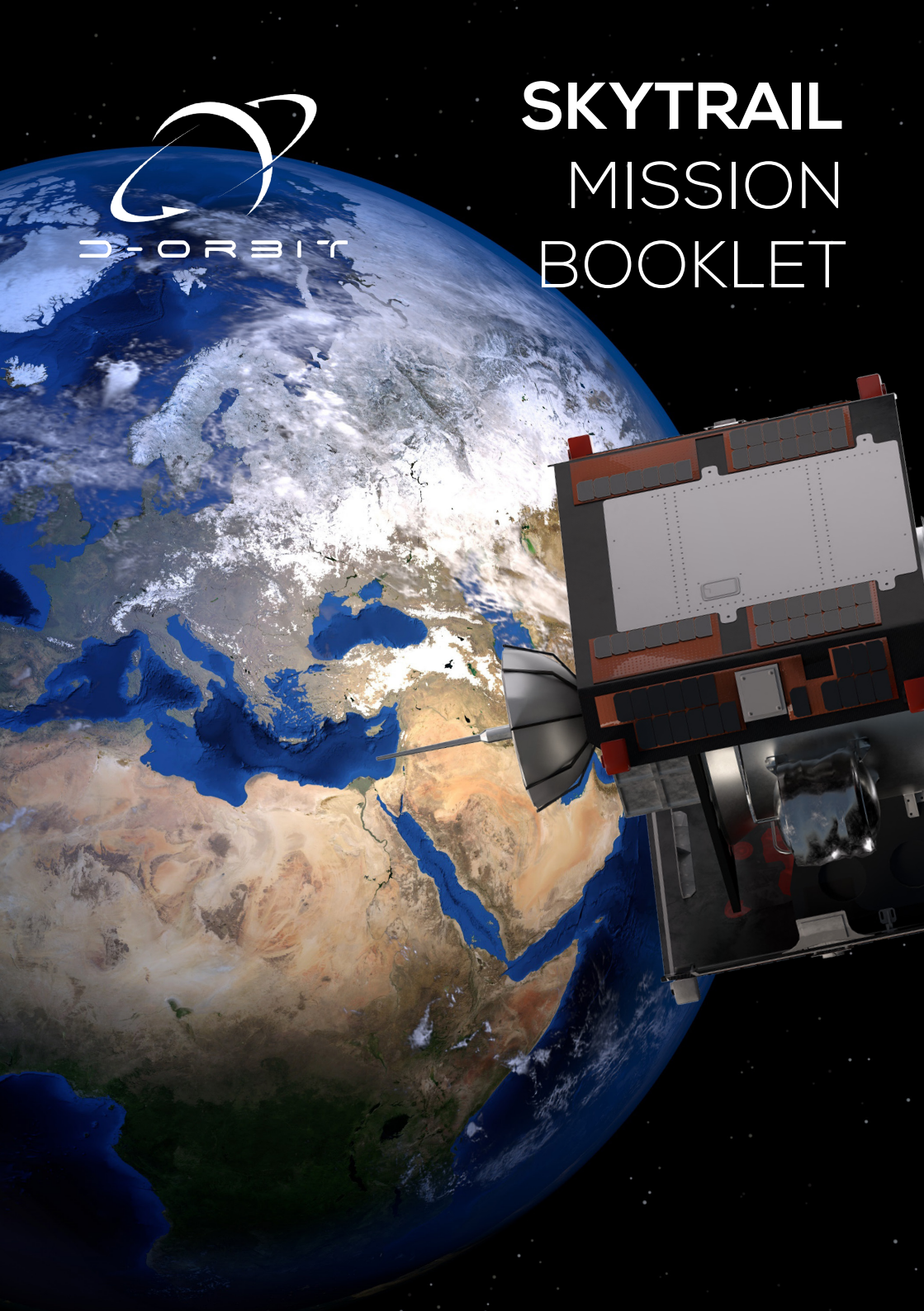




SKYTRAIL MISSION BOOKLET

Mission name: Skytrail
Carrier name: ION SCV Passionate Paula

Fino Mornasco, Italy, June 24, 2025 – On June 23, 2025, D-Orbit, a global leader in space logistics and orbital transportation, launched **Space Bound** and **Skytrail**, the **18th and 19th commercial missions** of **ION Satellite Carrier (ION)**, its orbital transfer vehicle (OTV), aboard **SpaceX's Transporter-14 mission**.

The two IONs were launched from **Space Launch Complex 4E (SLC-4E)** at **Vandenberg Space Force Base** in California at **02:25:00 PT (21:25:00 UTC)**. Following liftoff, the OTVs, **ION SCV Charismatic Carlus** and **ION SCV Passionate Paula**, were released into a Sun-synchronous Orbit at an altitude of approximately 590 km and 510 respectively.

ION Satellite Carrier is a versatile space vehicle capable of **transporting and releasing satellites into distinct orbital slots**. It can also accommodate third-party payloads, including innovative technologies, research experiments, and instruments requiring **in-orbit testing**. Additionally, ION can support **edge computing and space cloud services**, providing satellite operators with advanced storage and computational capabilities in orbit.

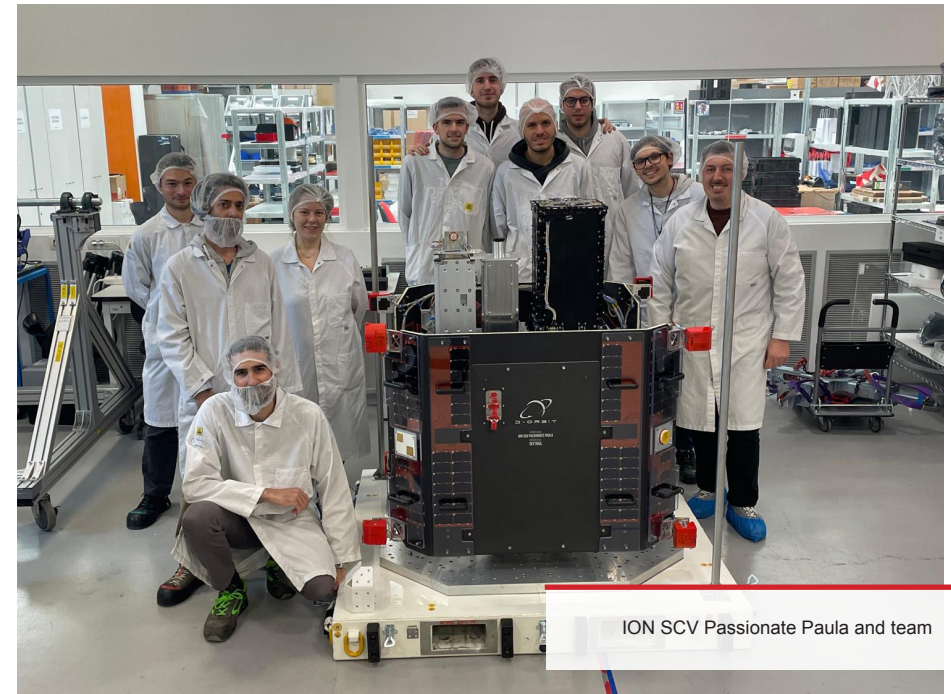
D-Orbit's mission control team is now conducting the **Launch and Early Orbit Phase (LEOP)**, setting the stage for the upcoming operational phase.



Photo credit: SpaceX

A note about the name of the satellite carrier

The name of the satellite carrier is "ION Passionate Paula", a combination of the acronym "ION", which stands for "InOrbit NOW", and the satellite's first name. This format follows the naming conventions of naval vessels used in navies around the World. The name "Paula" was drawn at random from a bowl containing the names of all D-Orbit's employees. The company will continue to follow this procedure in the future to honor the skills, energy, passion, and commitment to its people.



ION SCV Passionate Paula and team



telePIX

Name of payload: DNAV (Deep Space Navigation)

Type of payload: Processor

POC: Dowon Lee
dowon.lee@telepixon.net

DNAV is a system designed for satellites to autonomously navigate and determine their position in deep space, far from Earth, independent of ground station communication. It combines a wide-angle, high-resolution camera and advanced image processing algorithms to track celestial bodies like stars and planets, thereby enabling precise calculation of the satellite's position and velocity. To handle the data processing for this image-based navigation, the system is also equipped with TelePIX's TetraPLEX, a high-performance onboard AI processor that was successfully space-qualified last year.

COMPANY PROFILE Website: www.telepixon.net

TelePIX is South Korean space start up that engages in both upstream and downstream side of business. It designs and manufactures very high resolution optical payload and on-board processors, and engages in AI & Software building for satellite imagery analytics.



planetek
italia

Name of payload: AI-eXpress (AIX)

Type of payload: Cloud ecosystem platform

POC: Leonardo Amoruso
amoruso@planetek.it

A project by Planetek, in collaboration with D-Orbit and AIKO, and co-funded by ESA InCubed, an Earth Observation programme managed by ESA Φ-lab, AIX-1 follows the successful launch of AI-eXpress 1 Precursor (AIX-1p) in January 2025. Overall, the project leverages cutting-edge technologies such as Artificial Intelligence and Blockchain in Space to enhance satellite capabilities in terms of reactivity, responsiveness, and low-latency data delivery. Building on the in-orbit validation of AIX-1p, AIX-1 expands the functionalities of a hybrid edge/cloud ecosystem hosted on a Low Earth Orbit platform with the capacity of delivering actionable information extracted directly from the optical (VIS) payload onboard at low-latency. The system integrates Earth Observation payloads, a dedicated low-latency transmission payload, and a modular software framework that dynamically manages on-board sensors and computing resources. This mission marks a further step toward the development of the "satellite-as-a-service" model, bringing us closer to a fully operational space "App Store" - a new frontier for accessing, managing, consuming and monetising space infrastructure.

COMPANY PROFILE Website: www.planetek.it

Planetek Italia is an Italian company founded in 1994, employing over 130 men and women, passionate and skilled in Geomatics, Earth sciences and software for space missions. It develops systems and services for processing cartographic and satellite data aimed at creating geo-localised knowledge. It operates in many application fields: environmental and land monitoring, smart cities, defence and security, engineering, energy, utilities, Earth observation satellite missions and space exploration. With sustainability and business ethics as its core values, since 2021 it has become a Benefit Company.

Photo credit: Planetek Italia



Name of payload: ROQuET -
Reconfigurable lower Orbit Quantum
Computer for Earth observation Technology

Form factor: 3U

POC: Dr. Christiane Maria Losert-Valiente Kroon
christiane.losert@univie.ac.at

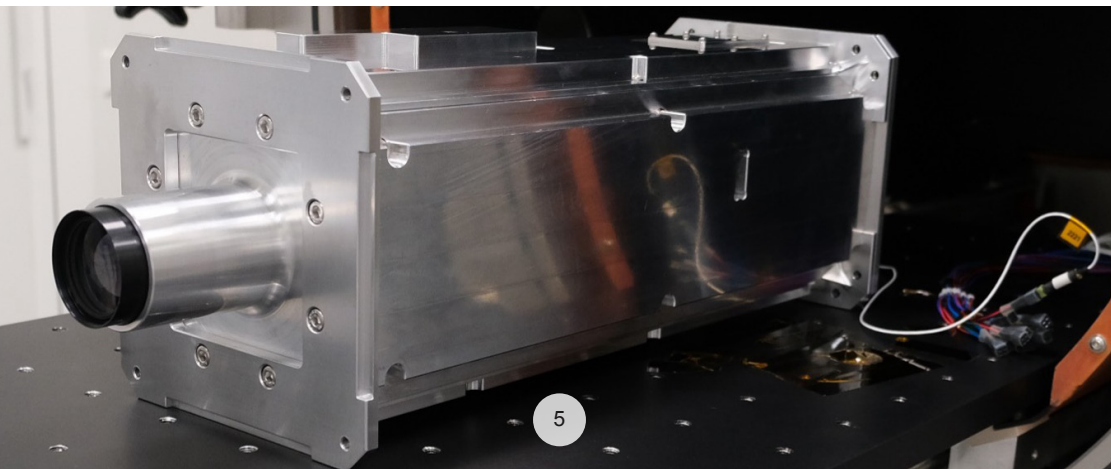
Prof. Dr. Philip Walther
philip.walther@univie.ac.at

RoQUET is a photonic quantum computer integrated into a satellite that can survive the harsh environmental conditions of a space mission. This novel quantum device fits the size of a shoe box, is very energy efficient and resists thermal and mechanical shocks. This mission will offer insights into the potentialities of quantum technologies to support tasks and improve current technology for space missions.

Quantum computers are rapidly becoming a key technology that promises powerful applications in areas such as logistics, finance, medicine, and artificial intelligence due to their ability to solve specific problems that even the world's most powerful supercomputers cannot solve. Yet, like the first computers in the 1950's they are usually run in highly controlled environments, such as large research labs equipped with cryogenic systems, clean rooms, or vibration absorption. Moreover, regular checks, adjustments and calibrations need to be performed by specialists. All this is not possible in space where resources are limited, and environmental conditions are uncontrollable.

The quantum computer is connected to an onboard camera provided by DLR to investigate potential usage of the setup for earth observation. The components underwent several tests to simulate vibrations and shocks for typical rocket launches. They also needed to be baked in a thermal vacuum oven to release trapped gas to prevent explosions.

The required expertise was gathered and developed as a joint undertaking from researchers at University of Vienna (Austria) in collaboration with CNR Milano (Italy) who developed the photonic chip which will perform quantum computational tasks. Additionally, three institutes of the German Aerospace Center in Berlin, Munich and Trauen supported with their knowledge on space missions and provided their vacuum chambers and facilities for the final assembly of the satellite in their cleanrooms. This joint work puts Europe at the forefront of quantum computation for space missions and could give rise to the next generation of energy efficient satellites.



COMPANY PROFILE - UNIVERISTY OF VIENNA

Website: www.univie.ac.at

The University of Vienna is the largest research institution in Austria as well as the largest educational establishment. The group led by Prof. Dr. Philip Walther at the Faculty of Physics is one of the world's leading research groups in quantum photonics. The focus lies in developing concepts and experimentally implementing scalable and miniaturized photonic quantum computers, as well as exploring their applications in quantum machine learning.

COMPANY PROFILE - DLR

Website: www.dlr.de

The DLR is the Federal Republic of Germany's research center for aerospace. Its research and development activities in aviation, space exploration, energy, transportation, digitalization, and security are integrated into national and international collaborations.

COMPANY PROFILE - ISTITUTO DI FOTONICA E NANOTECNOLOGIE

Website: www.ifn.cnr.it

The Istituto di Fotonica e Nanotecnologie (CNR-IFN) carries out innovative research in the fields of photonics and of nanotechnologies considering both the fundamental aspects and those applied involving the development of novel photonic devices and systems, optoelectronic equipment, and electronics devices. CNR-IFN belongs to the National Research Council (CNR), a public organization who is in charge to carry out, promote, spread, transfer and improve research activities in the main sectors of knowledge growth and of its applications for the scientific, technological, economic and social development of Italy.

Photo credits: University of Vienna, DLR, CNR-IFN

