Biomass Mission Status

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Mission Objective - Take stock of the biomass in the world's forests and monitor its evolution

Forest biomass **Forest height**

Disturbances

Secondary objectives

1. Sub-surface geology in deserts
2. Mapping topography under dense vegetation
3. Glacier and ice sheet velocities
4. First opportunity to globally observe the Earth with a P-band sensor

Three innovative missions – one goal

3 innovative missions, 1 goal

biomass

- ESA mission
- First fully polarimetric P-band SAR in Space
- Global maps of forest biomass and forest height
- Launch planned in Q1/2025

NISAR
NASA - ISRO SAR Mission

- NASA-ISRO mission
- L- spaceborne SAR
- Ecosystem disturbances, ice-sheet collapse, and natural hazards such as earthquakes, tsunamis, volcanoes and landslides.
- Launch planned in 2024

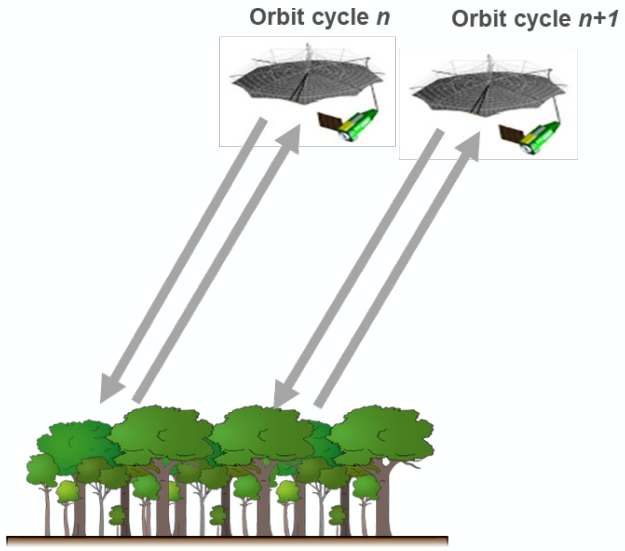
GEDI
ECOSYSTEM LIDAR

- NASA mission
- space-borne LIDAR on ISS
- Vertical structure of Earth's tropical and temperate forests
- Launched in December 2018

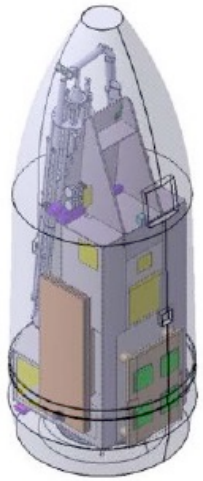
Main Satellite and Mission Characteristics

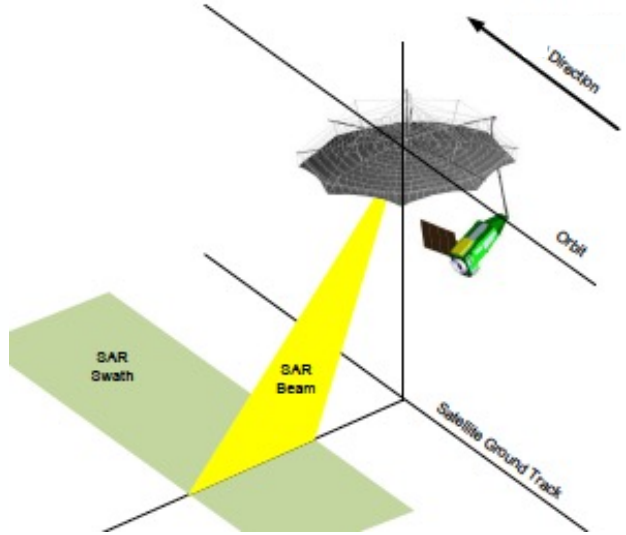
BIOMASS is ESA's 7th Earth Explorer Mission with the goal to observe the above-ground biomass

- Based on a P-band (435 MHz, 6 MHz bandwidth) SAR system for quantification of the above ground biomass

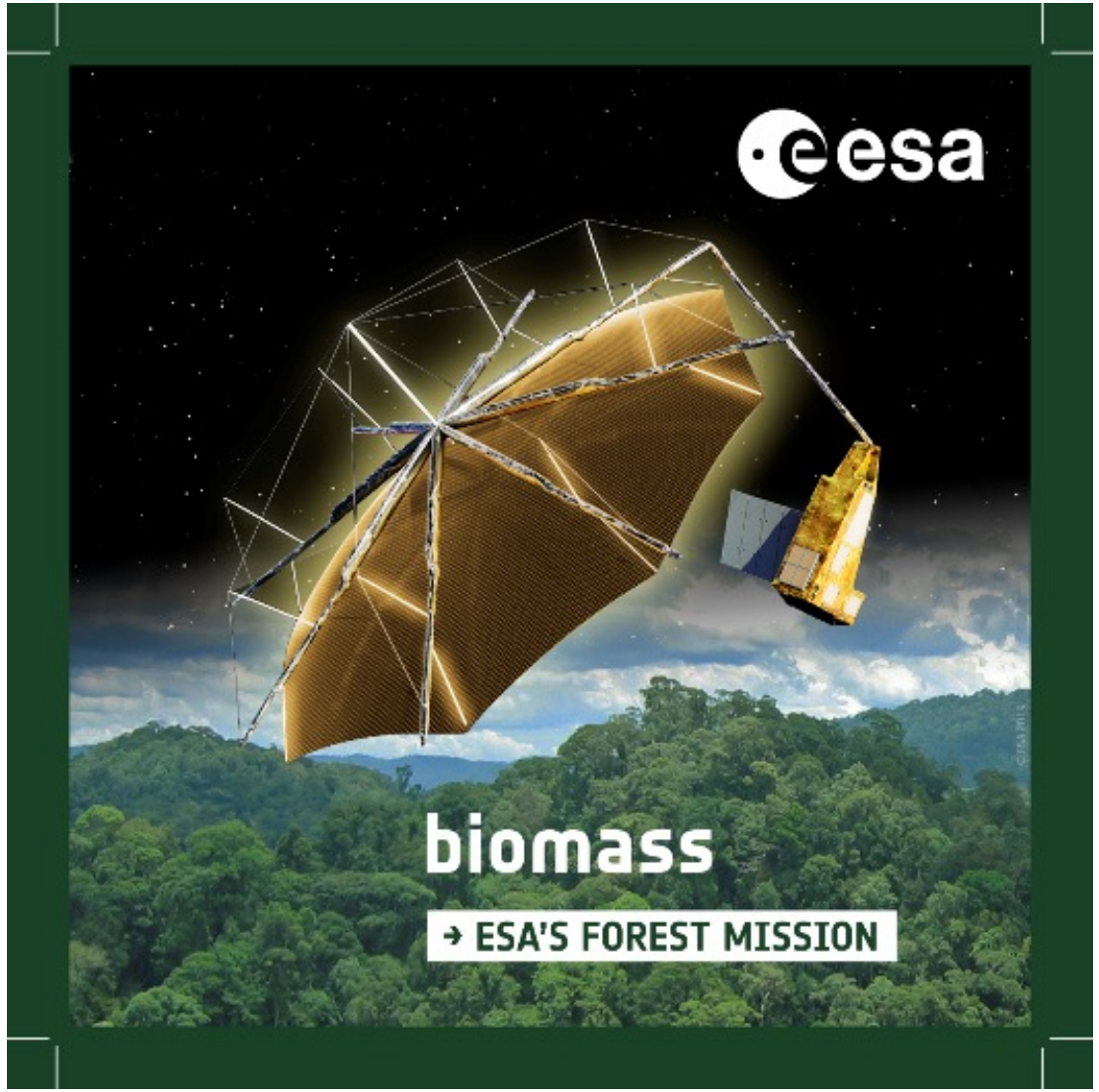


- Multi-pass interferometry, 3 days repeat
- Full polarimetry
- VEGA launch (contracted)
- 666 km Sun-sync. Orbit
- Launch Q1/2025
- 5 years lifetime





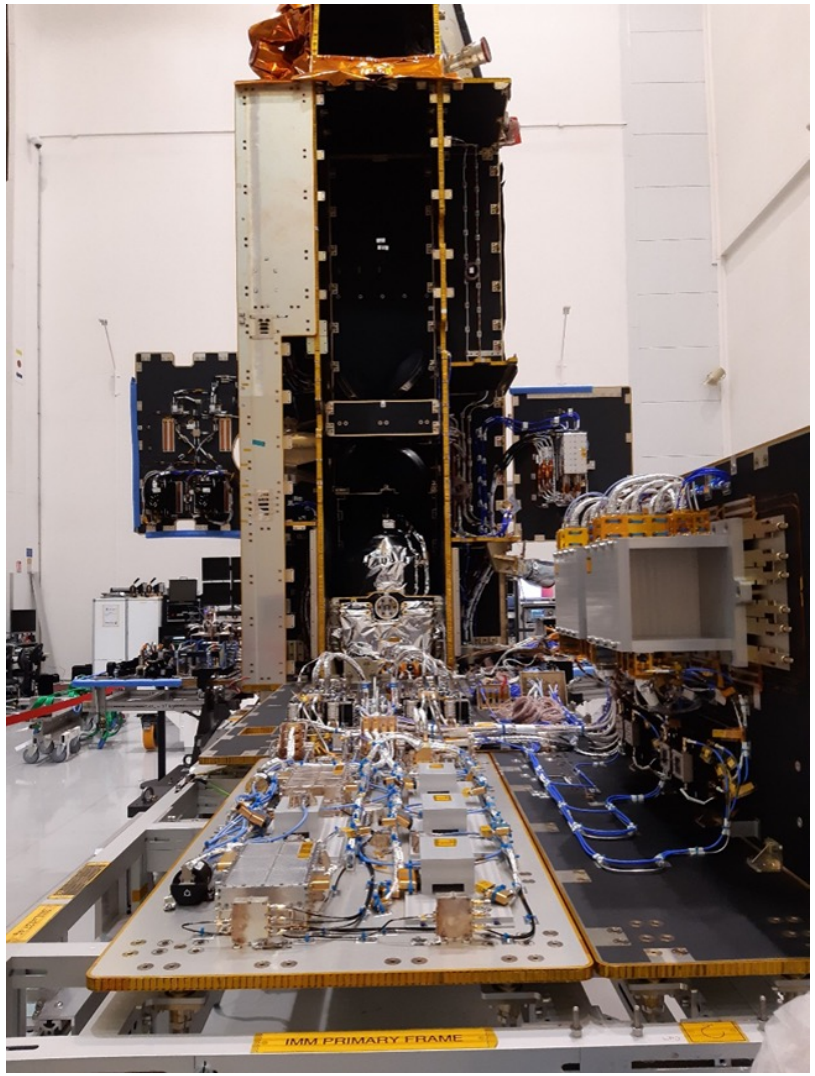
Artist’s impression vs. real hardware



The fully assembled satellite on the shaker in January 2023

Satellite pictures from environmental test camp[aign

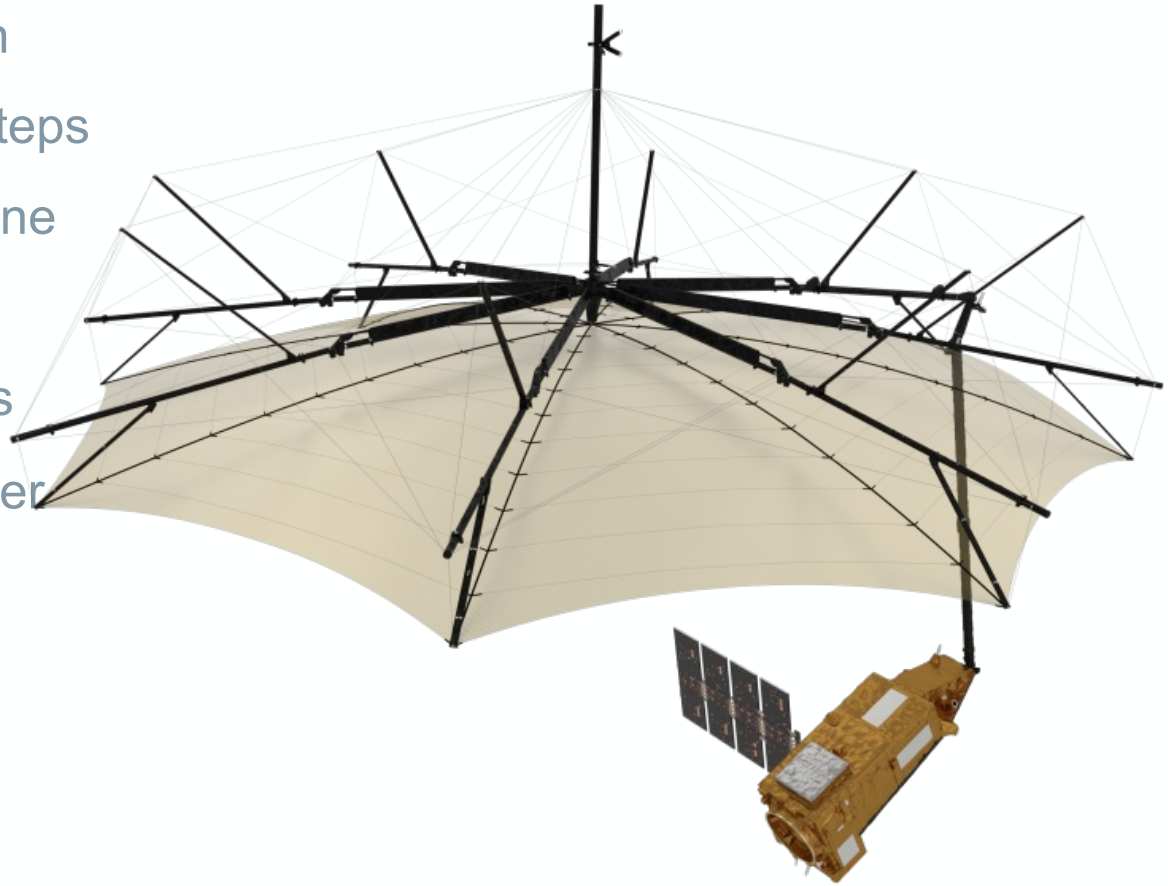
Satellite in accoustic chamber – Feb 2023



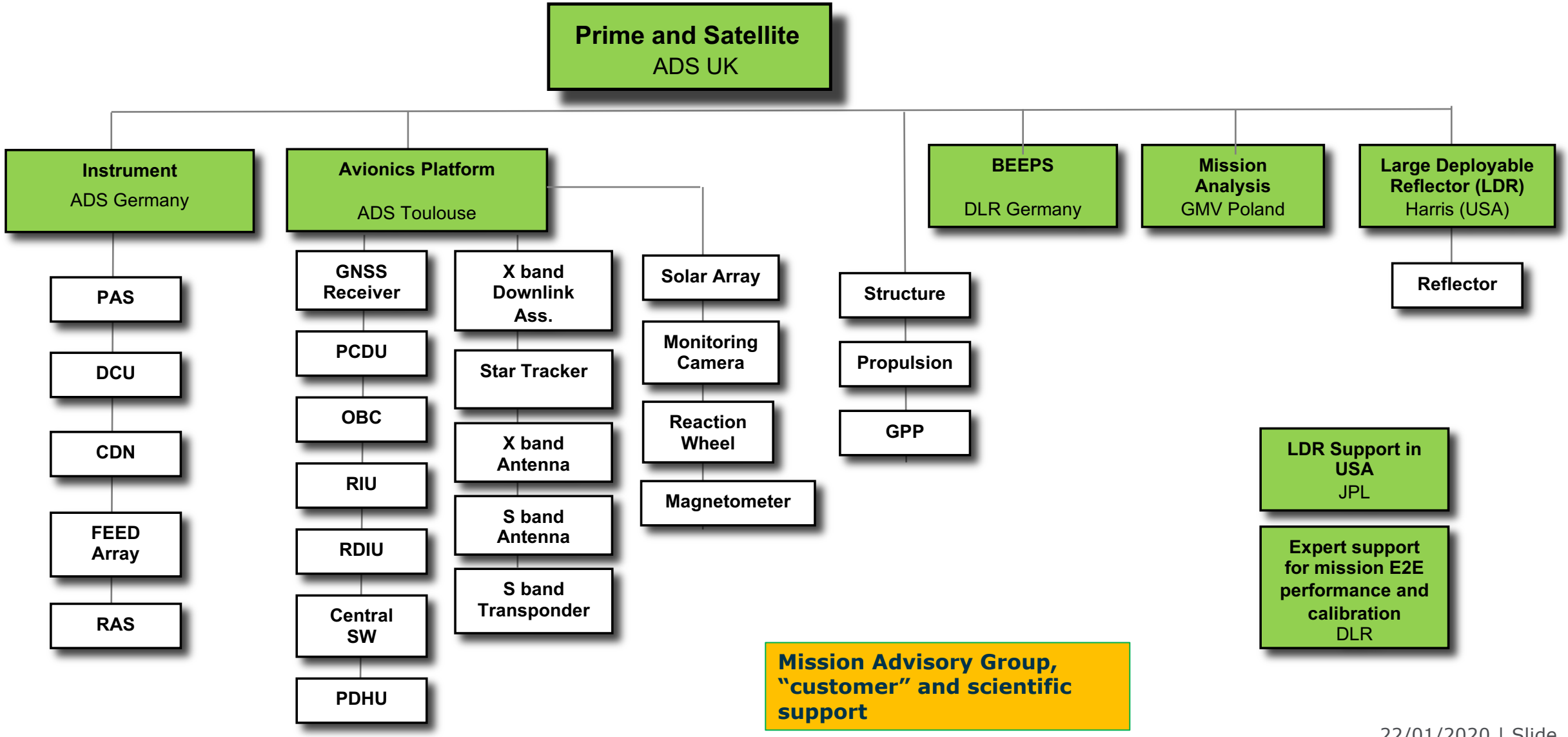
Satellite opened to work on instrument – April 2023

Project development status

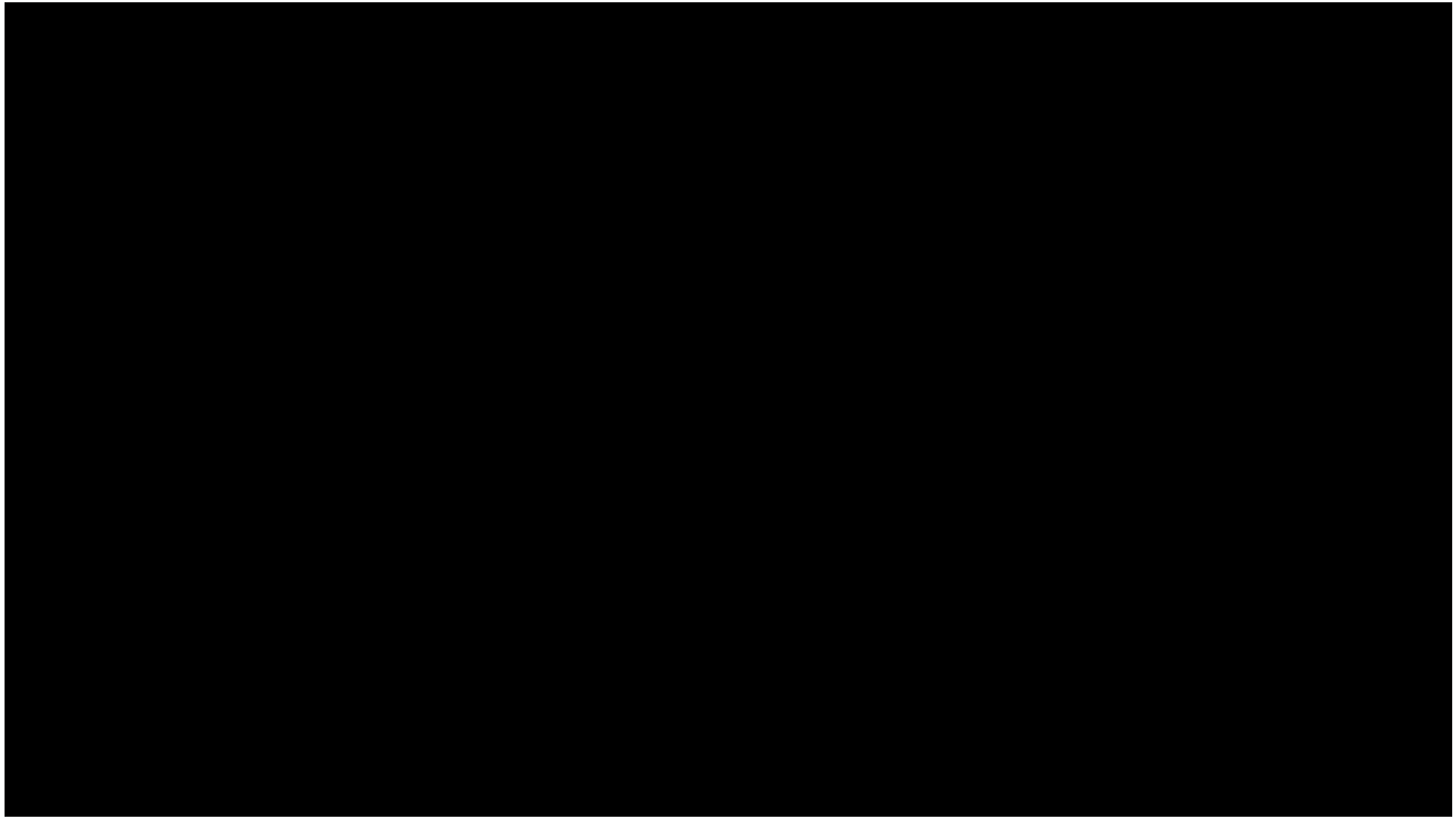
- We are in the System Environmental test campaign with mechanical, thermal vacuum and EMC tests as major steps
- The mechanical test is completed, launcher fit check done
- The instrument has been taken out again to install flight units of the Digital Control Unit and the Power Amplifiers
- Work on platform is finalised in parallel till end September
- Power Amplifier is expected in Q4/23
- Completion of system test campaign with the aim for a launch readiness in late Q3/24
- The Ground segment (flight operations, payload data handling, calibration transponder) is on track
- Current launch slot indicated by Arianespace is Q1/25



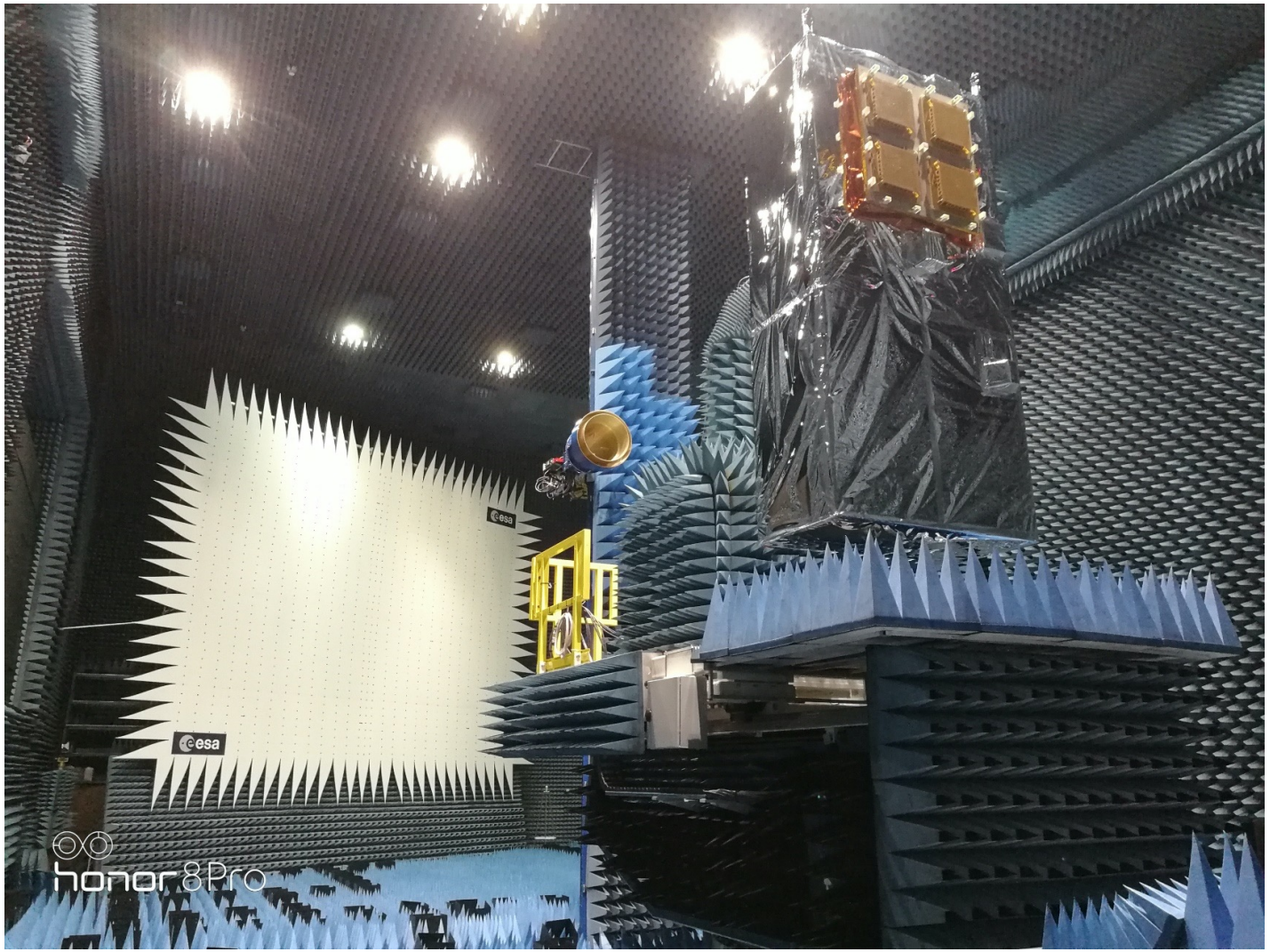
Industrial Project Team

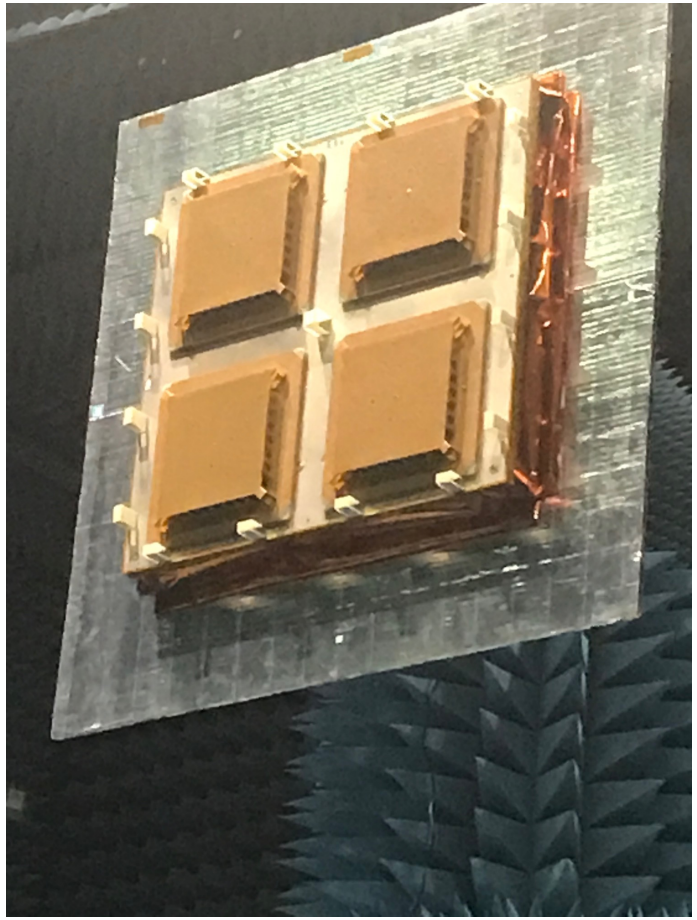


Signal flow in the Biomass radar

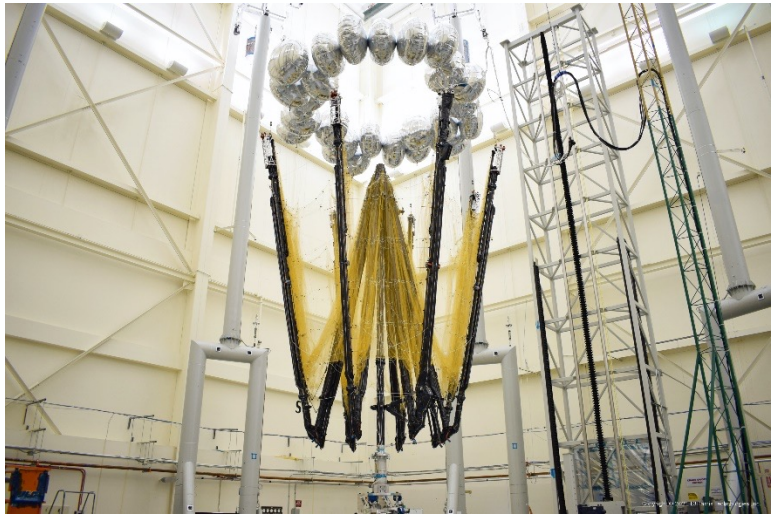


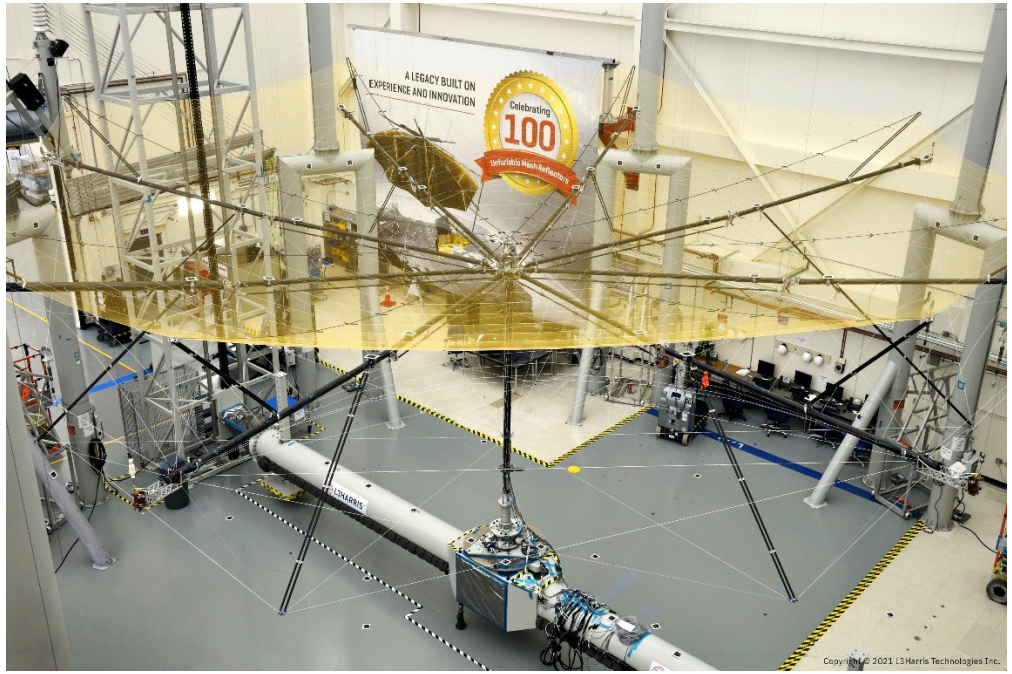
Feed array



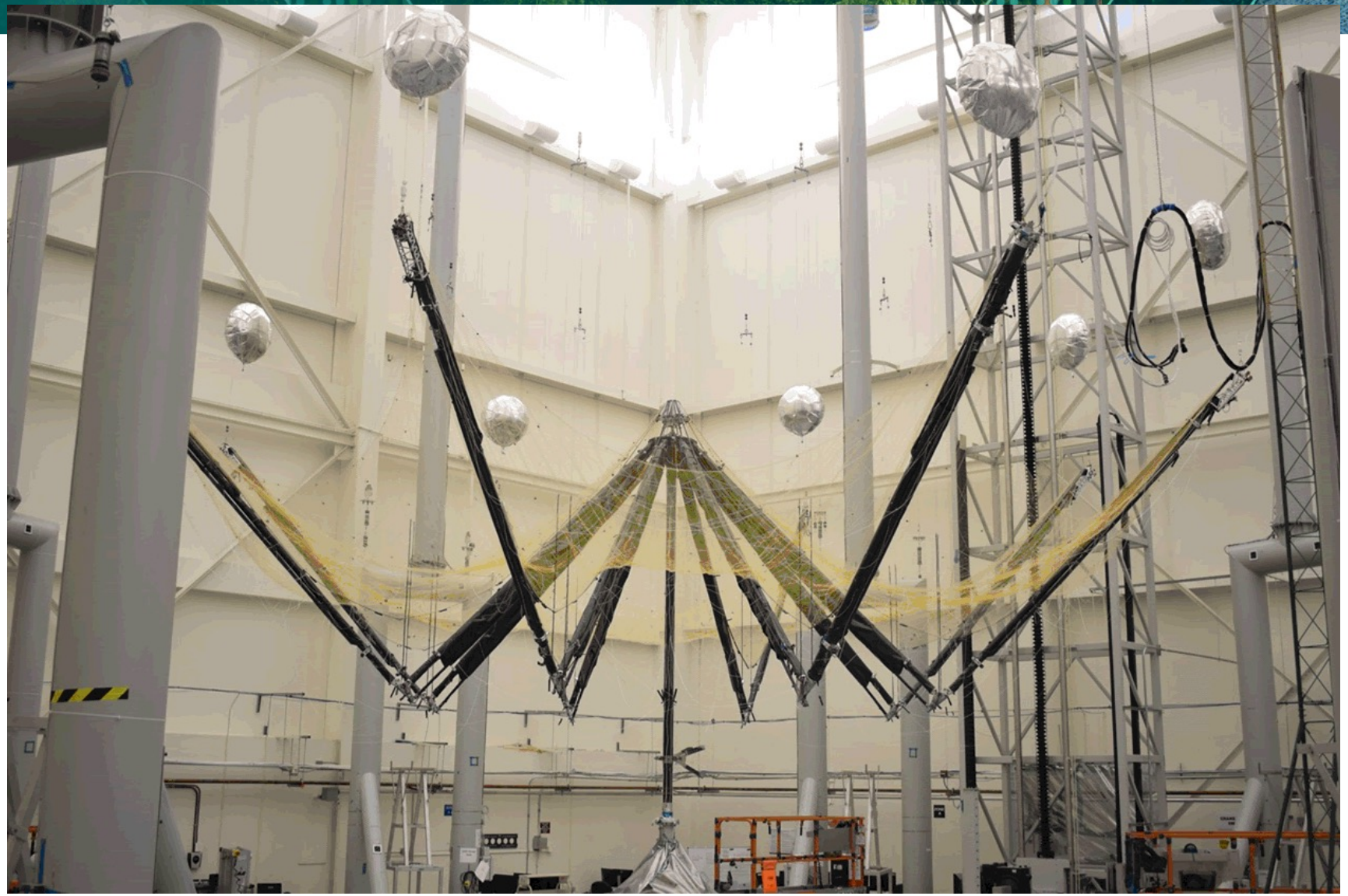


Large Deployable Reflector





Large Deployable Reflector (LDR) – Harris, US

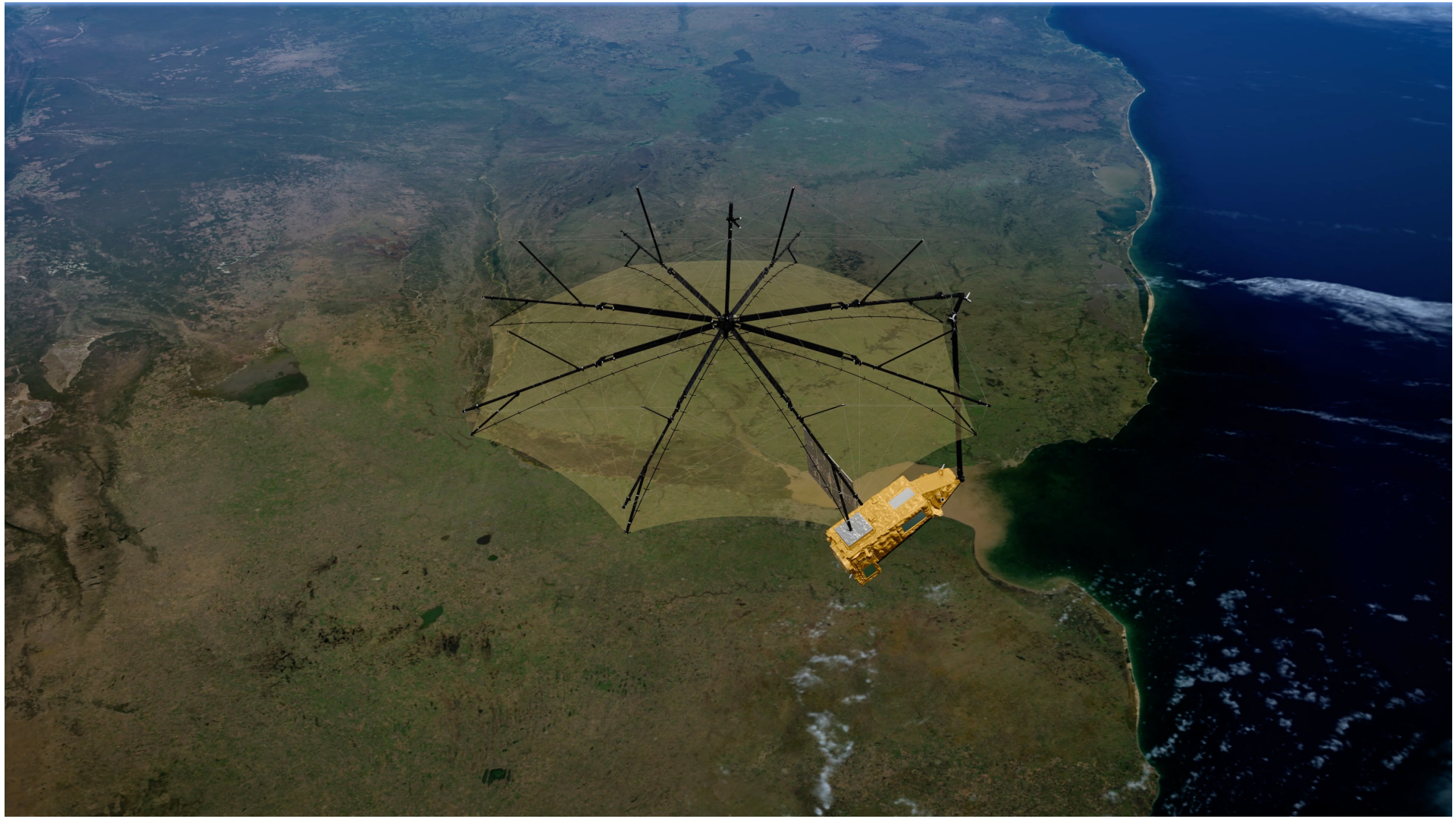


Ground calibration transponder in New Norcia, AUS

Transponder building with 5 m antenna on top of positioner and radome being installed

Transponder site – leveled and soild homogenised

Animation Biomass in orbit



backup

Payload Functional Architecture