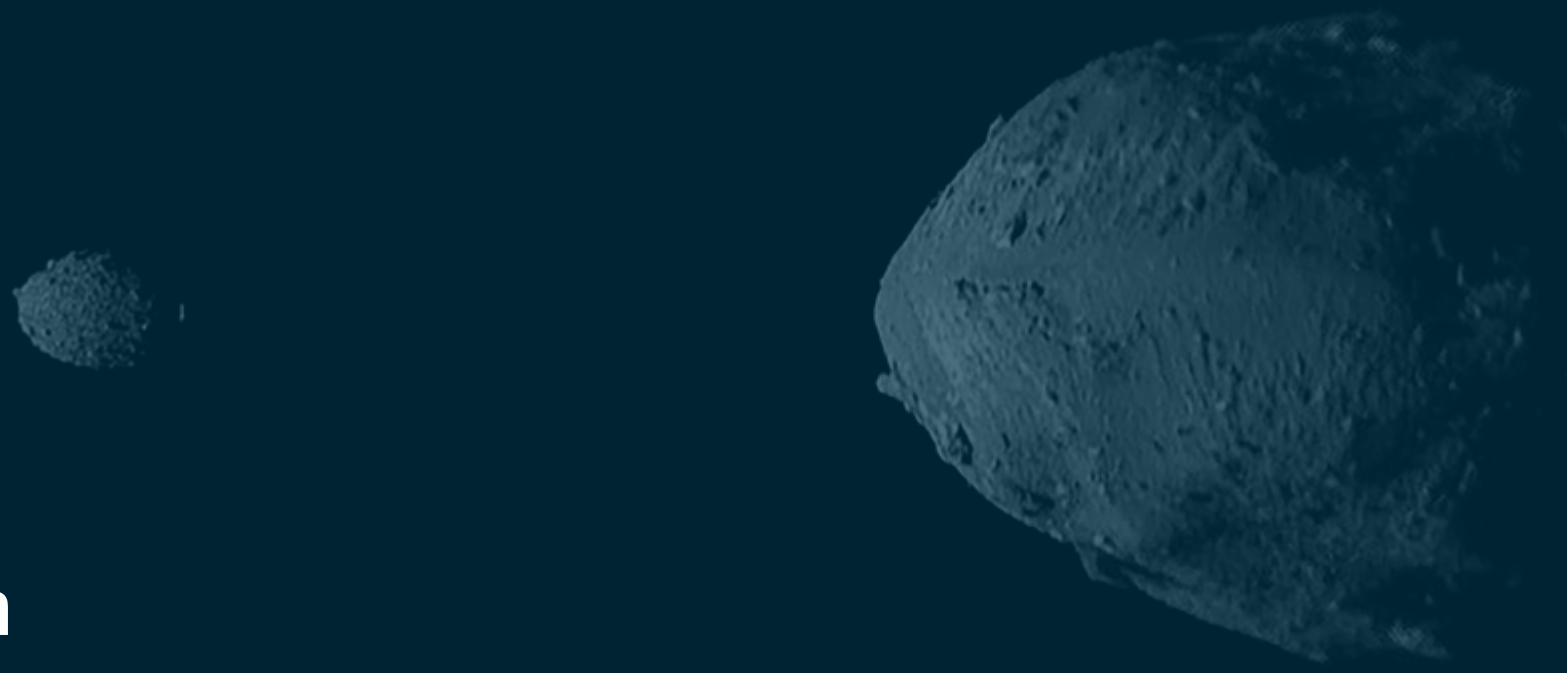


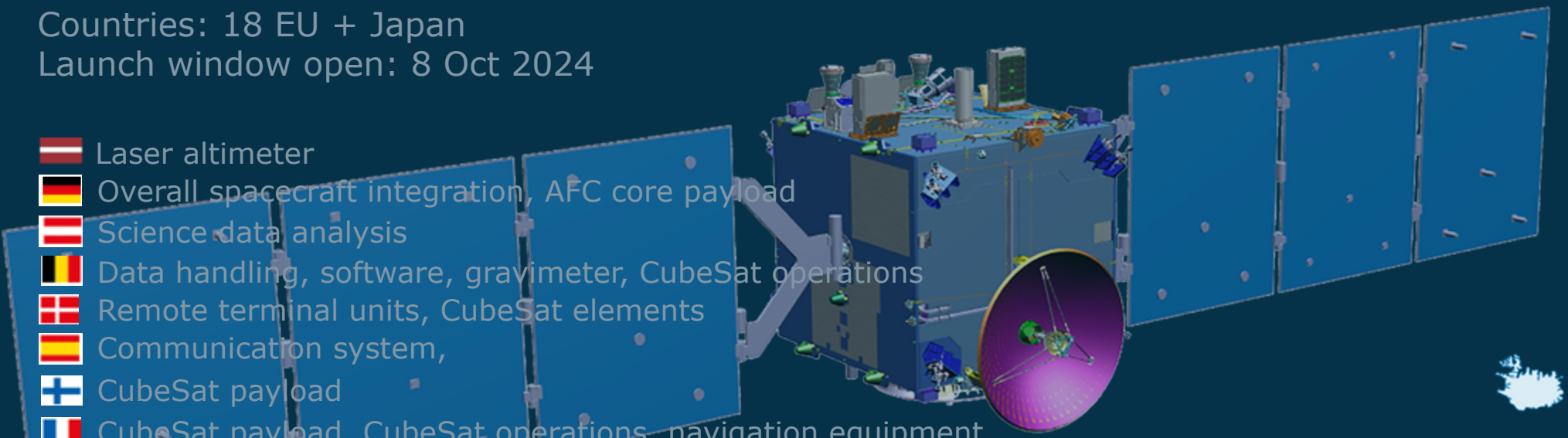
Hera mission

Planetary Defence Conference 2023

ESA UNCLASSIFIED - For ESA Official Use Only

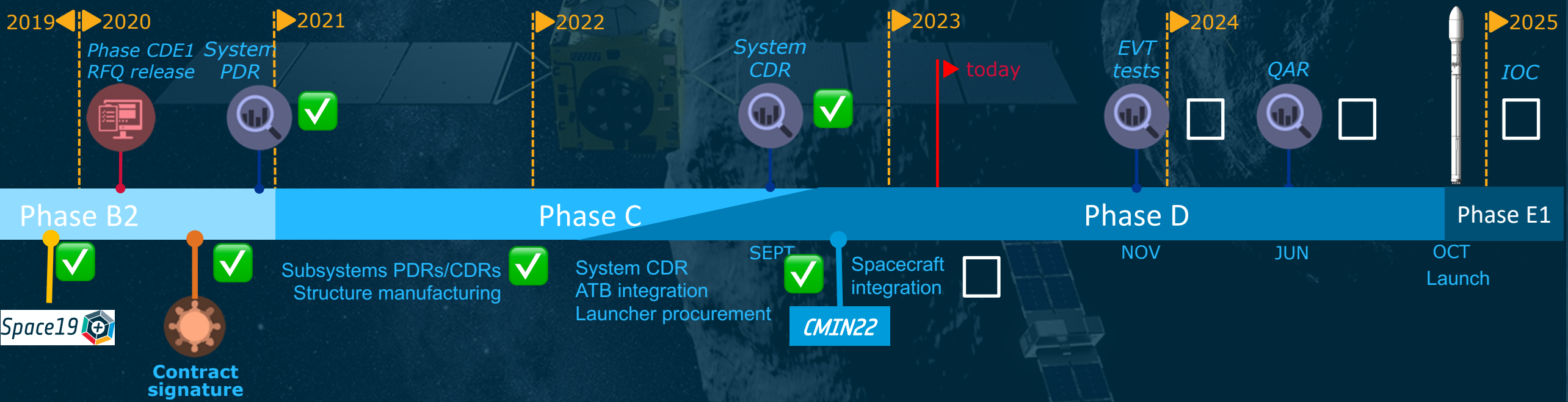
Hera spacecraft

Countries: 18 EU + Japan
Launch window open: 8 Oct 2024



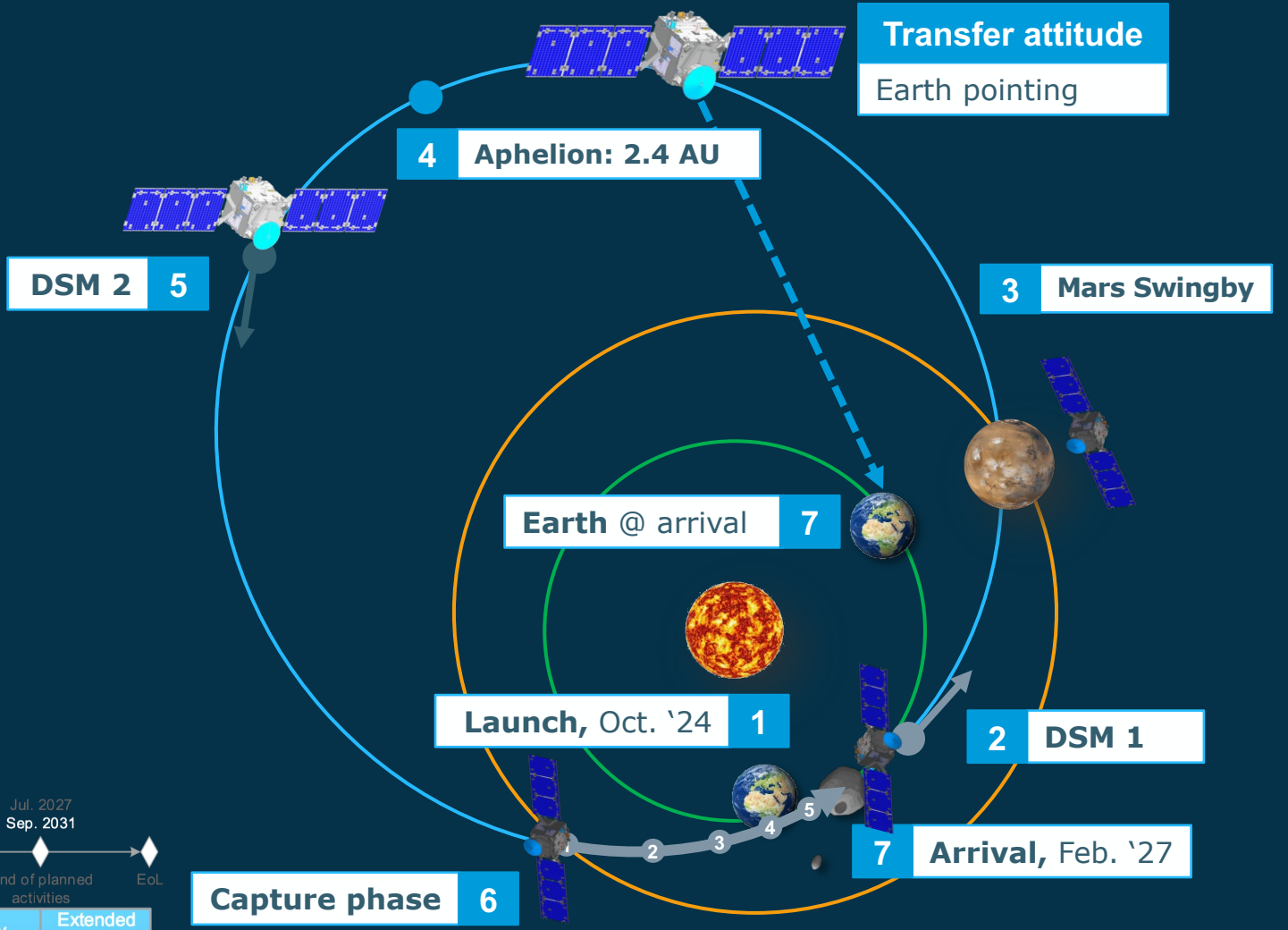
- Laser altimeter
- Overall spacecraft integration, AFC core payload
- Science data analysis
- Data handling, software, gravimeter, CubeSat operations
- Remote terminal units, CubeSat elements
- Communication system,
- CubeSat payload
- CubeSat payload, CubeSat operations, navigation equipment
- Instruments calibration
- Navigation equipment
- Power system, communication system, monitoring camera, Milani CubeSat lead
- Juventas CubeSat lead
- Hyperscout instrument
- Juventas radar mechanisms, software
- Altimeter, thermal system, navigation
- Spacecraft structure, CubeSat payload
- Altimeter, navigation system
- Spacecraft structure, solar arrays
- Thermal imager

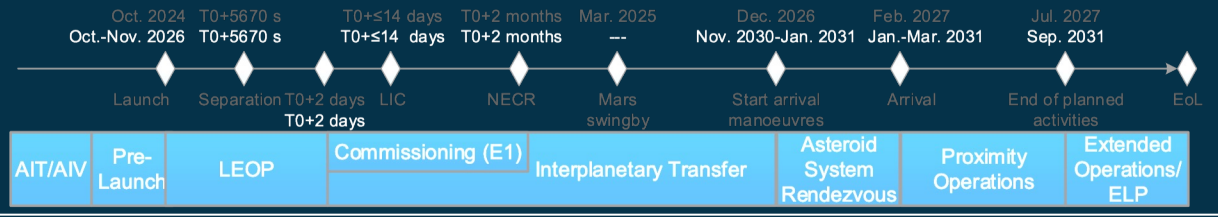
Hera mission



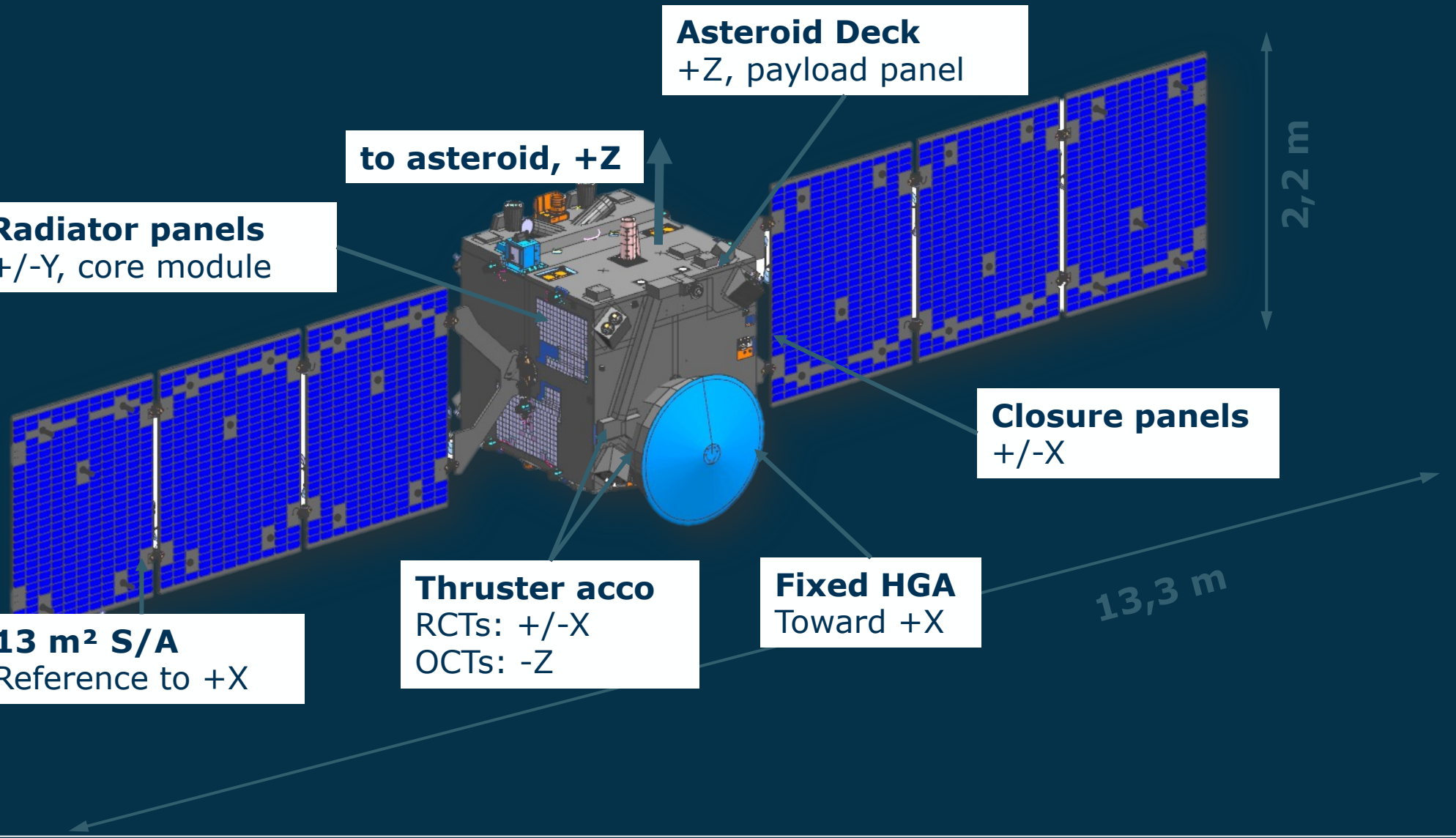
Mission overview

Launch mass	**1214 kg** (**2024** launch) **1229 kg** (**2026** launch)
Power	**826 W** max. in steady state
Structure	**Central tube** primary structure **Modular** concept
Propulsion	**Bi-propellant** system 8N + 8R 10 N RCTs 3N + 3R 10 N OCTs
GNC	**3-axis stabilized gyro-stellar** ADCS **Autonomous guidance** using camera and laser
COMMS	**X-band, fixed HGA** (1.1 m), 2 x LGA
Data Handling	**1 x dual-core OBC**, 2 x RTU, 1 x MMU





Spacecraft overview



Payload overview

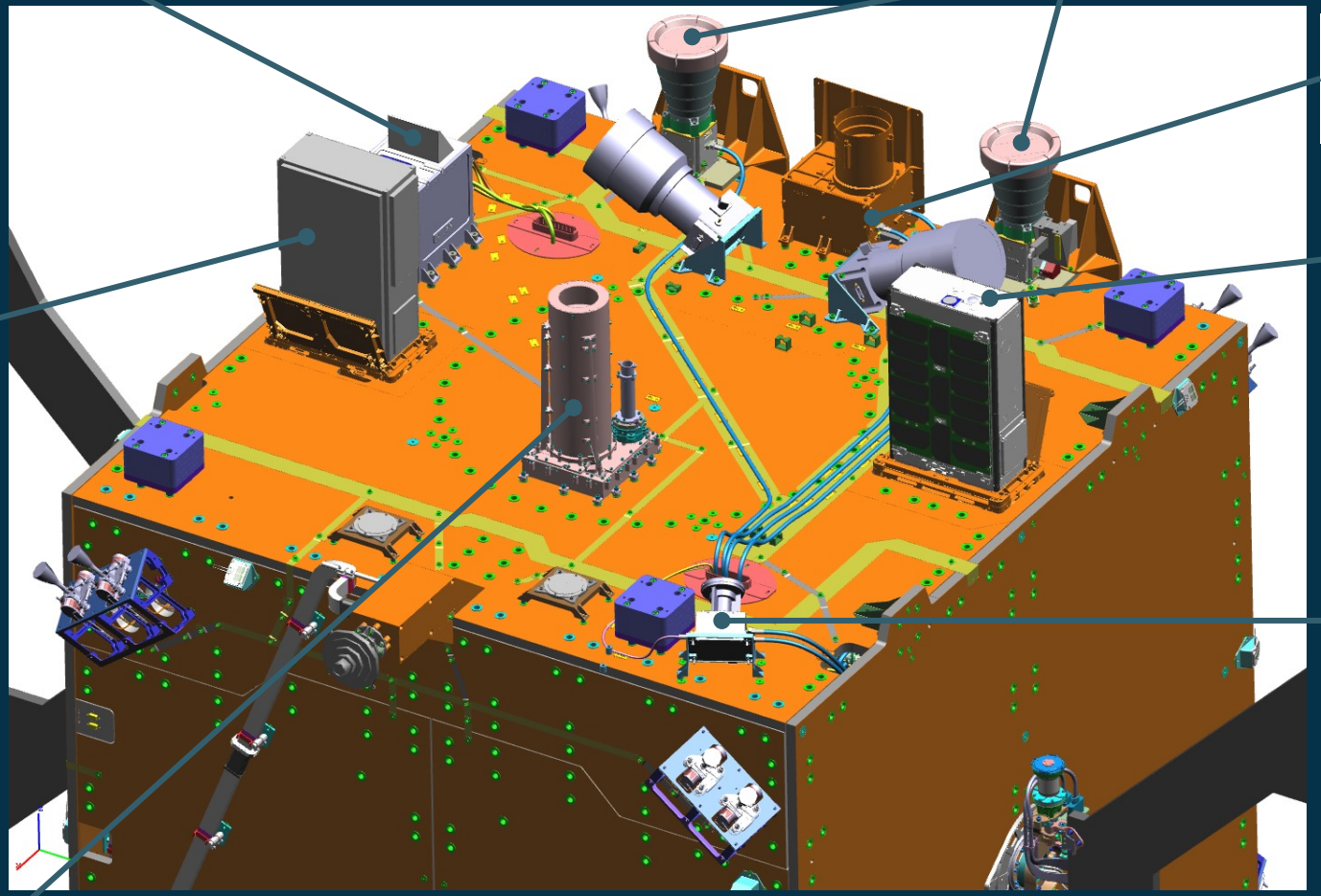
HyperScout
Multispectral imager

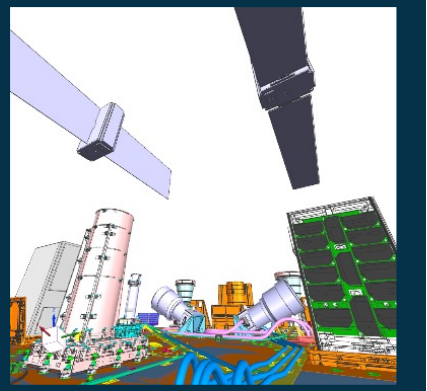
AFC – Asteroid Framing Camera
Redundant visible cameras used for both GNC and science purposes, FOV: 5.5°x5.5°

TIRI
Thermal InfraRed (8-14 µm) with filter wheel

Milani CubeSat
Multispectral imager
Retroreflectors
Dust analyzer
Radio-science

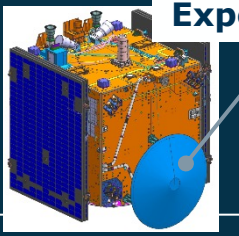
Juventas CubeSat
Radar, Gravimeter, Radio-science





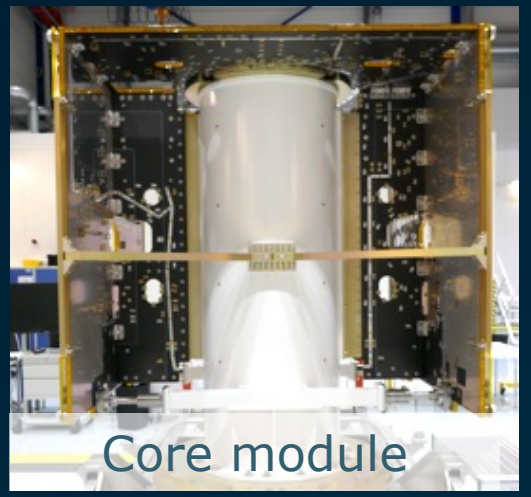
SMC
Monitoring Camera

Radio Science Experiment



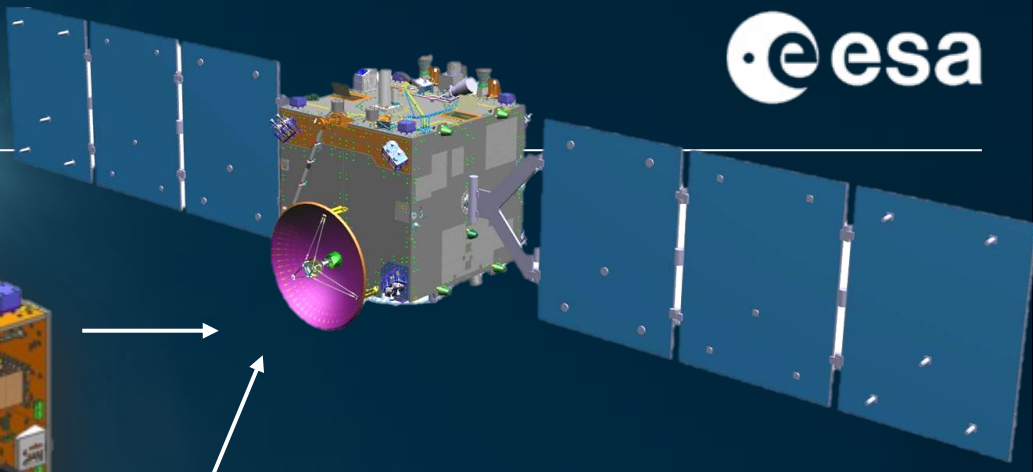
PALT – Planetary Altimeter
Laser-range finder for science & GNC

Hera integration flow



Core module

Integration ongoing at OHB

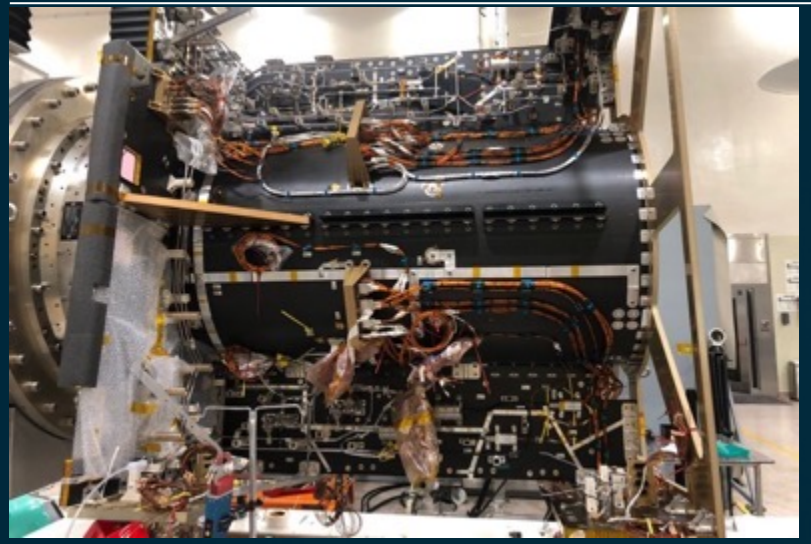


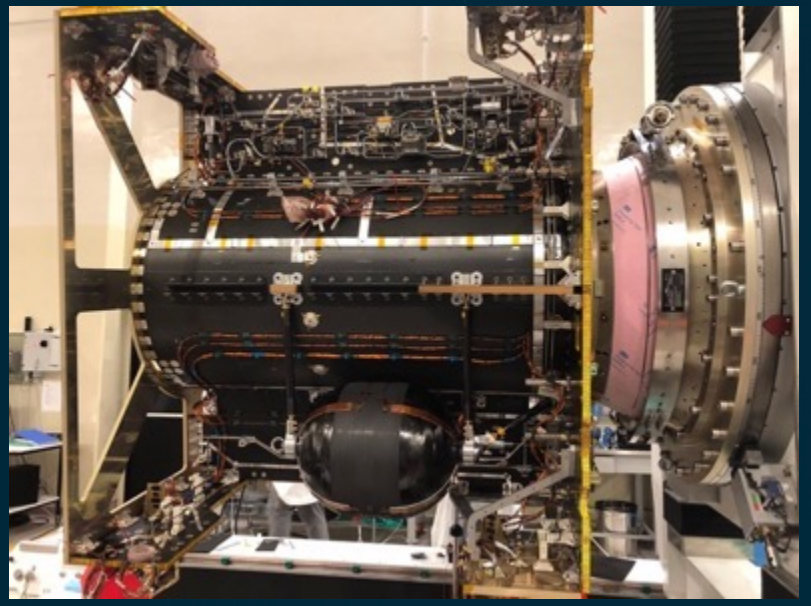
Propulsion module

Integration ongoing at AVIO

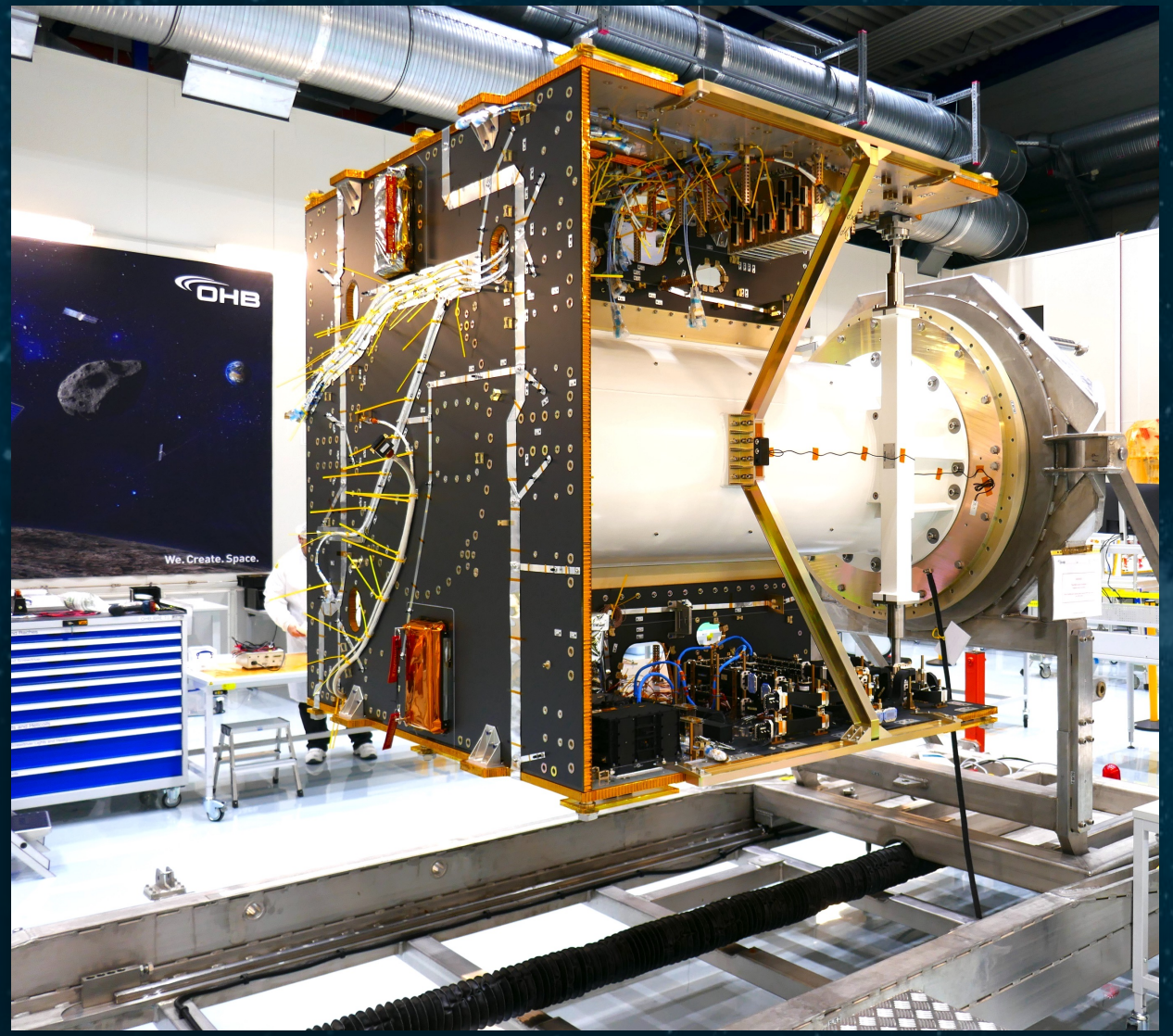
Spacecraft ATB at OHB

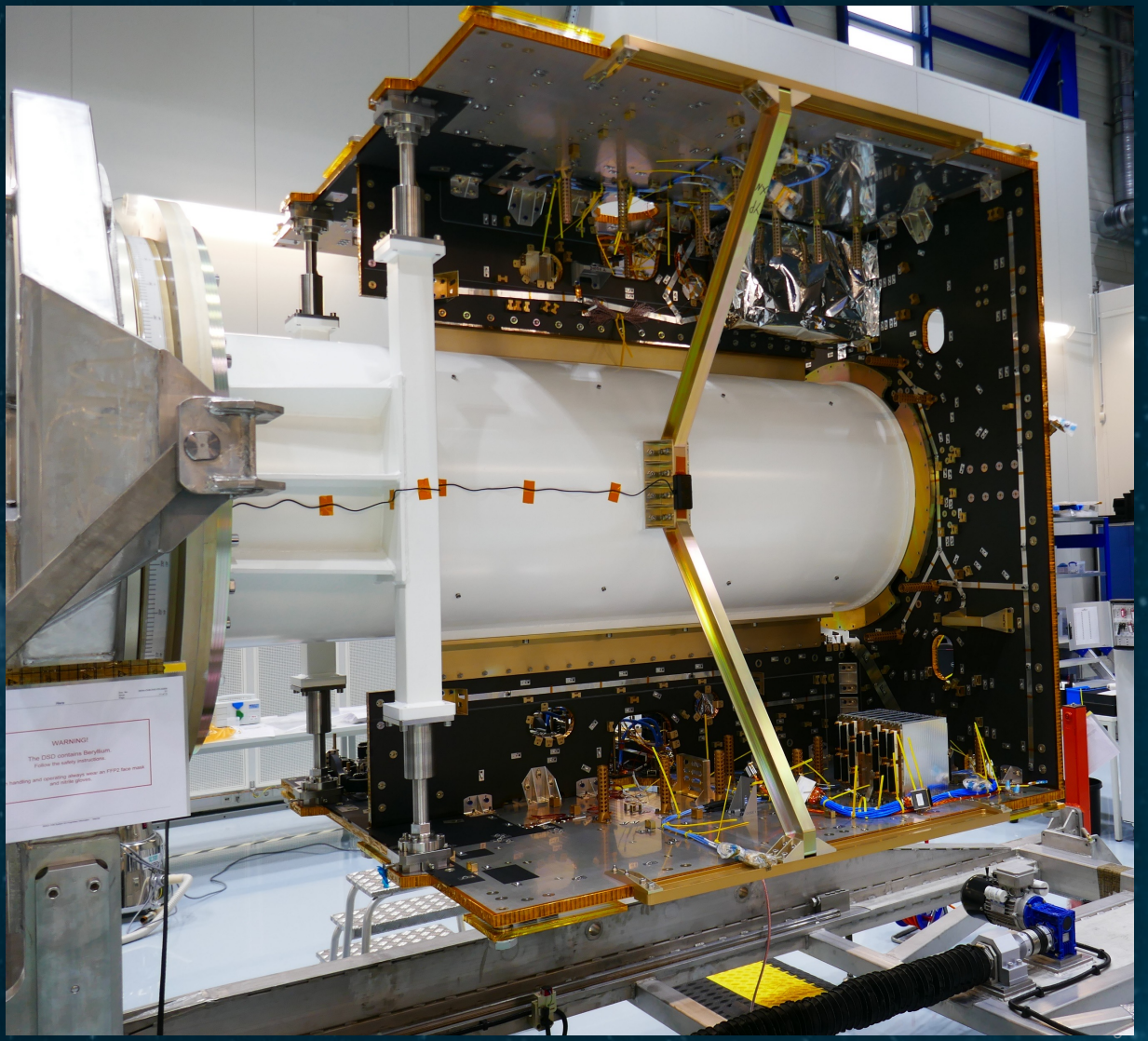
Propulsion module (AVIO)



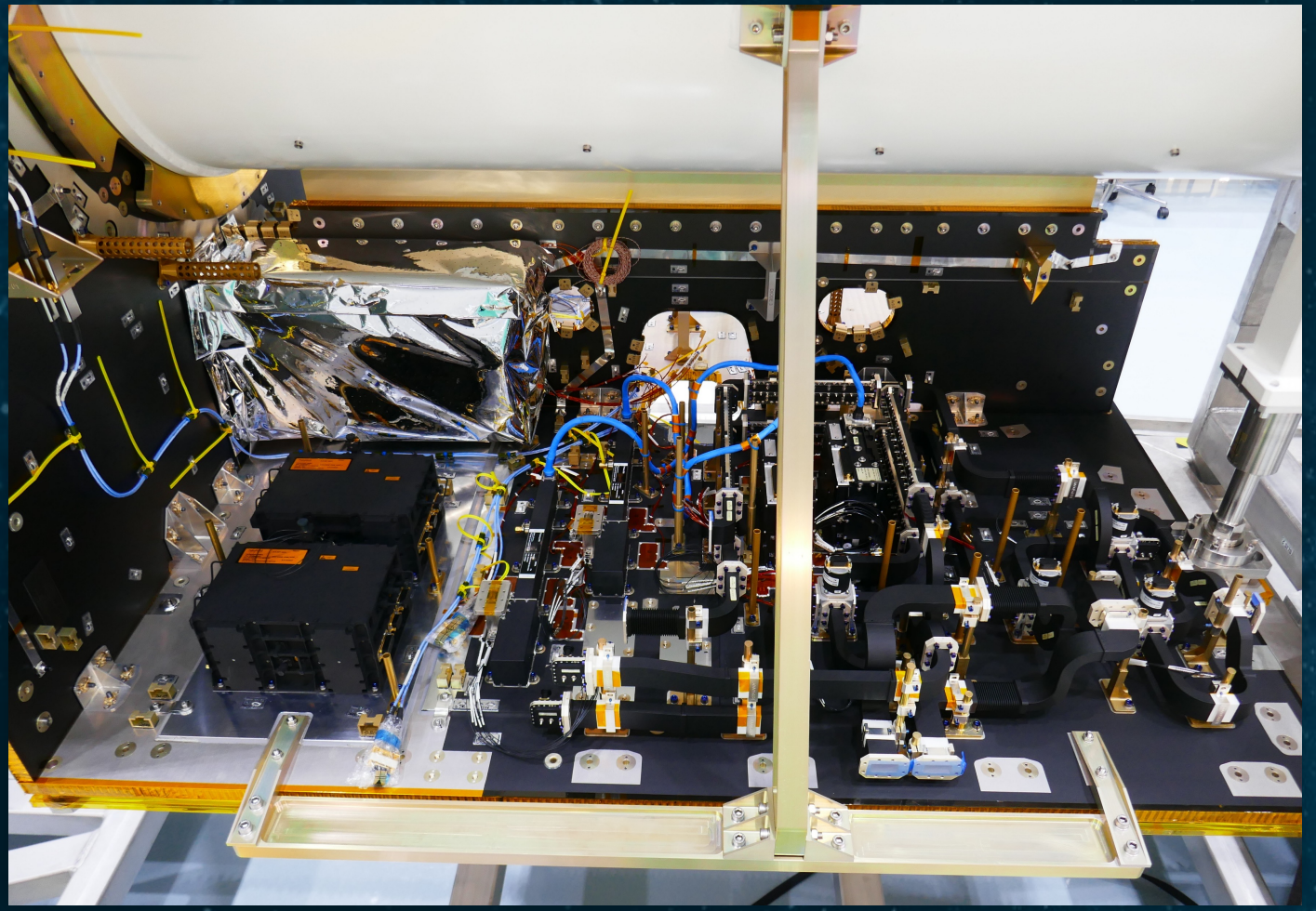


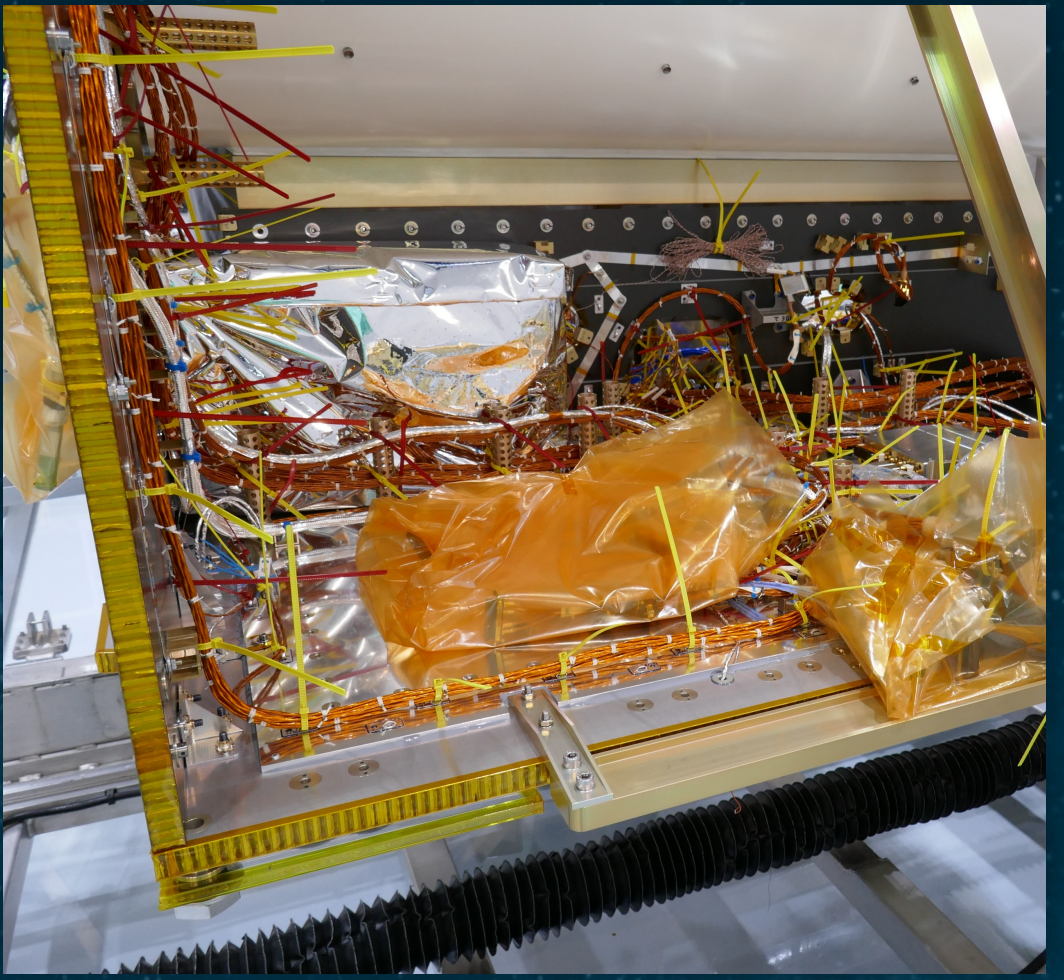
Core module (OHB)



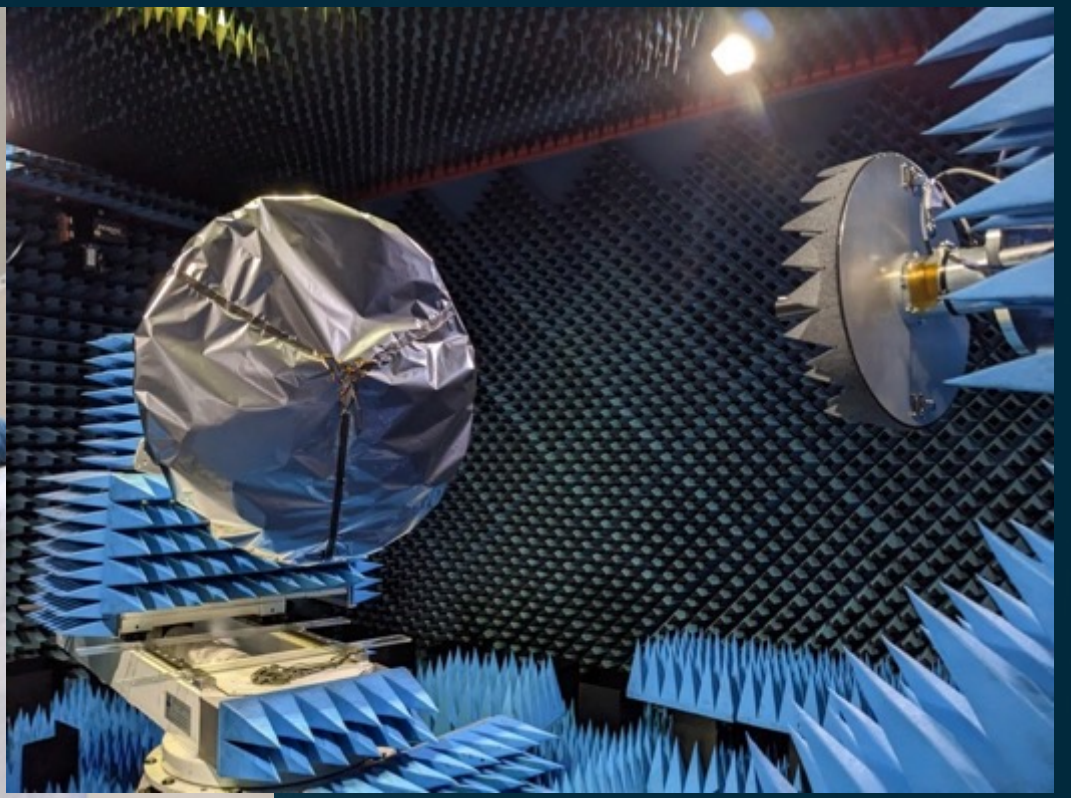


Core module (OHB)





HGA qual



Payload status

AFC

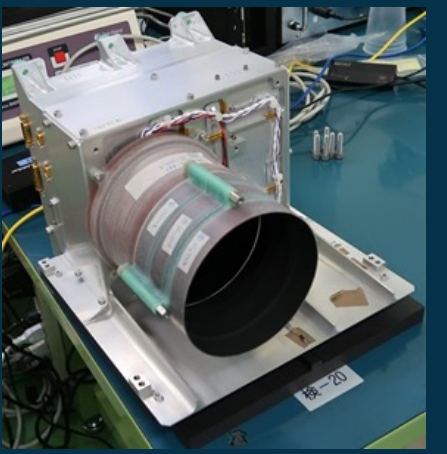
- Both flight units qualified and delivered to OHB for integration.

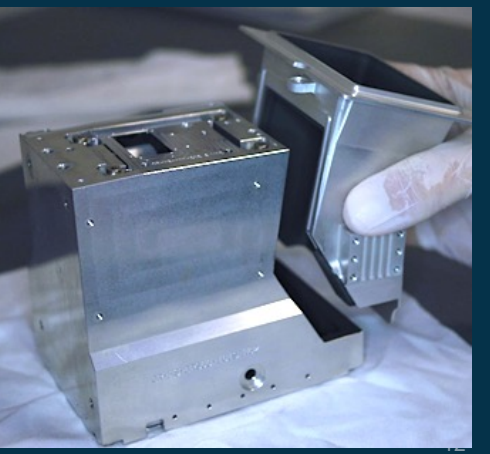
Milani

- rEM fully tested with Hera spacecraft ATB, propulsion qualification completed
- Structural & thermal model and EM under assembly ongoing
  FM integration KO in June 2023

Juventas

- rEM tested with Hera, propulsion qualification ongoing
- Structural & thermal assembly ongoing
- FM integration KO in July 2023, payload FMs under integration





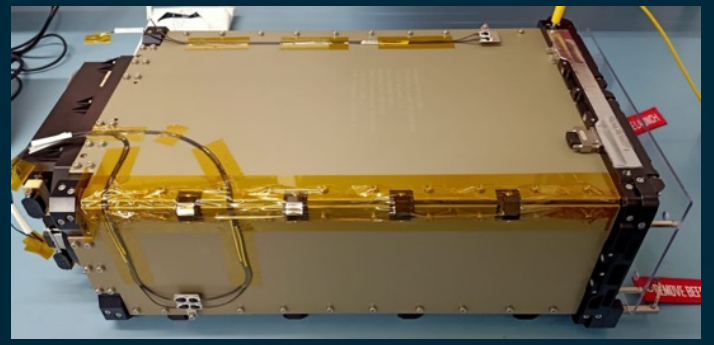
TIRI

- EQM EMC tests completed, vibration and TVAC to be performed
- FM integration started

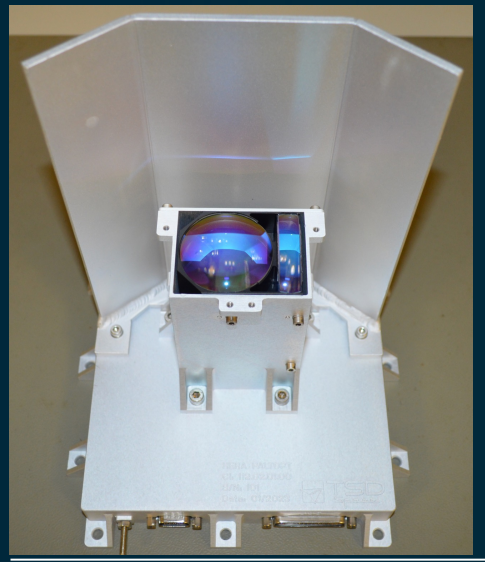
Hyperscout-H

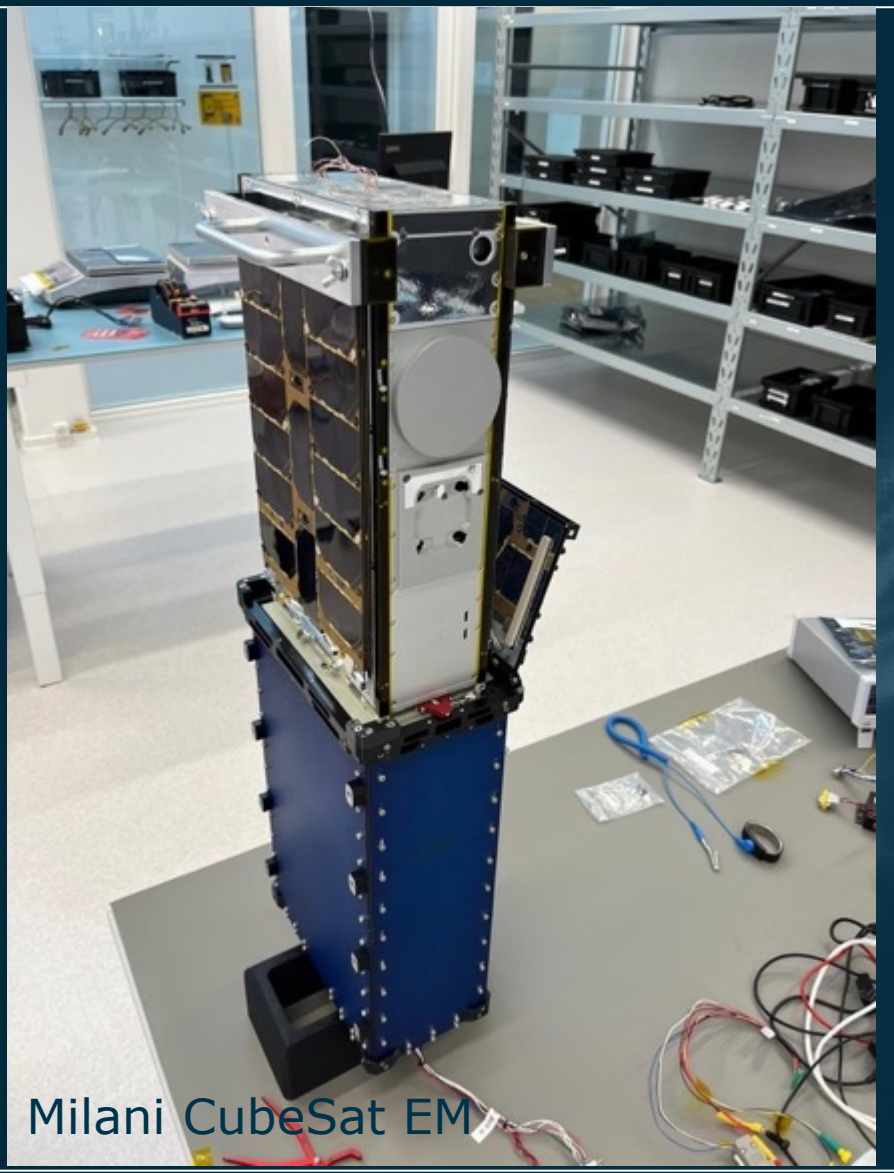
- PFM integrated, qualification tests starting next week
- Engineering model completed, software debugging ongoing

Payload



CubeSat deployer





Milani CubeSat EM

Asteroid Framing Camera

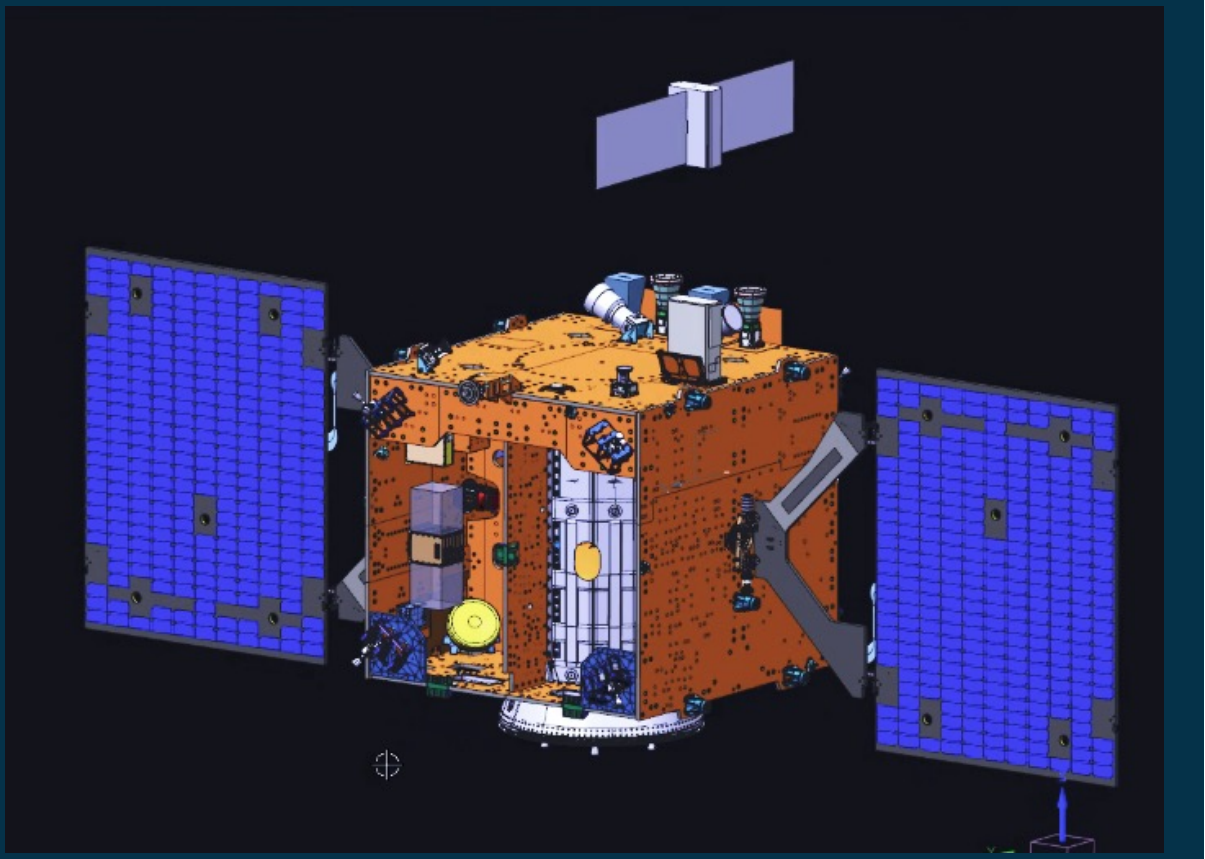
Main milestones in 2023

- All payloads delivered (including CubeSats)
- Propulsion module completed by AVIO and delivered to OHB
- Core module integrated at OHB
- Spacecraft PFM integration completion
- Ground Segment Implementation Readiness Review
- Mechanical and TVAC environmental test campaign at ESTEC
- CMOC PDR and KO implementation phase
- Launch contract signed with Space-X
- Payload operations plan by Hera Investigation Team

The future…

Comet Interceptor

Implementation contract signed with OHB-Italy



RAMSES

Phase A / B proposal under preparation by OHB System