

# The Exploration Company Nyx Earth Spacecraft

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### **BPS Decadal Science Goals**

Thriving in Space: Revolutionary research in extraordinary places



#### Precision Health

Leveraging space to unlock the secrets of aging and disease



### Space Crops

Boldly growing where no one has grown before



### Quantum Leaps

Unraveling mysteries of the universe



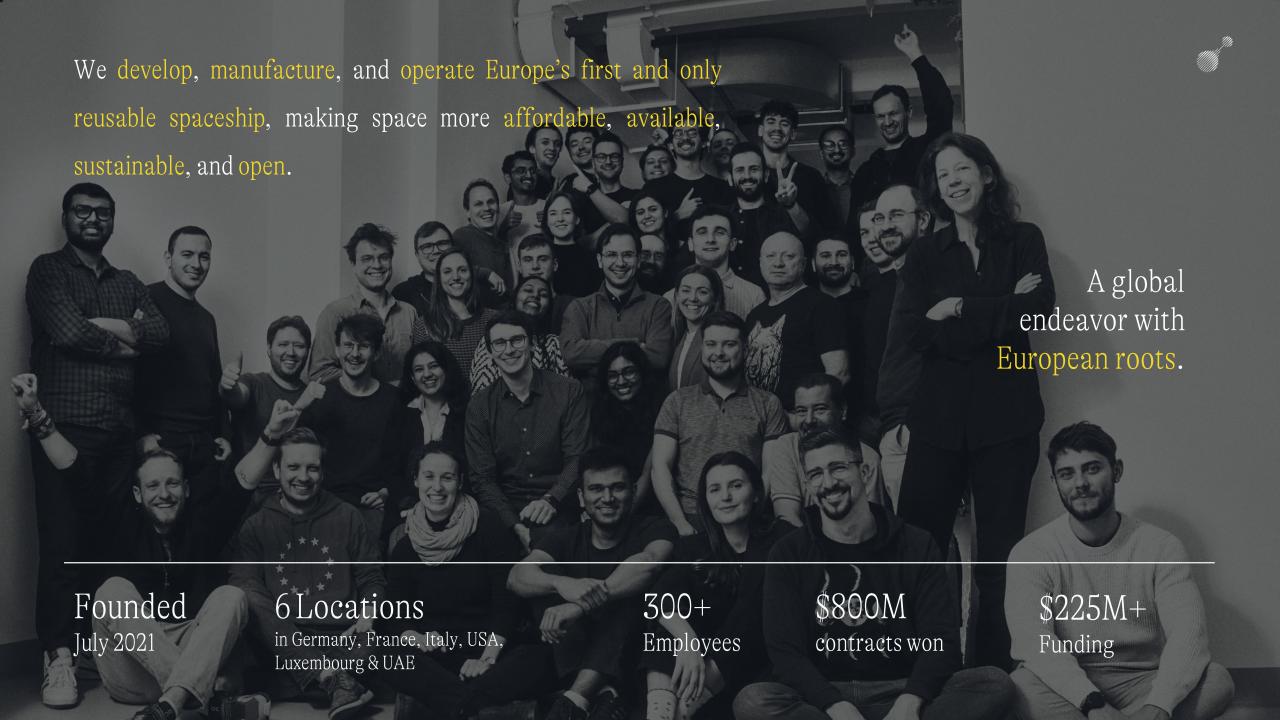
#### **Foundations**

Revealing the novel behaviors of fluids, fire, and materials in space



#### Space Labs

Advancing research in space, on any platform, anywhere



## A Future in LEO and Beyond

10+ space stations are currently being built, and the first private space station will be operational in 2026.





## Reentry Vehicle Series



Mission Bikini

30kg, Sketch to Flight in 9 Months



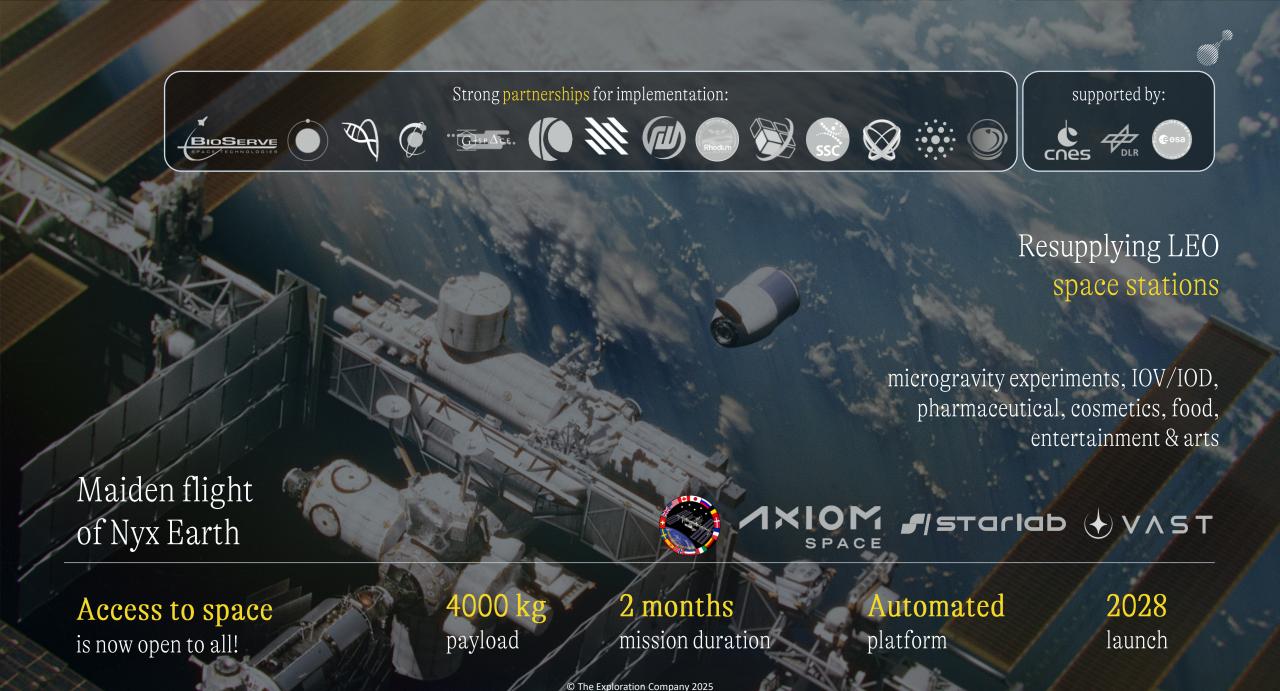
Mission Possible

1.6MT, Built for Controlled Reentry



Nyx

13MT, LEO Logistics & Beyond



## Nyx Earth



### Completed:

• System Requirements Review



 Hot Firing of Green Thrusters



 Preliminary Design Review



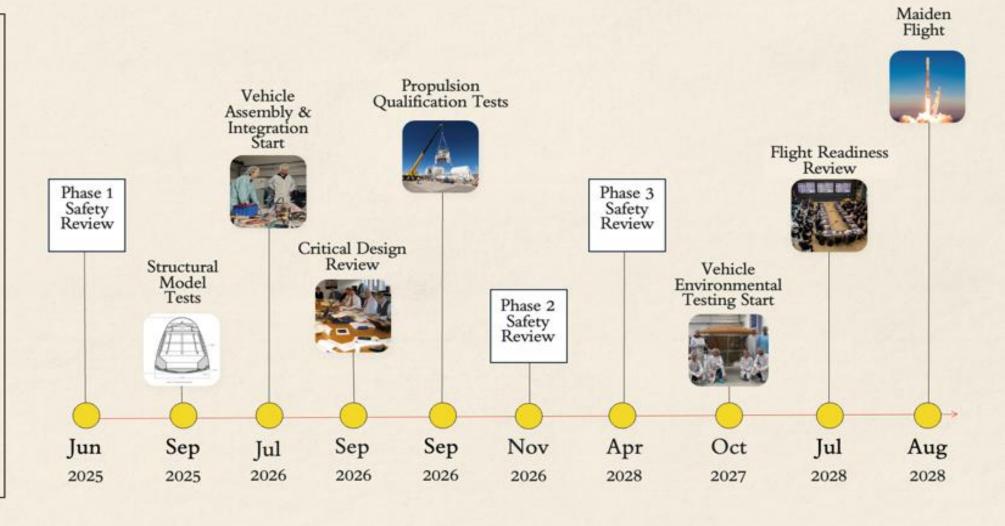
 Phase 0 Safety Review



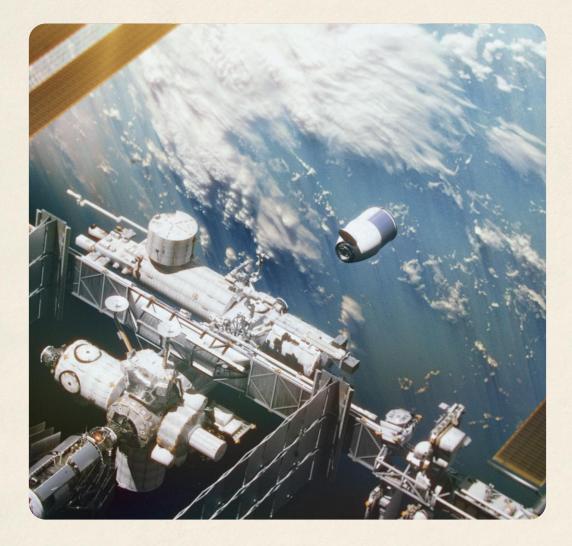
 Long-Lead Items Procurement Initiated



\*PDR Action Item Close-Out Ongoing



### Mission Design Drivers





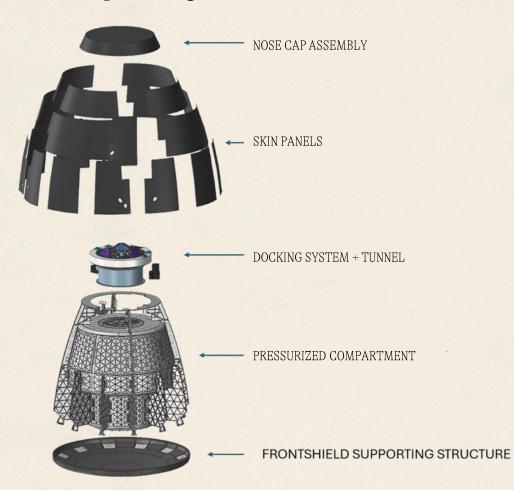
### Mission Requirements

- Up to 10 missions per capsule
- Ready to fly again within 6 months of splashdown
- Enables both cargo delivery and downmass services
- Payload: 4 MT upmass, up to 3 MT Earth return
- Compliant with ISS Visiting Vehicle standards
- Launcher-agnostic: compatible with ArianeGroup,
  SpaceX, and ISRO, among other emerging launchers
- Growth pathway toward human spaceflight
- Target cadence: 5 missions per year

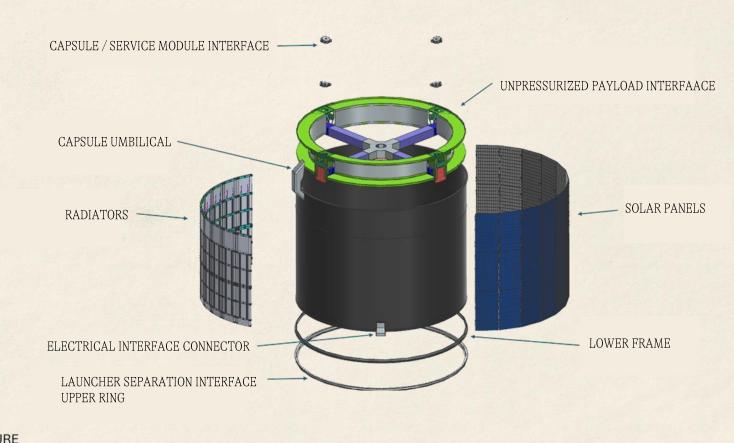
### Vehicle Architecture

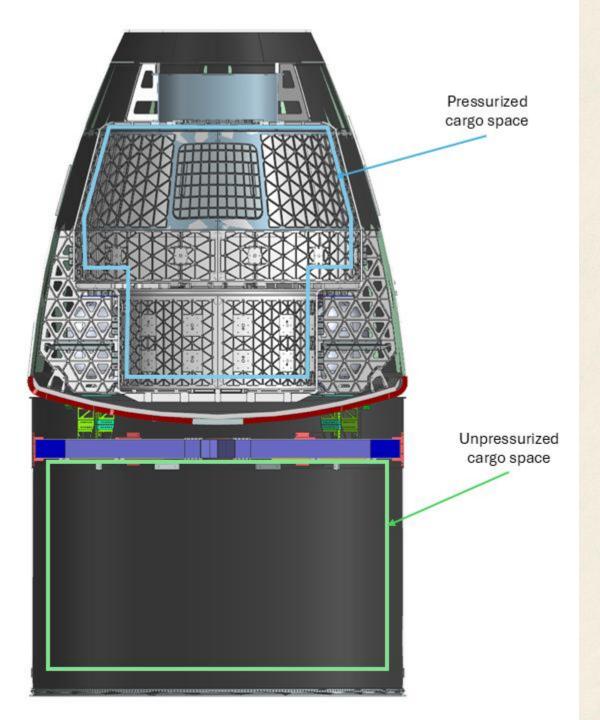


### Capsule high-level architecture



### Service Module high-level architecture





### Technical Overview



- Capsule size: 4 m diameter, 47 m<sup>3</sup> total volume
- Payload volume: 7 m<sup>3</sup> pressurized, 12 m<sup>3</sup> unpress
- Payload:
  - 2.6 MT pressurized upmass AND downmass (reconfigurable with nominal 12 MLE + 126 CTBE)
  - 1.4 MT unpressurized upmass
  - 1 MT unpressurized disposal
- Power: Body-fixed solar, 450-750 W manifest average
- Remains docked in orbit for up to 50 days with design life extensible to 210 days.
- Supports long-duration missions and on-orbit servicing

## Use Cases & Applications



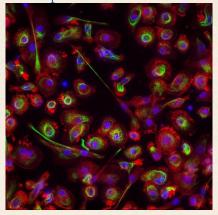
Small Satellites and Control Technologies



Air, Water and Surface Monitoring



Characterizing
Experiment Hardware



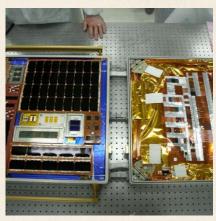
Life Support Systems and Habitation



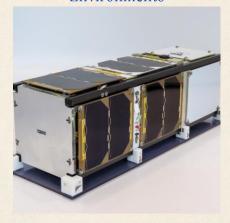
Radiation Measurements and Shielding



Spacecraft Materials



Spacecraft and Orbital Environments



Avionics and Software



Communication and Navigation

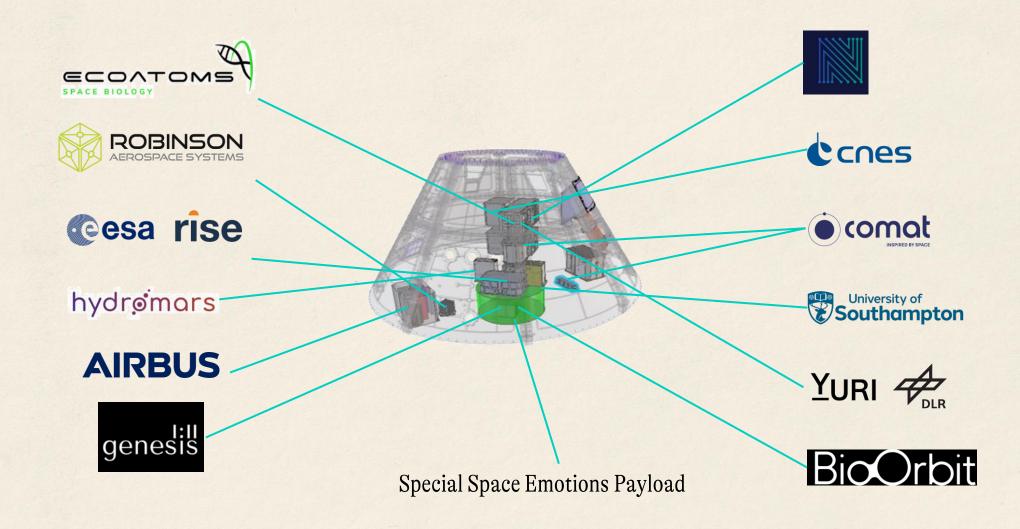


Robotics





## Mission Possible Payload Customers



### Nyx Earth - Europe's Space Logistics Solution





- Modular, reusable, sustainable capsule for orbital logistics
- Designed to support today's LEO missions and scale to tomorrow's lunar operations
- Enables a more competitive global space logistics ecosystem.

Commercial platforms like Nyx Earth and Commercial LEO Destinations are increasing options for flying AND recovering microgravity science, technology demos, education, arts, and commercial payloads.

To take advantage of this flexibility, consider:

- Hardware automation
- Design for mission operations
- Benefits of hardware reuse
- Range of funding sources
- Global collaborations

Engage with commercial providers early! sales@exploration.space

## Researcher Takeaways





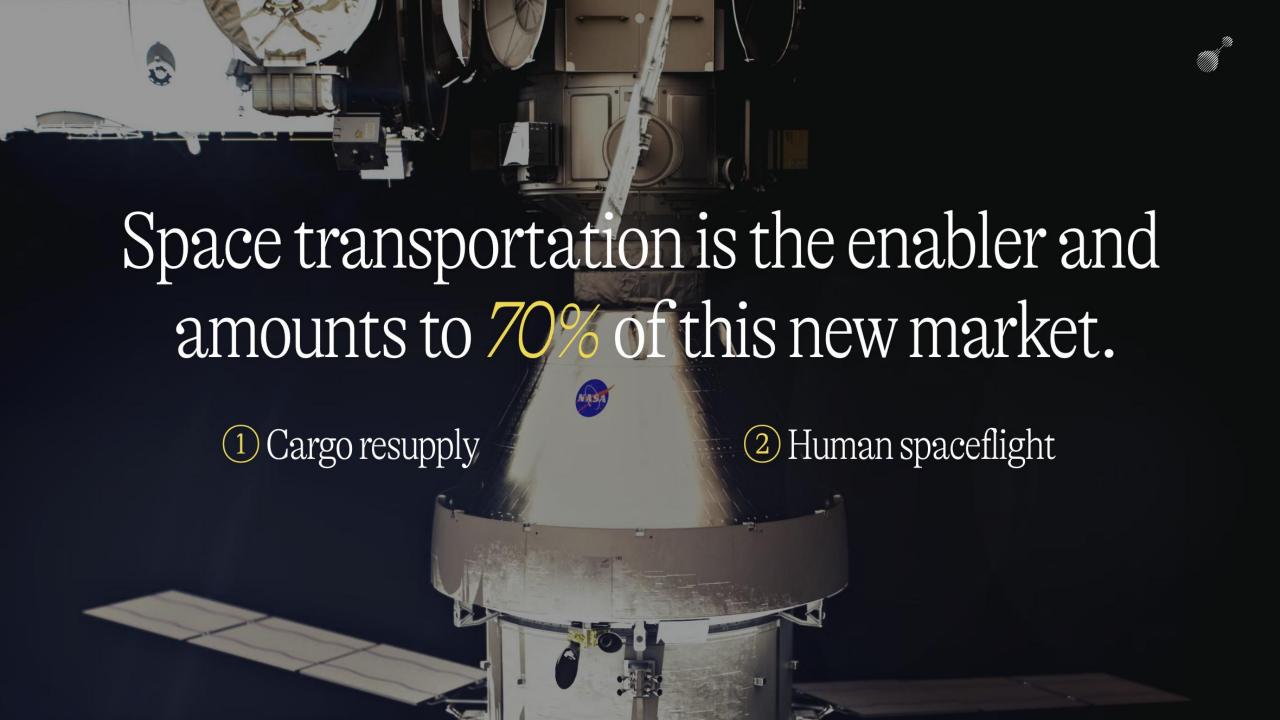
## Thank you for your Attention

Questions Welcome



Scan to explore career opportunities at The Exploration Company.





### LEO Cargo Return Service Requirements

- Launch date before end of 2028
- Compliance with
  - SSP 50808 Rev. G and related documents
  - SSP 50833 Rev. B and related documents
  - ESSB-ST-U-007 Rev. B baseline
- Powered payload capacity ≥ 300 W
- Minimum return payload mass  $\geq 2,000 \text{ kg}$

## Mission Design Drivers



