cornerstone in Apogeo Space's planned constellation of around 100 picosatellites, PiCo-IoT embodies a forward-thinking approach to satellite deployment. Each picosatellite in this constellation is built on a proprietary 10x10x3 cm platform, conforming to a 0.3U CubeSat standard. Each launch will deploy a batch of nine such picosatellites, collectively equivalent to a 3U CubeSat.
- **Crypto3**, a 3U CubeSat by [Cryptosat](#): Crypto3 serves a multitude of blockchain applications, including MPC, key management, and data security, as well as a prototype platform for edge computing in space. Equipped with features like high bandwidth, satellite-to-satellite networking, and an advanced cryptographic processing unit, this 3U CubeSat aims to provide an unprecedented level of security for blockchain applications.
- **OSW Cazorla**, a 3U satellite by [Odyssey SpaceWorks](#): equipped with both internal and external imaging sensors, OSW Cazorla aims to serve dual scientific purposes. The internal sensor will record and monitor experiments within enclosed lab modules, while the external sensor will ensure mission orientation and assurance. The satellite will carry two distinct lab modules, each hosting a separate experiment in low-Earth orbit (LEO). The first, in collaboration with Tufts University, aims to study the growth and effectiveness of insect protein cells in microgravity, potentially serving as a proof point for off-world pharmaceutical R&D and commercialization. The second lab module, in partnership with Physical Synthesis, will house a digital synthesizer

designed to convert LEO's physical conditions into digitally produced sounds, which the satellite will transmit back to Earth, providing a unique blend of science and art in orbital research.

- **Radiosat&Beamasat**, a 3U hosted payload by [PICOSATS](#): focused on in-orbit validation of advanced telecommunication technologies, PICOSATS will test RADIOSAT, a Ka-band transponder, and BEAMSAT, a Ka-band horn antenna specifically designed for small satellites. Weighing just 1.7 kg and occupying less than 3U of space, these technologies promise high-speed communications and the capability to transfer significant volumes of data in short time frames.
- **Antelope**, an onboard computer (OBC) with a data processing unit (DPU) by [KP Labs](#): designed to manage and monitor all on-board satellite components, Antelope ensures optimal performance and overall satellite functionality. The unit's DPU can be enhanced with AI-based algorithms for tasks like anomaly detection and imagery data processing from external sensors. During its in-orbit demonstration, the primary focus will be on using AI/ML techniques for continuous telemetry data analysis to detect system irregularities, including those induced by factors like radiation.
- **Gen-03**, an in-space propulsion system by [Genergo](#): this innovative payload introduces a completely new type of in-space propulsion, aiming to expand the possibilities of space travel. During its mission, Gen-03 will be used to test new configurations and technical specifications, further advancing the field of space propulsion systems.
- **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.
- Finally, this mission will also include a **memorial payload** by [StardustMe](#) consisting of a batch of aluminum machined capsules, each carrying a gram of human cremated ashes, contained in an additive-manufactured frame and enclosure. The assembly, permanently fixed to the main core of ION, will eventually re-enter the atmosphere with the host vehicle during decommissioning, providing an ultimate form of space burial.

D-Orbit's next and thirteenth commercial orbital transportation mission will be launched in just a few weeks.

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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