



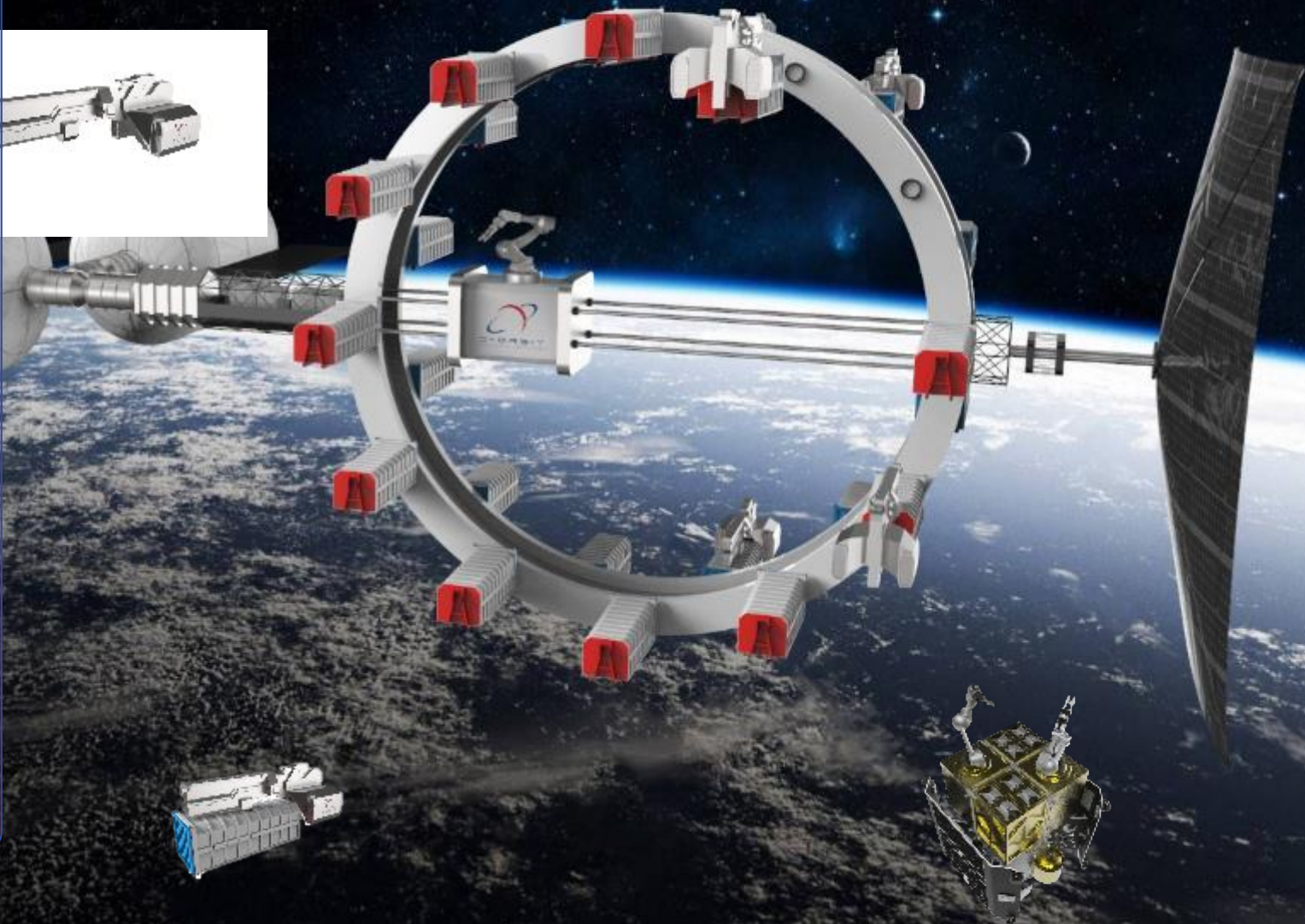
D - O R B I T
N E W S P A C E S O L U T I O N S

SPACE LOGISTICS & TRANSPORTATION

MATTEO ANDREAS LORENZONI - CDW 2023

Our Vision

Creating the first space logistics infrastructure to enable the trillion dollar space economy and human expansion in sustainable space



D-ORBIT AT A GLANCE

WELL POSITIONED TO BENEFIT FROM RAPIDLY GROWING SPACE ECONOMY

World's first to provide
in-space satellite transportation
for paying customers

World's first to demonstrate
satellite-as-a-service
capabilities in space



2021+

TODAY



Last-mile delivery solution for
satellites and advanced
infrastructure services



2023+

TOMORROW



Next-gen in-orbit services
across entire satellite
lifecycle



BEYOND



In-orbit recycling,
manufacturing
& infrastructure

D-ORBIT'S PREMISES

270+
people

D-ORBIT UK

ION Advanced Services
Harwell, UK

D-ORBIT

Headquarters
Production venue, mission control
(2,500m²)



D-ORBIT USA

Commercial subsidiary, Washington
DC

D-ORBIT PT

Critical software and AURORA mission control software,
Lisbon, Portugal



SOLUTIONS FOR COMMERCIAL SPACE

DPOD Launch Services

Satellite Transportation and Logistics Services with ION

D-POD LAUNCH SERVICE

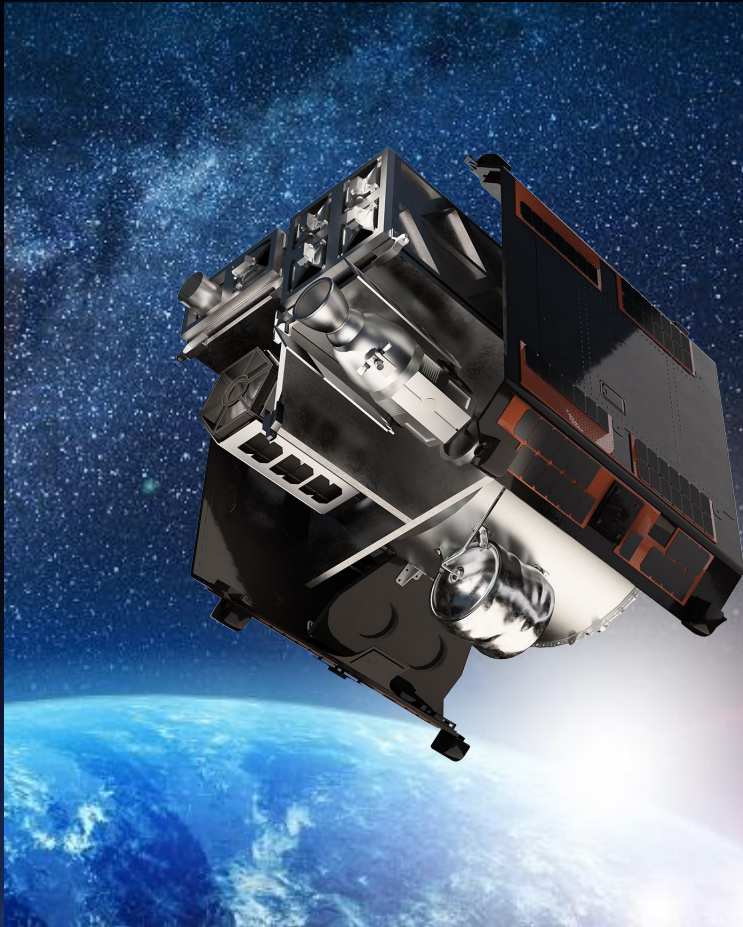
D-POD Launch Service is a **launch and deployment service** provided in collaboration with third-party launchers.

Our D-POD launch tubes are available in four form factors:

DPOD-3	1U	2U	3U	
DPOD-8	4U	4U	8UL	
DCUBE-12	3U	3U	6U	12U
	3U	3U	3U	
DCUBE-16	4U	4U	8UL	16U
	4U	4U	4U	



ION SATELLITE CARRIER



- The first cargo spacecraft designed to transport satellites to space and release them into precise, independent orbital slots, enabling to start their space mission quickly and in optimal operational conditions
- ION Cargo Spacecraft is equipped to transport a combination of satellites of any form factor, up to 160 kg mass* in total, including nano- and micro-satellites.
- ION Cargo Spacecraft is a fully redounded satellite up to 500kg in mass at launch including propellant, capable of delivering its payload into multiple orbit. With more than 1km/s Delta-V ION Cargo Spacecraft can deploy its payload into the Lunar Orbit.
- Extra services include mission analysis and design, platform engineering, software development, acceptance testing, and transportation.

* It is possible to increase the payload mass to 200 kg for ION Mk02.

ION SATELLITE CARRIER



PHOTOGRAPH OF CUSTOMER'S SATELLITE DEPLOYED BY ION-MK01, LAUNCHED IN 2020

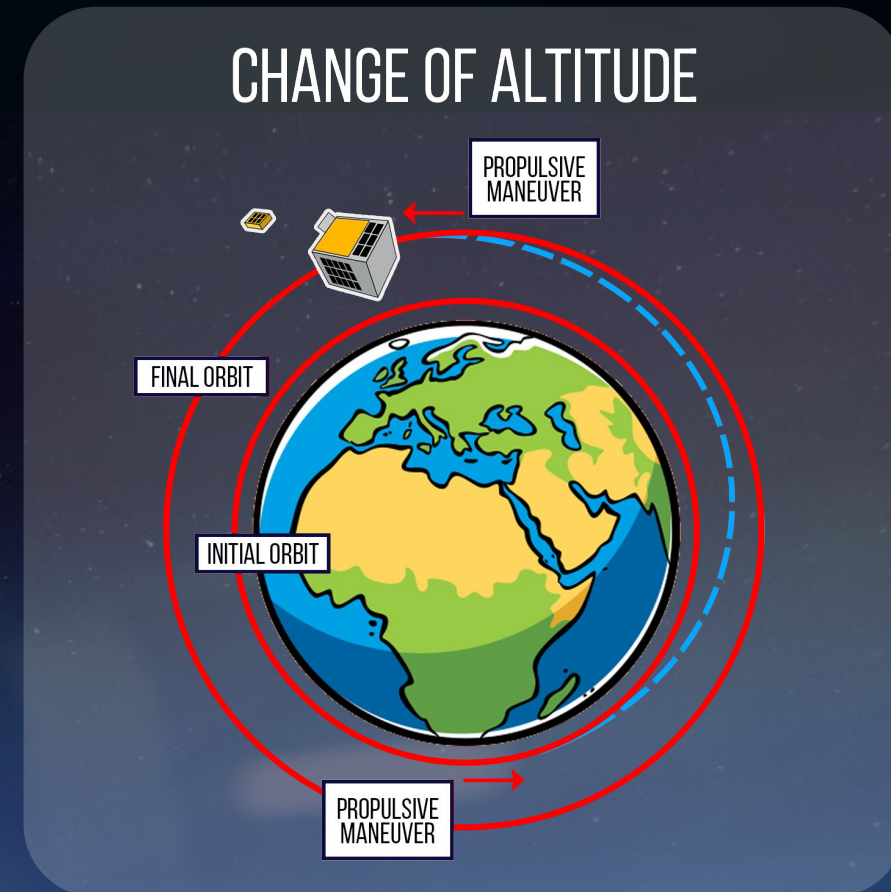


PHOTOGRAPH OF CUSTOMER'S SATELLITE DEPLOYED BY ION-MK02, LAUNCHED IN 2021

ION TRANSPORTATION SERVICES

CHANGE OF ALTITUDE AND PLANE

Propulsive Module: the propulsive module enables ION Satellite Carrier to change the altitude and correct the inclination, increasing the flexibility of pre-deployment maneuvers. Operators can now send their propulsionless CubeSats to previously inaccessible orbits. Constellation operators can deploy a whole multi-plane constellation using up different ION Satellite Carriers on a single small launcher.



ION TRANSPORTATION SERVICES

RAAN SHIFT

ION Satellite Carrier can change the right ascension of ascending node (RAAN) of its orbit thanks to its propulsion module. The procedure exploits the Earth's oblateness (J_2 effect), which torques a satellite orbit. A change in altitude or inclination induces a differential precession of the phasing orbit with respect to the initial trajectory. Once achieved the required RAAN separation, the vehicle performs a counter-maneuver to inject itself into the desired orbital slot.

For more information on ION Launch Service watch:
<https://youtu.be/Uz5W8lgtwhk>

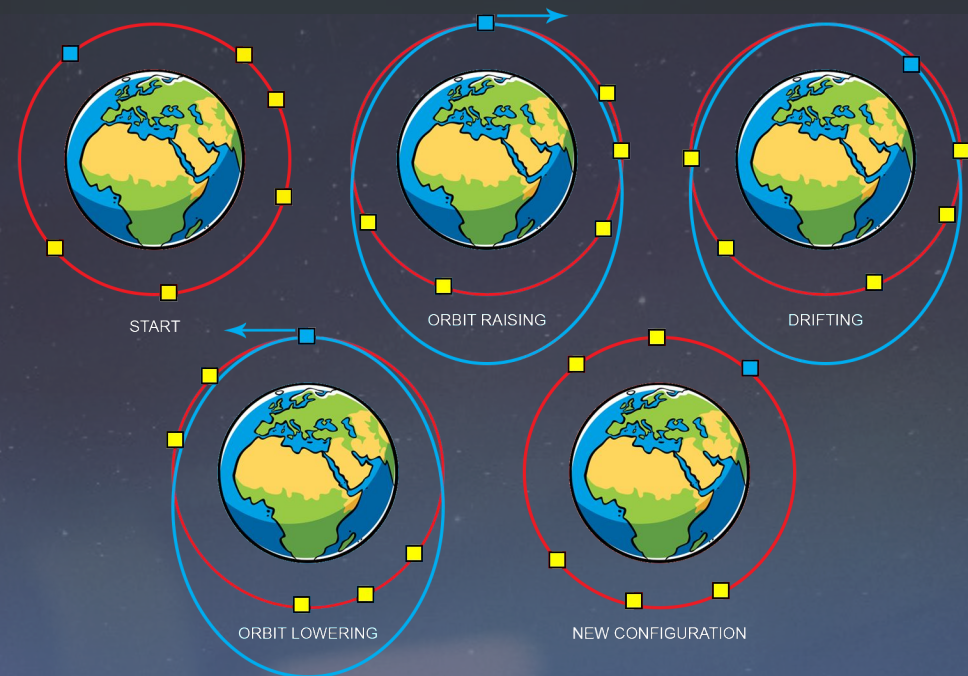


■ Original Orbit ■ RAAN Drifting Orbit ■ New Orbit

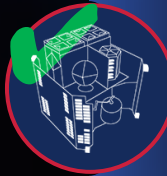
ION TRANSPORTATION SERVICES

TRUE ANOMALY PHASING

Using its internal propulsion, ION Satellite Carrier can modify its relative position with respect to other satellites within an orbit. With an orbit-rising maneuver, ION moves itself into a higher, slower orbit, and then drift for a few days or weeks, until it is aligned with the new orbital slot. An orbit-lowering maneuver, circularizes the orbit, placing ION into the desired new configuration.



SECOND LIFE OF ION



IN-ORBIT VALIDATION AND DEMONSTRATION

HOSTED PAYLOADS AND EXPERIMENTS

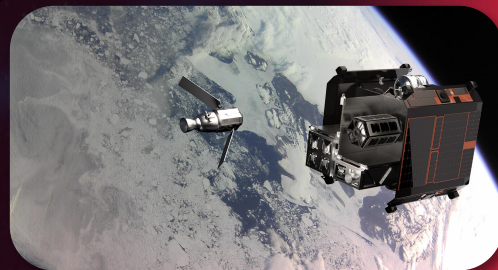


VERSATILITY
FROM IN-ORBIT DEMONSTRATIONS MISSING POOL OF LESS THAN 1% TO DEDICATED MISSING USING MASSIVE OPTICAL OR RADAR INSTRUMENTS

- Enable experiments and the testing of equipment in space
- Make innovative technology flight proven in space and ready for market in a few months



SATELLITE-AS-A-SERVICE



- Customers buy operation or data generation by an IONs with a specific purposes
- With ~15 ION units already in orbit by 2023, constellations can be offered 'as-a-service'



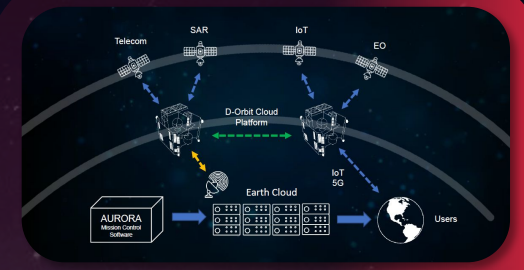
SATELLITE FOR RENT



- Customers rent slot on IONs to place sensors that will generate data
- D-Orbit operates IONs and delivers the data to the customers via Aurora



SPACE CLOUD COMPUTING



- In-orbit edge computing, data storage & processing
- Next paradigm for space data collection and analysis

Leveraging on an existing constellation infrastructure



SOLUTIONS FOR COMMERCIAL SPACE

In-Orbit Validation and Demonstration
Extra launch-related services

D-ORBIT IOD/IOV

Innovative space technology needs to be tested and proven in space in order to be ready for the market. Today, this is a complex activity, requiring a minimum of two years and two to six million euro investment. D-Orbit IOD/IOV service enable companies and research entities to get to space within 6 or 12 months, at an extremely competitive price. All included: launch, operations, and the software to visualize and download the results of the test in orbit.



- **Standard, well defined interfaces:** Plug-and-play CubeSat mechanical interface, standard 3.3/5/12/28V electrical interface



- **Access to host resources:** Uplink, downlink, memory, and more



- **Wide coverage:** A network of ground stations provides multiple daily access opportunities



- **Attitude control:** Ability to point the platform to perform your tasks with optimal exposure to sun, darkness, Earth, and horizon



- **Launch flexibility:** Multiple launch options in LEO, SSO every year, with possibility to switch launch in case of delay



- **Multi-orbit:** Repeat your experiment at different altitude and planes



- **Flexible pricing:** Pay what you use

TESTED IN SPACE – READY FOR MARKET

IMAGES FROM OUR IOD/IOV – DRAGO-2

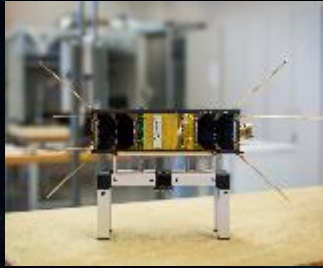


OUR HERITAGE

THE BUSINESS OF SPACE LOGISTICS



2013
1st SPACE MISSION



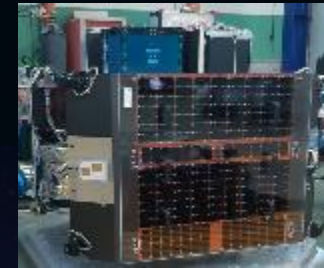
2017
1st SATELLITE IN SPACE



2020
ION Mk01 MISSION 1*



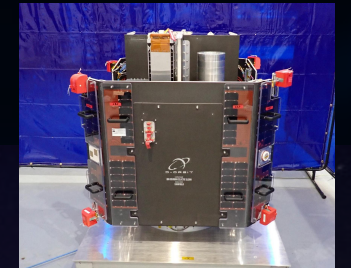
2021
ION Mk02 MISSION 2**



2021
ION Mk02 MISSION 3***



2022
ION Mk02 MISSION 4
ION Mk02 MISSION 5
ION Mk02 MISSION 6



2023
ION Mk02 MISSION 7
ION Mk02 MISSION 8
ION Mk02 MISSION 9
ION Mk02 MISSION 10****

D-Orbit is the currently the only company on the market providing transportation services for satellites. Our ION cargo spacecraft can transport in orbit more than 150kg of payload and deliver it into multiple orbits. ION cargo spacecraft is a satellite ranging from 300 kg to 500 kg class.

AIMING TO 12 MISSIONS PER YEAR – SEVERAL OPPORTUNITIES FOR LAUNCHING AND HOSTED PAYLOADS FOR UNIVERSITY

* 12 customers' satellites on board; ** 20 customers' satellites on board; *** customers from 11 different nations; **** launching in April



D - O R B I T
NEW SPACE SOLUTIONS

THANK YOU

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