

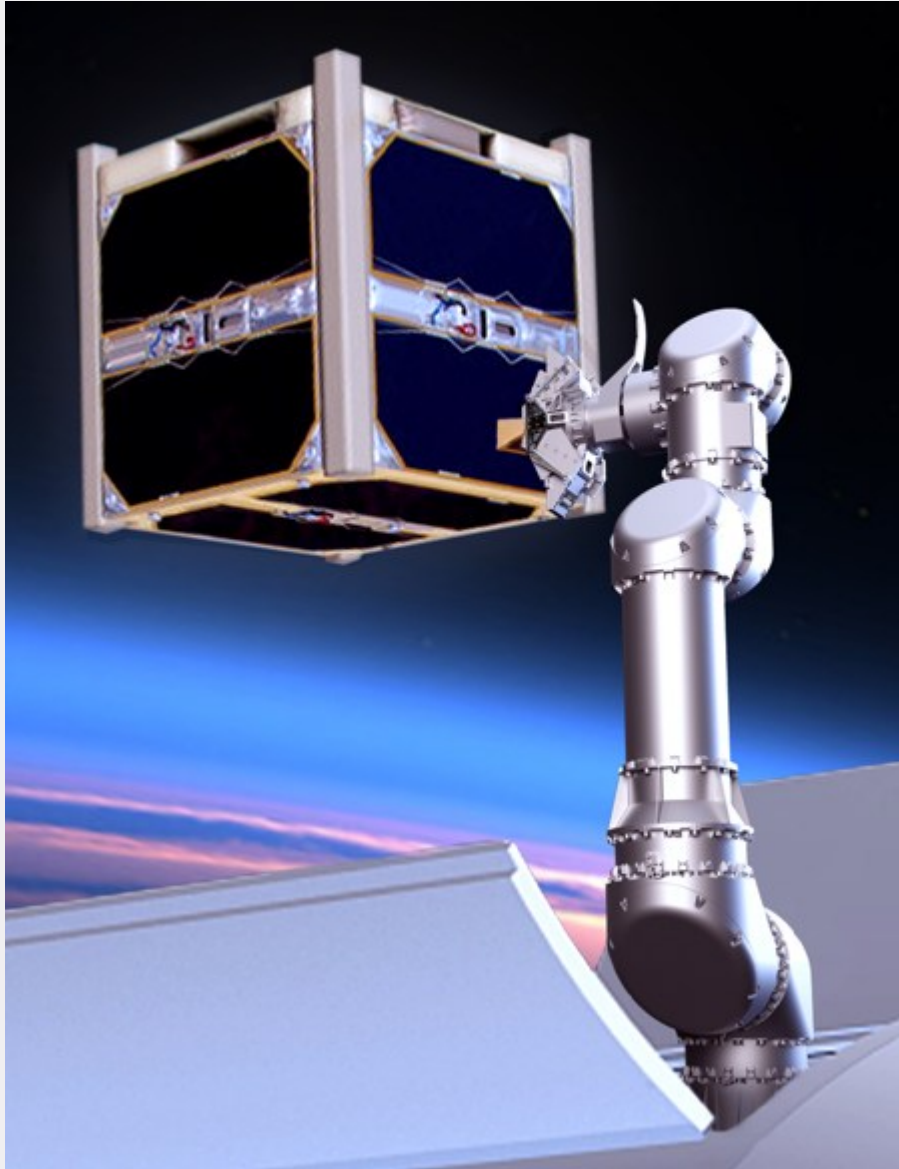


# REVEN Programme

## A Modular Multi-Mission Architecture for In-Space Transportation and Logistics

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Rafał Baczewski (PIAP Space), Valère Girardin (ESA)

Clean Space Days 2026, ESTEC, 30.06.2026



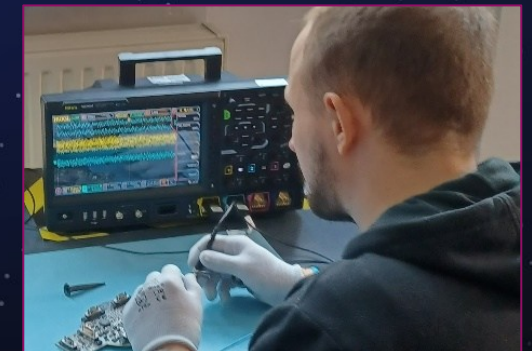
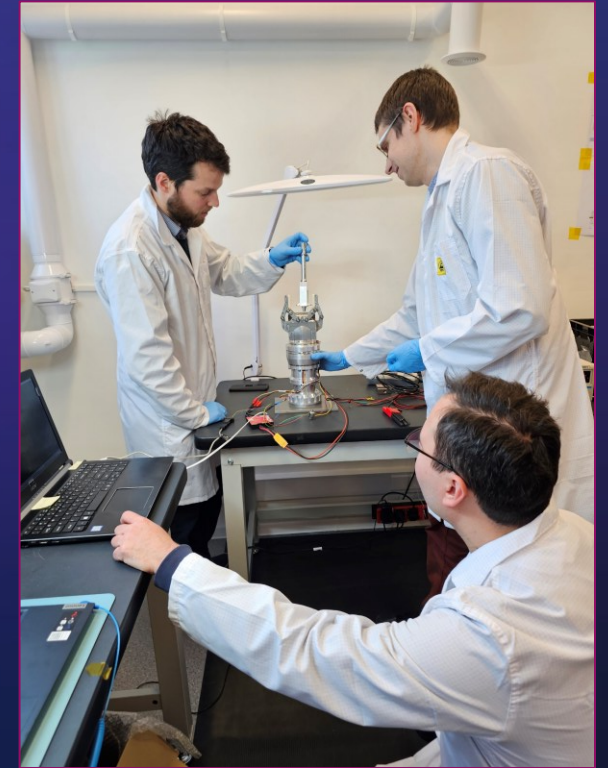
# Agenda

1. PIAP Space Intro
2. RAVEN Programme overview
3. CONOPS
4. Architecture
5. Wrap-up



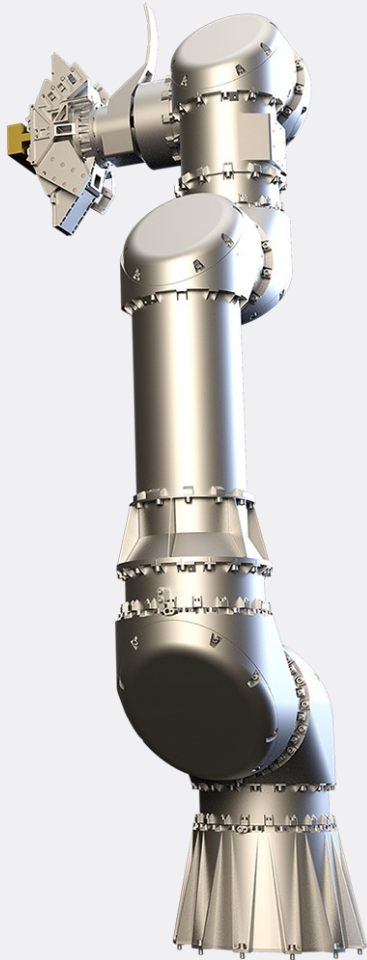
# PIAP Space in numbers

- Established in 2017
- Based in Warsaw, Poland
- First 100% government-owned company in Polish space sector
- Owners: Industrial Development Agency JSC, Łukasiewicz Research Network – Industrial Research Institute for Automation and Measurements PIAP
- 60 employees
- ISO 9001:2015 certification in 2021

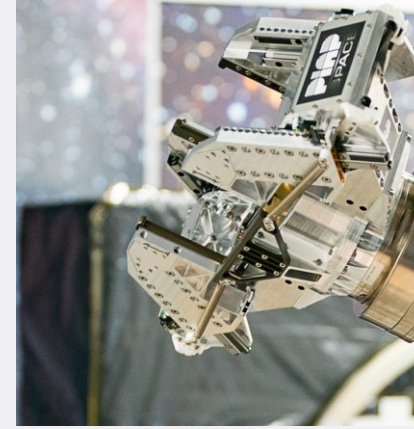




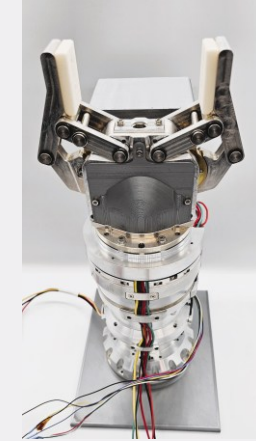
# PIAP Space robotics key building blocks



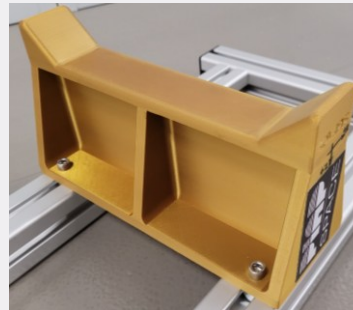
**TITAN ARM**



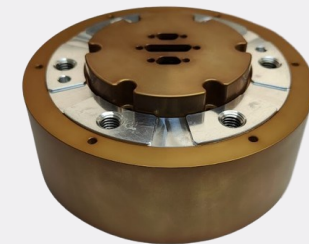
**LARIS GRIPPER**



**MULTIS GRIPPER**

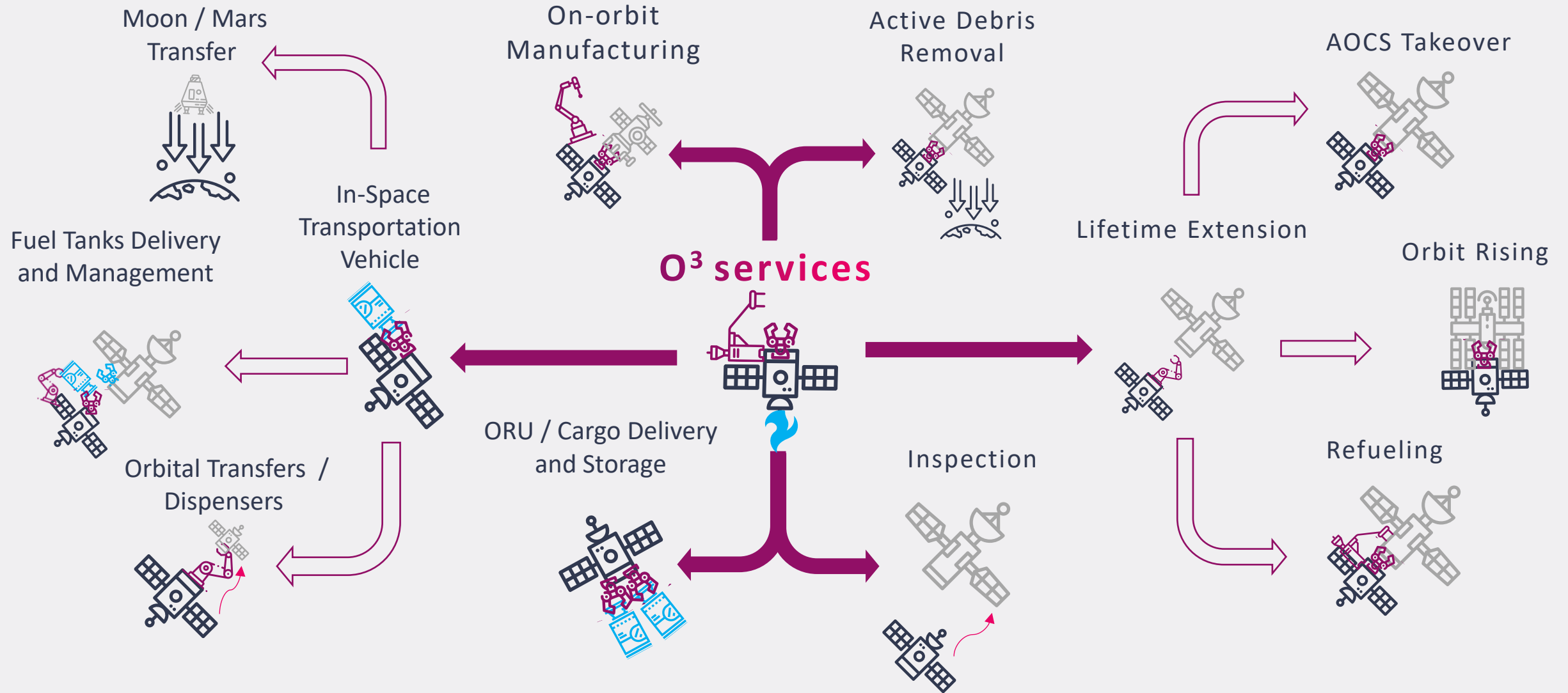


**STANDARD GRIPPING  
FIXTURE**

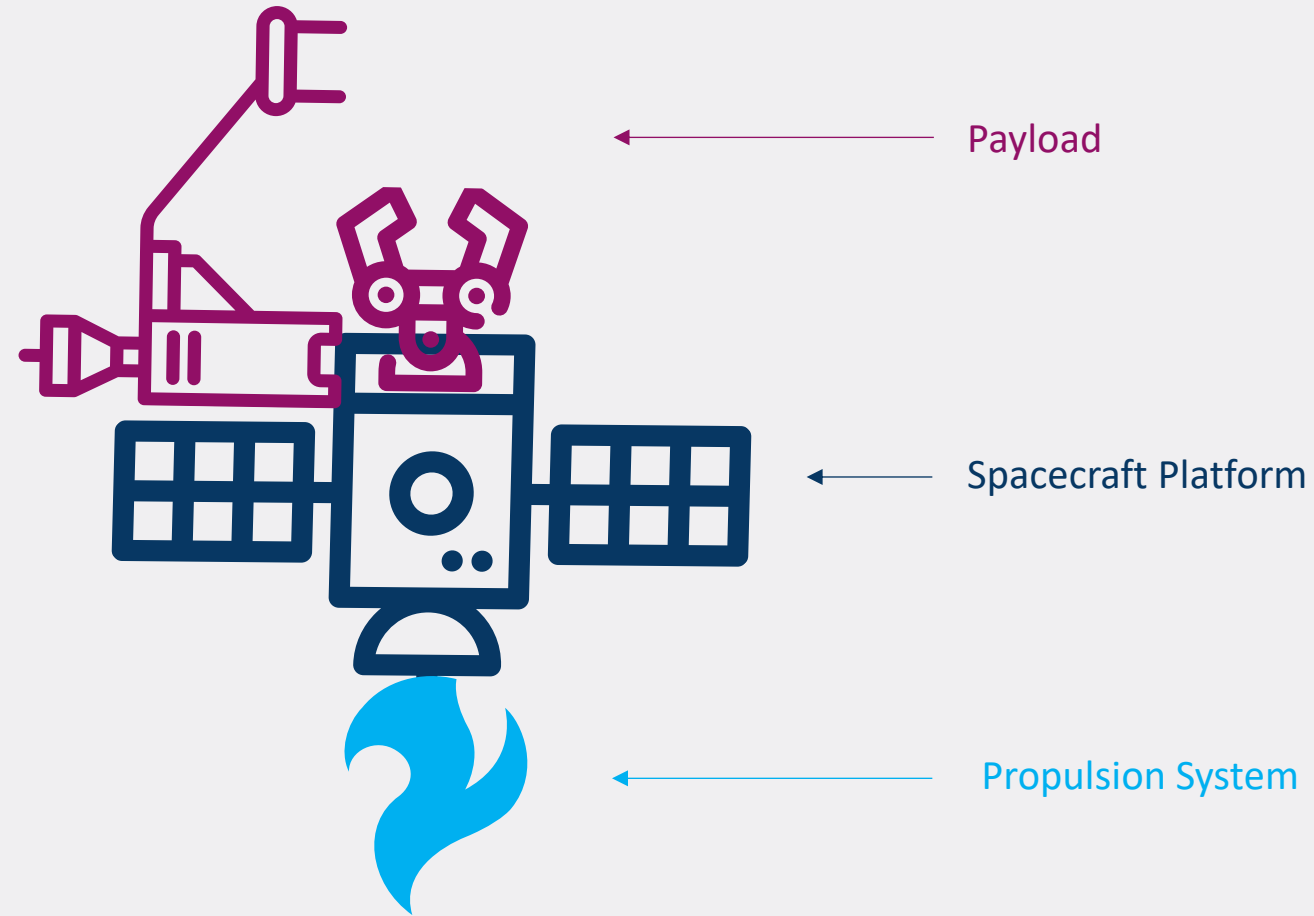


**FORCE AND TORQUE  
SENSOR**

# On-Orbit Operations



# O<sup>3</sup>- modular solution



- RPO GNC (Safety, Vision, Autonomy)
- Robotic System
- Docking and Securing System
- Intersatellite Link

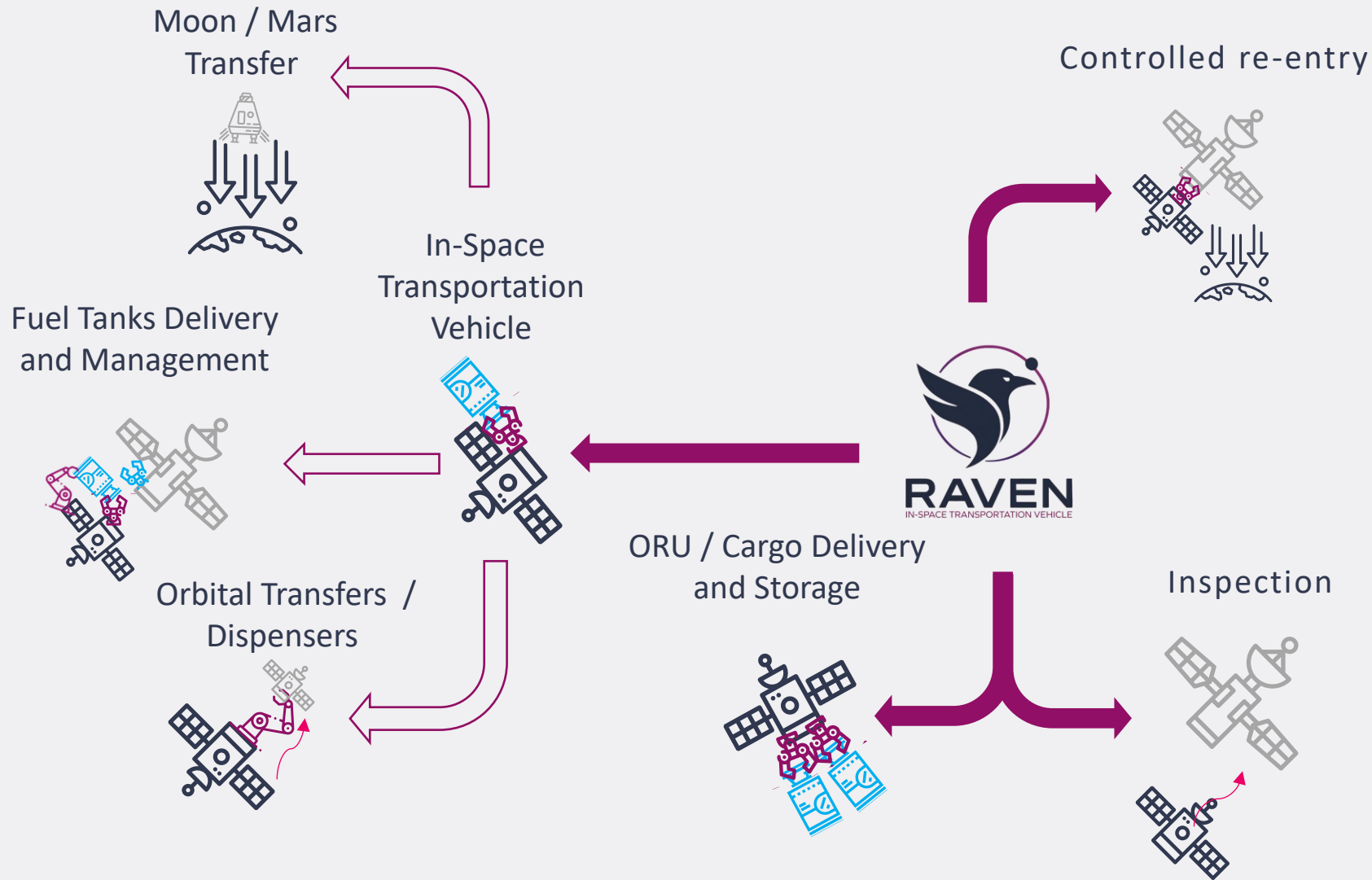
- Structure, Power System, Thermal Control
- Ground Communication
- Data storage, transfer and encryption

- RCS
- Manoeuvres
- Refuelling capability



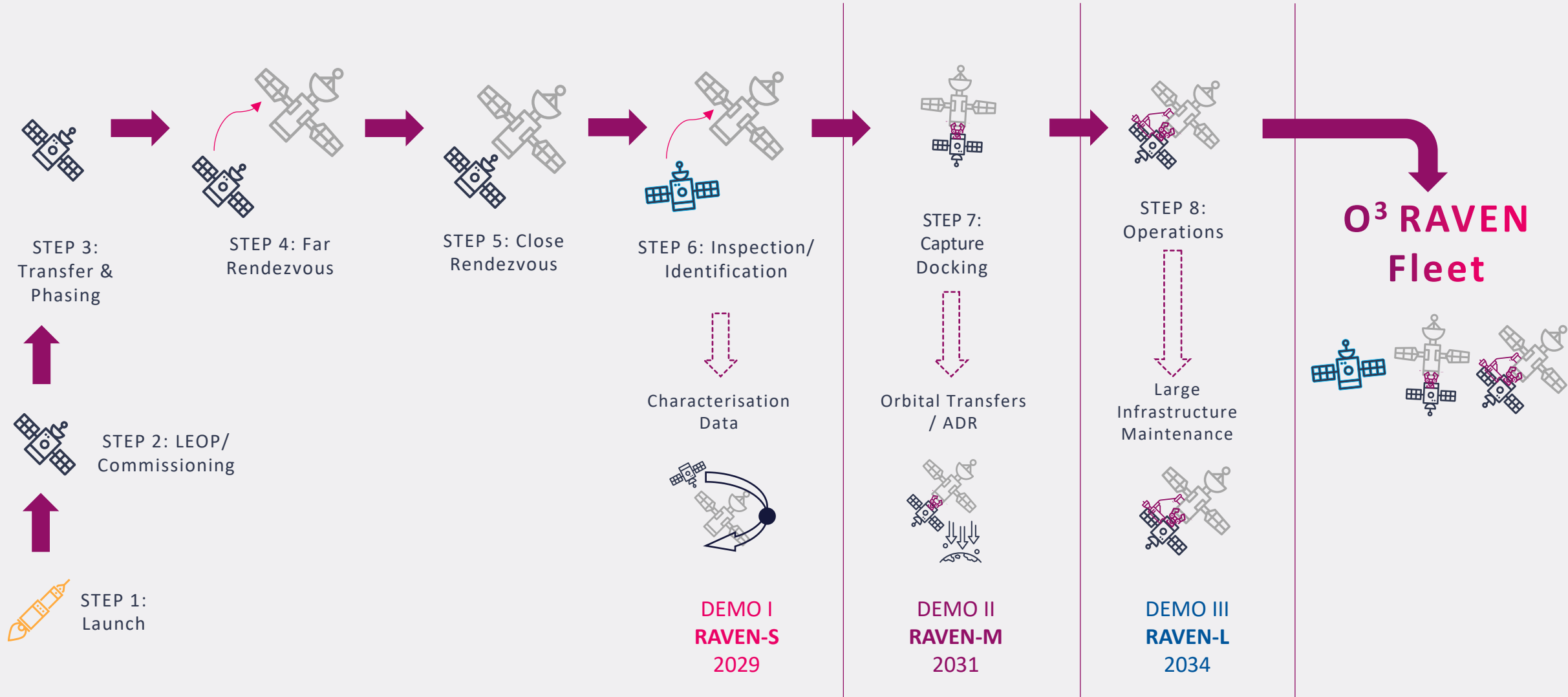


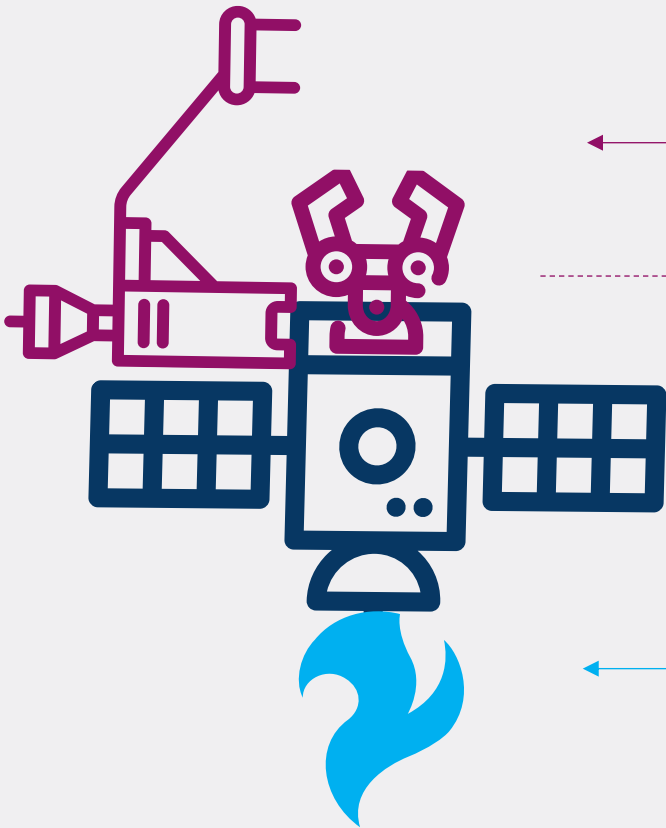
# RAVEN



## In-space Transportation and Logistics

# Roadmap





←  
 $O^3$  Rendezvous Proximity  
Operations and Servicing System

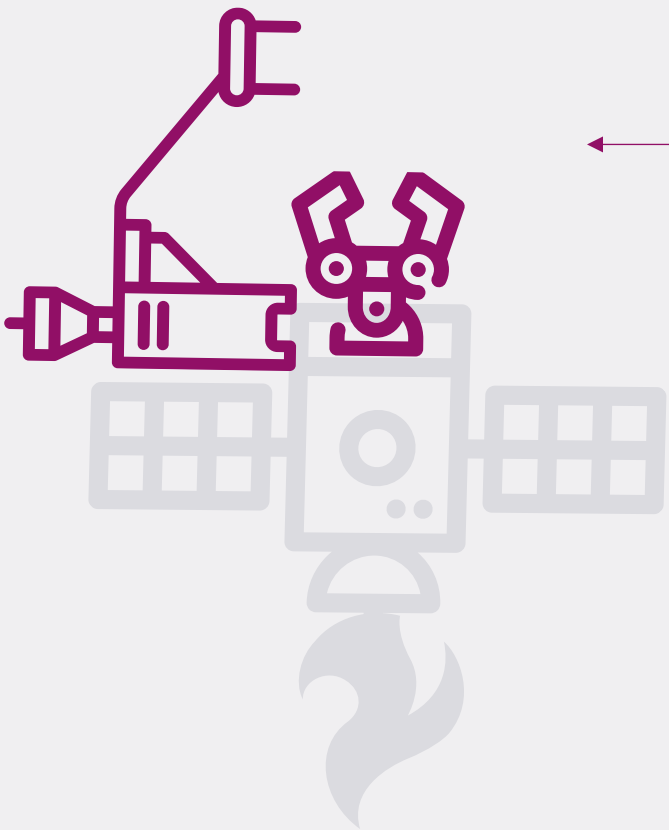


←  
Spacecraft Platform



←  
Propulsion System





0<sup>3</sup> Rendezvous Proximity  
Operations and Servicing System



Payload Computer



GNC



SPACE SCAVENGERS

Hosted Payload



Hosted Payload



Ground Segment



Wojskowa  
Akademia  
Techniczna



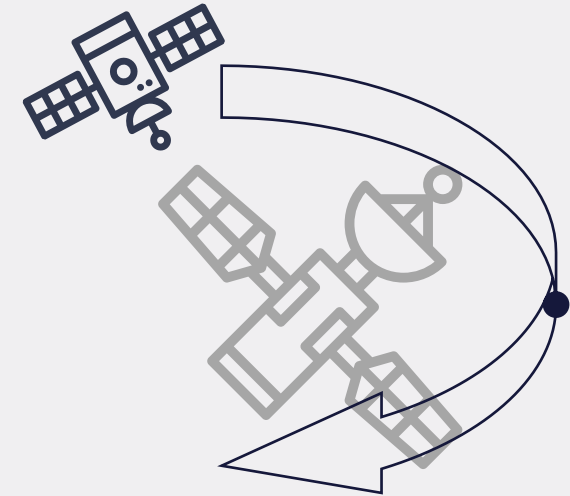


# Mission objective

**Mission objective:** Demonstrate autonomous RPO and validate the in-orbit performance of the modular payload architecture.

**The mission shall deliver:**

- Demonstrate autonomous RPO capabilities
- Acquire optical inspection data
- Enable mission-class identification of the target spacecraft
- Validate key technologies for future servicing missions



# Mission scope and constraints

## Mission Scope & Boundaries:

- Non-contact operations only
- No docking or capture
- High-resolution inspection
- Ground-supervised operations (baseline assumption)

## Communication constraints:

- ground-supervised operations (baseline)
- limited visibility windows
- implications for:
  - operations timing
  - data downlink

# Target and environment

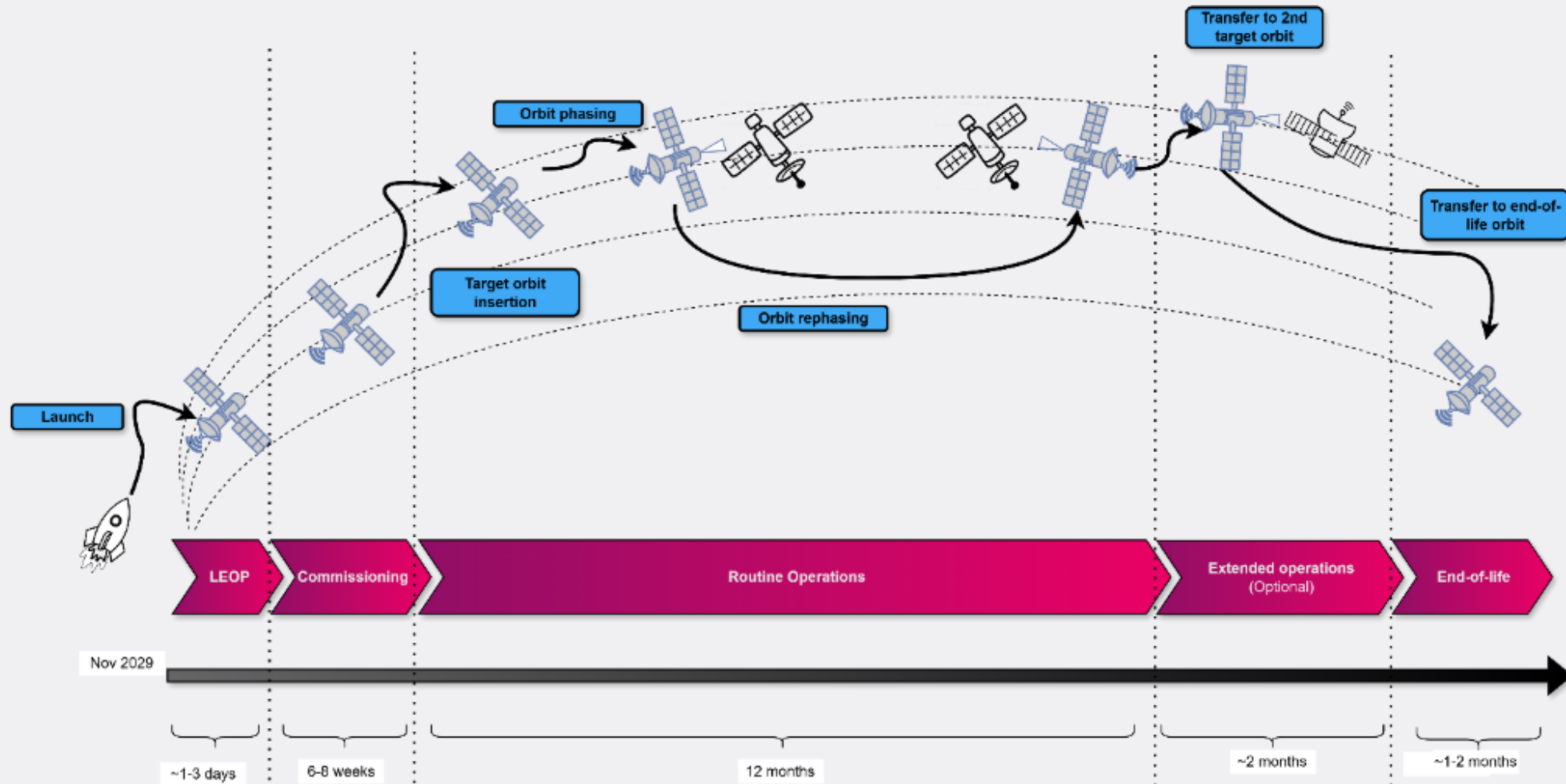
## Orbit & Operational Environment:

- **Orbit:** LEO, SSO
- **Altitude range:** 500-600 km

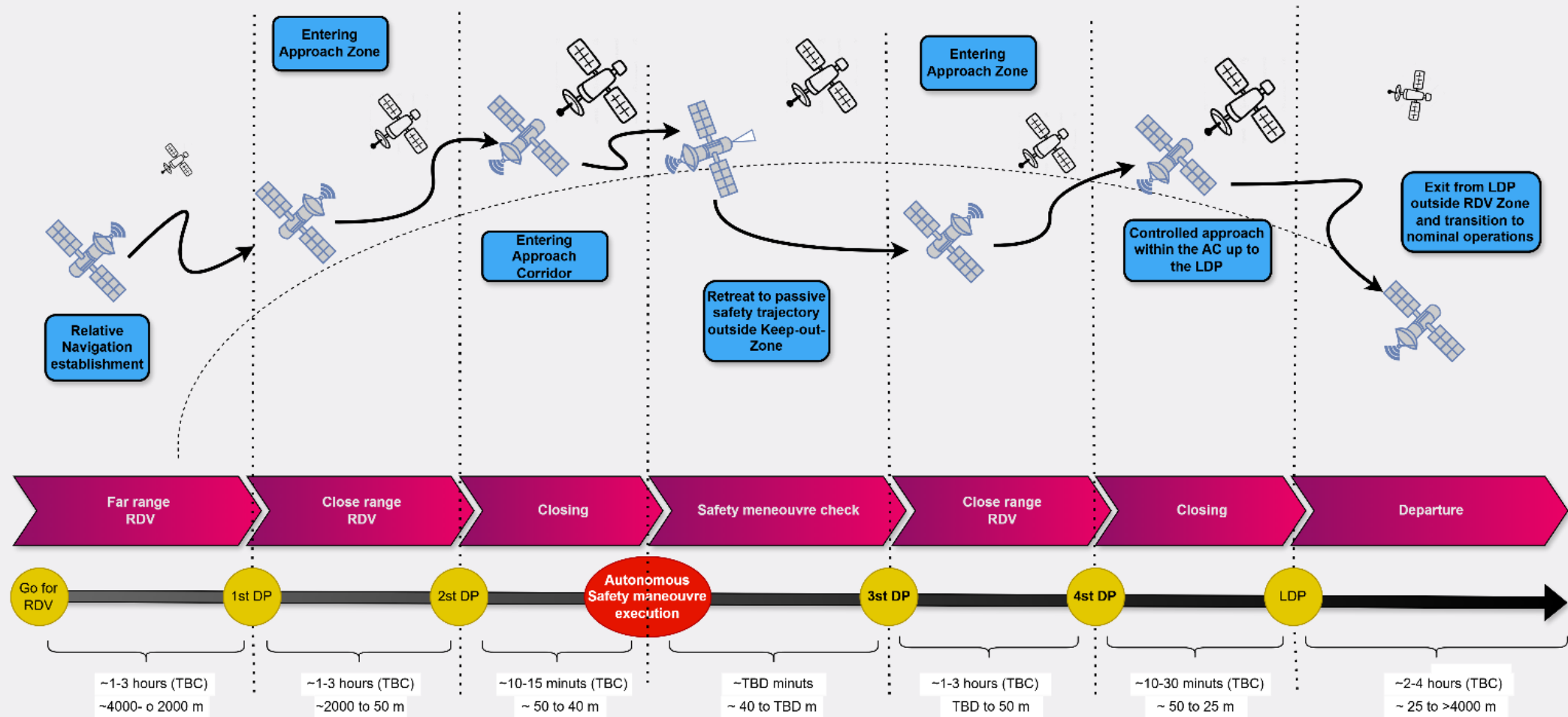
## Target:

- **Cooperative target:**  
markers, communication support
- **Size class:** small to medium spacecraft
- **Attitude behaviour:** stable

# Mission Conops



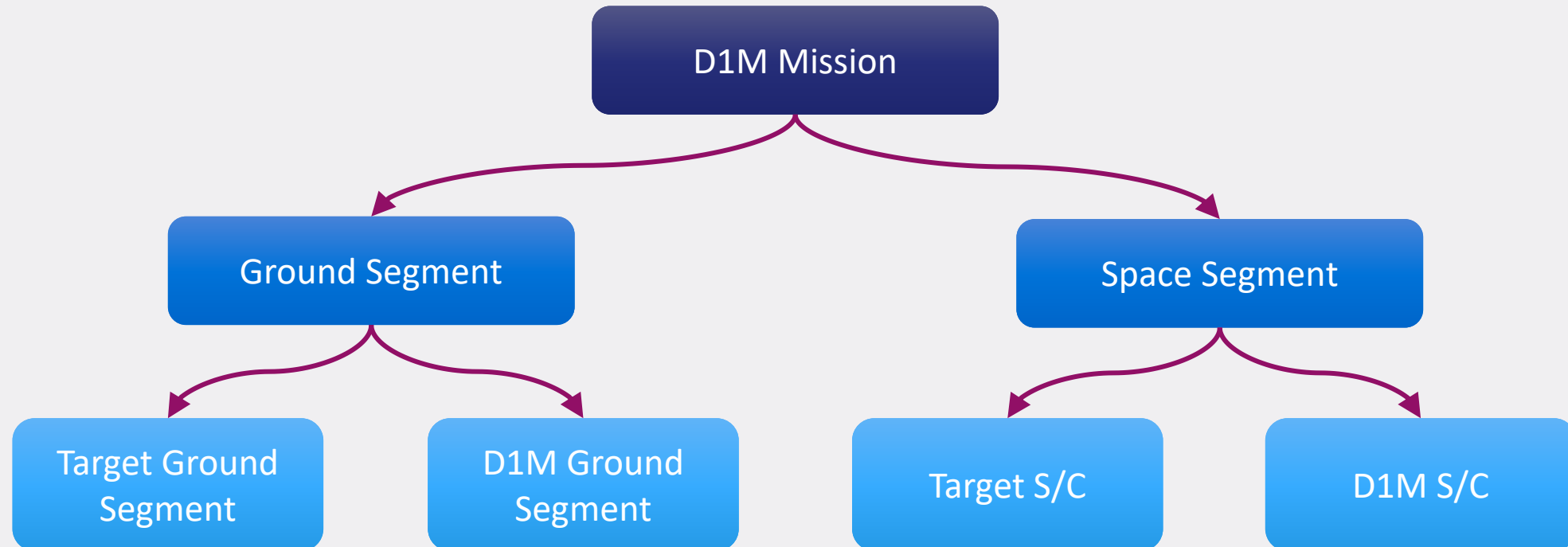
# Routine Operations Conops



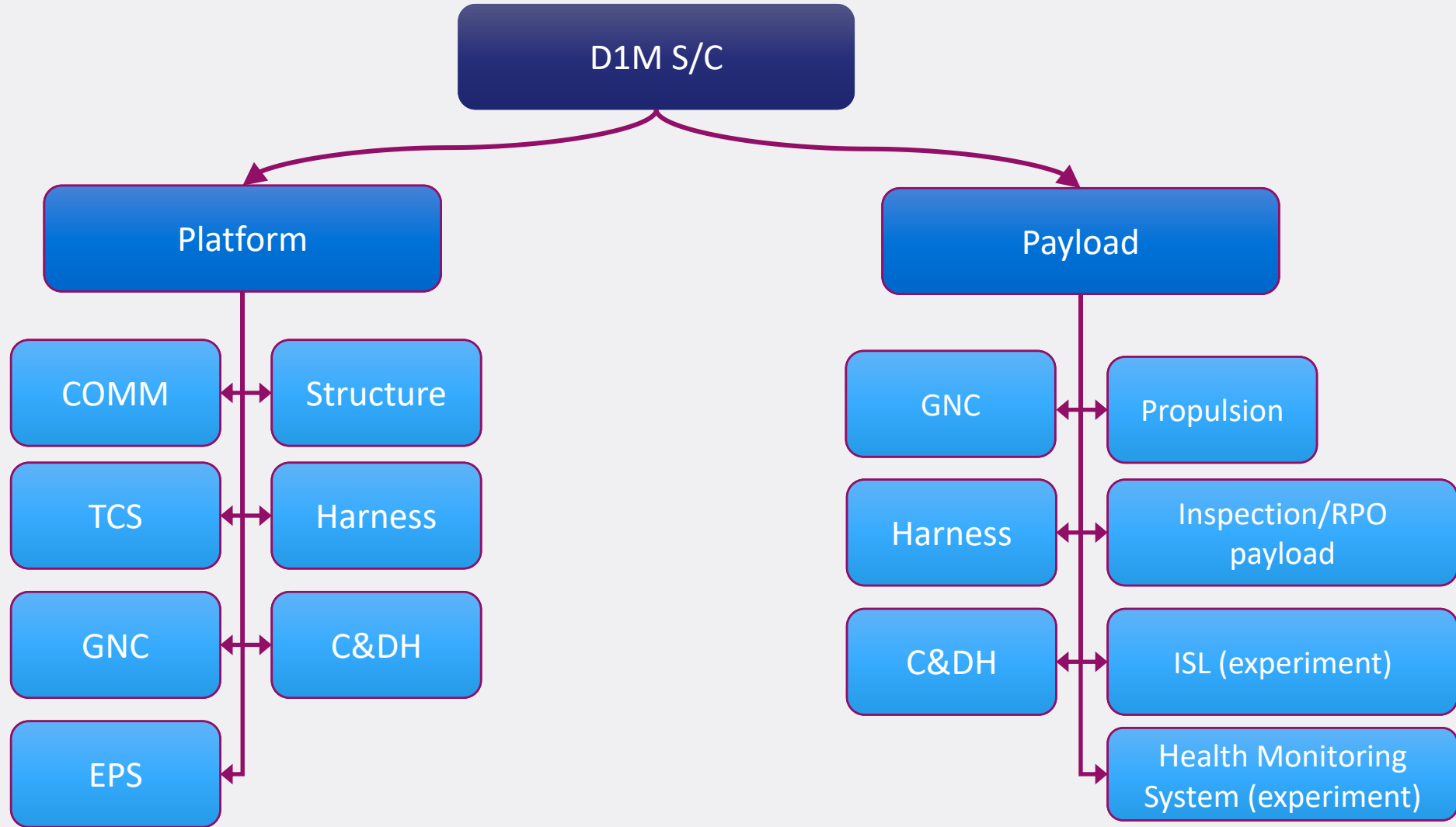




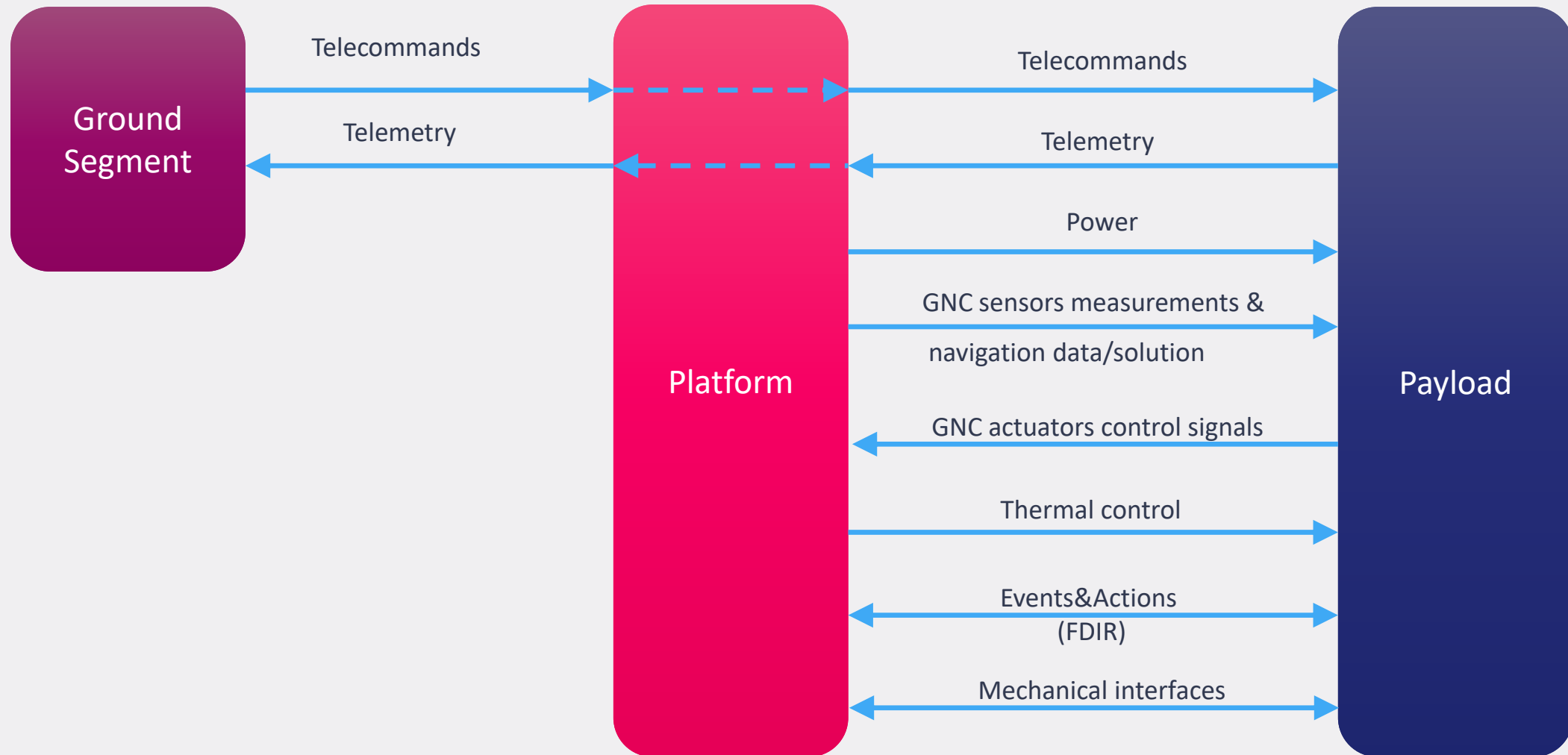
# Mission architecture – product tree



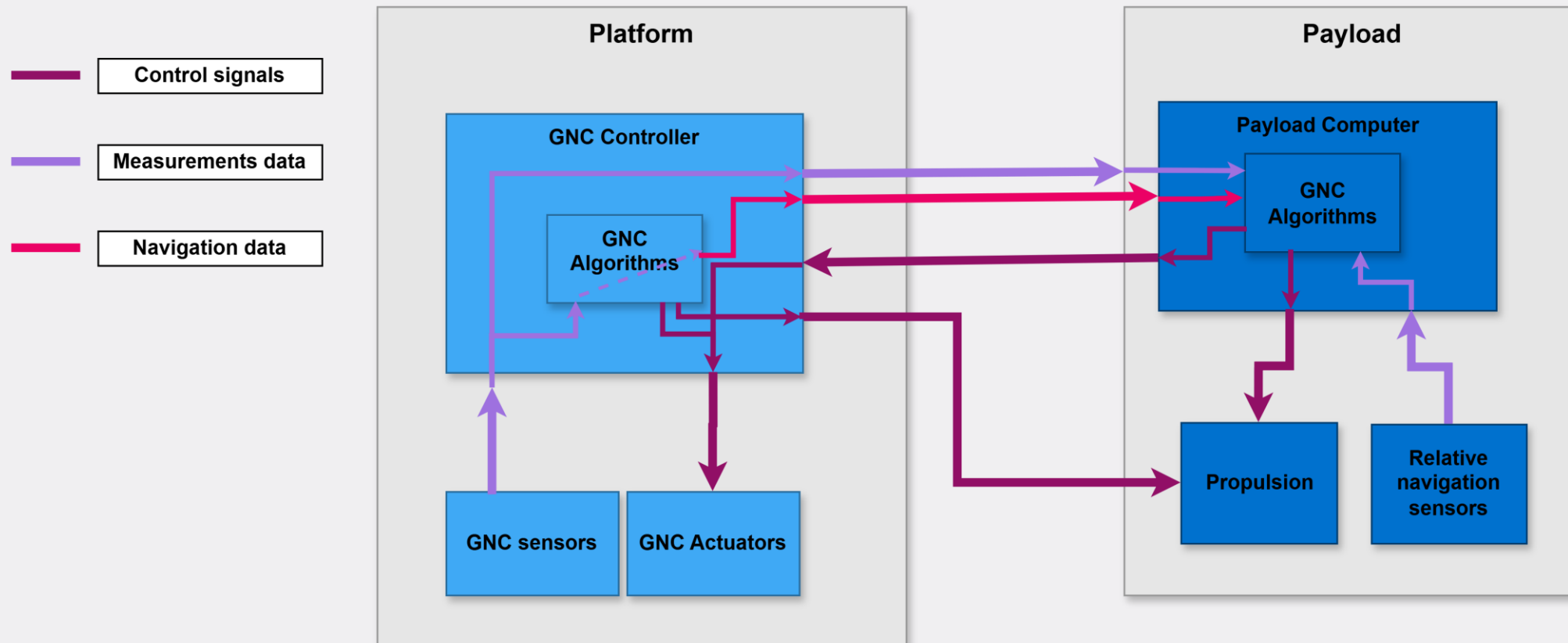
# Mission architecture – product tree



# Mission architecture – platform agnostic



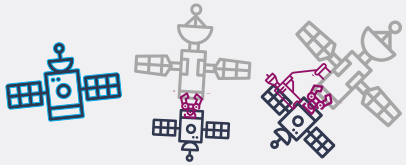
# Mission architecture – platform agnostic, GNC





# Wrap-up!

## O<sup>3</sup> RAVEN Fleet



**Driver:** Building a satellite fleet tailored to diverse missions requires internal standardization and unification.

**Solution:** A modular approach and reusable avionics, supported by a standardized avionics ICD.

**Status:** Work in progress (assumptions are being challenged and validated); Phase B1 finalization is targeted for Q4 2026

# Let your next mission be our common success

THANK YOU

PRODUCT DEVELOPMENT

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