OHB'S LARGE LEO ZERO DEBRIS PLATFORM

CLEAN SPACE DAYS 2026

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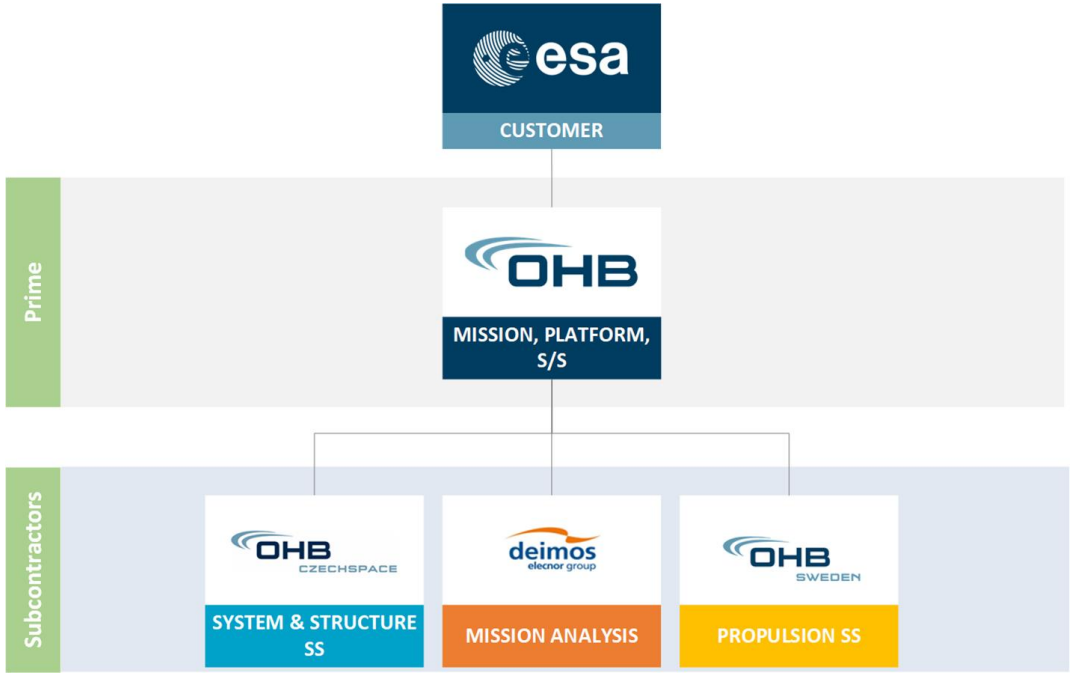
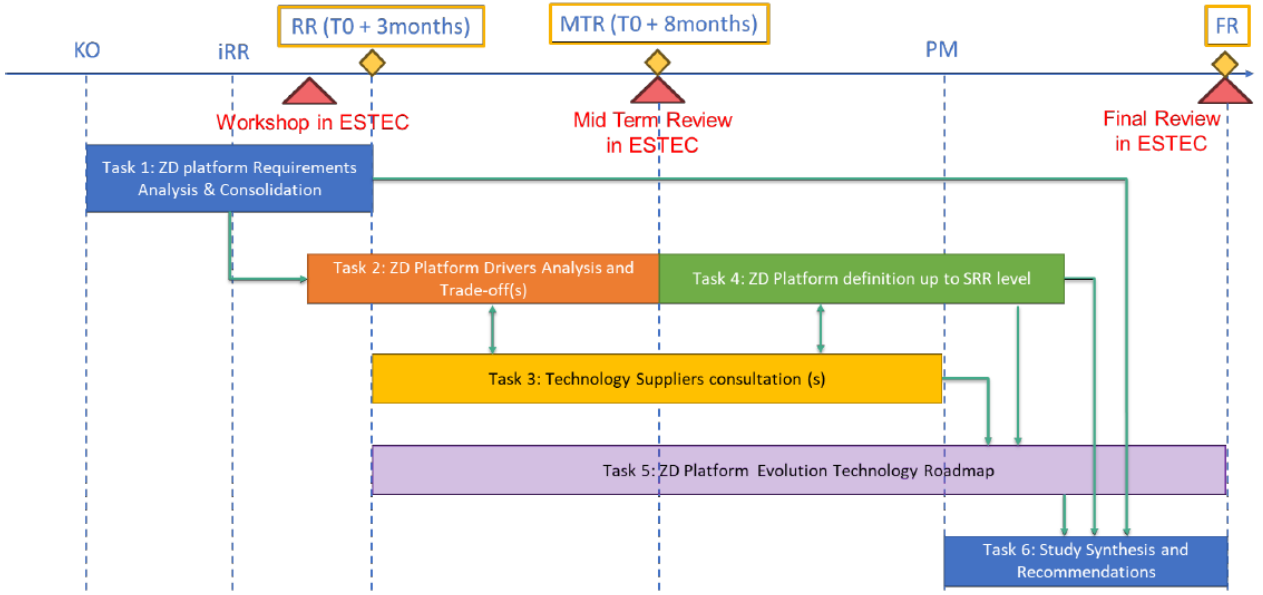
STUDY OVERVIEW

- Consortium



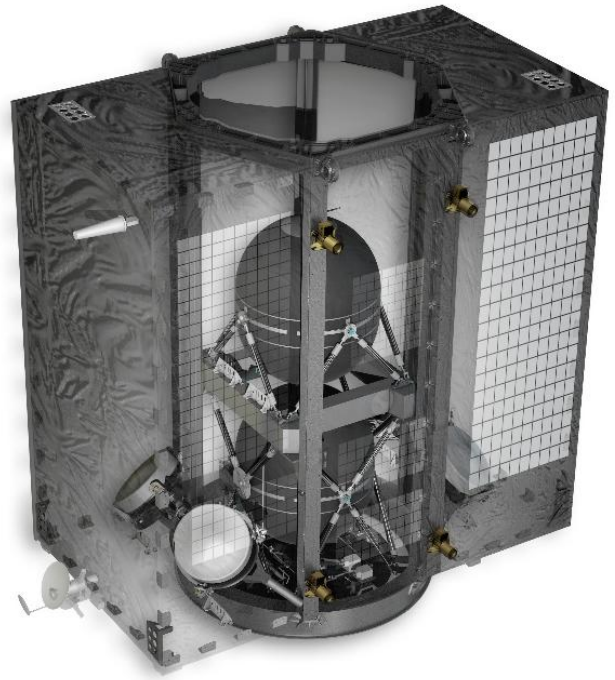
- Phase 1 of platform evolution for zero debris
  - 16-month study to raise maturity of ZD-PF to SRR level
  - Split into 6 tasks, and 5 technical objectives



EOS PLATFORM

- Eos is founded on common and well-established state-of-the-art technologies serving Copernicus Expansion and Earth Explorer
- **Standard avionics** core implements PUS-C and is capable of File Based Operation
- Offering a **flexible, modular design**:
  - Platform consists of two compartments:
    - Recurring compartment with standard equipment
    - Mission specific compartment dedicated to the payload
  - Simple & mature Platform/Payload Interfaces
- Enhanced **schedule robustness**: independent and parallel integration with fast access to all elements

  → opportunity of a fast track and low risk platform adaptation to different mission needs
- OHB's Standard Earth Observation Platform, Eos, has been developed, among others, in the frame of the ESA Copernicus Standard Platform Study



Eos Platform	
Mass	Platform wet mass: 990 kg Dry mass: 790 kg
Delta V	Total (incl. Margin): 300 m/s
Volume	Stowed volume: 2.5 x 2.8 x 1.6 m3 Deployed solar array: 12 m2
Lifetime	Up to 12 years

MISSION STUDY CASES

- All assessments done in this study were carried out on three study cases:

Parameter	Study Case 1	Study Case 2	Study Case 2
Study Case code	EO_OPT	EO_SAR	EO_RAD
Payload	Optical	Radar – SAR	Radar - Doppler
Reference Orbit	800 km altitude Morning SSO	700 km altitude Dusk-Dawn SSO	500 km altitude Nearly polar SSO
Re-Entry Strategy	Controlled	Uncontrolled	Controlled

T-OBJ1 & T-OBJ2

FULLY DEMISABLE PLATFORM

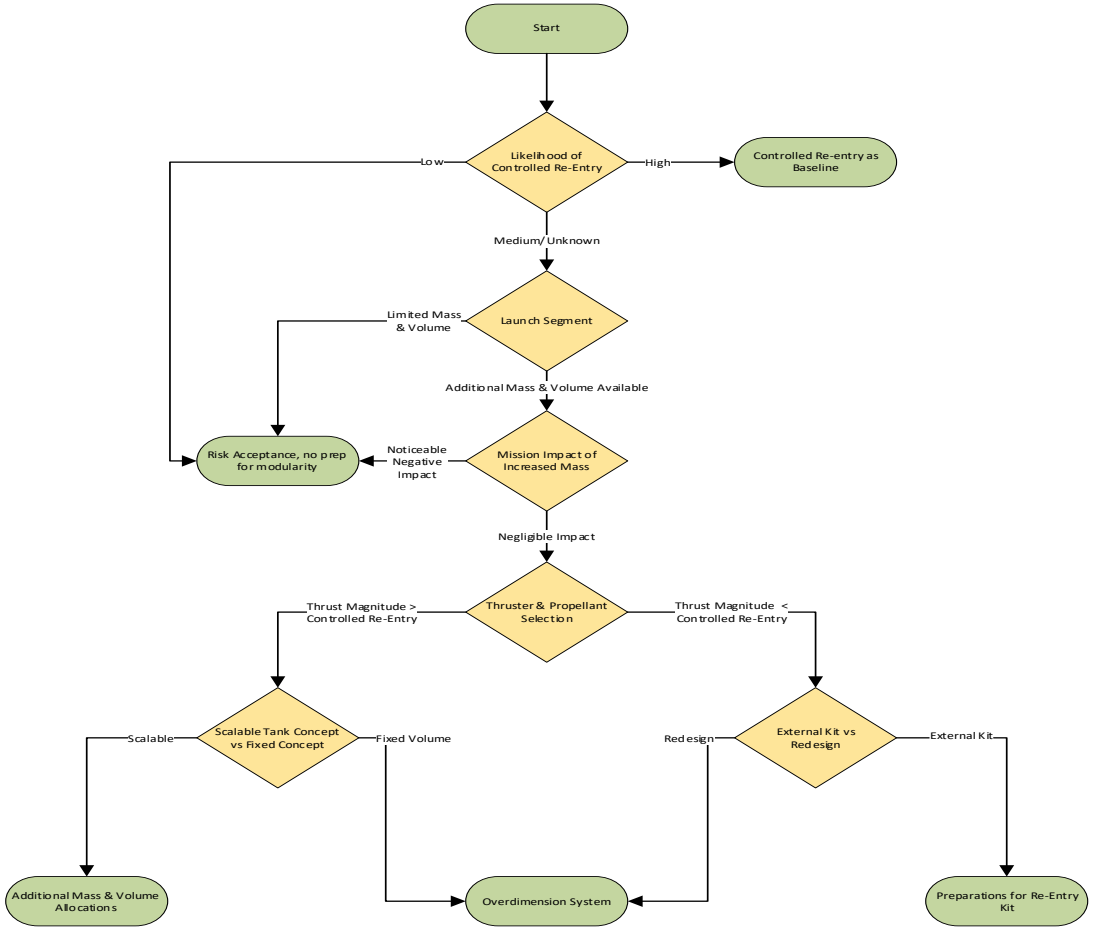
Analysis of the impact of demisable equipment on platform design:

- Assess the impacts of the integration of the identified demisable equipment at system and subsystem levels
- Consolidated and performed the trade-offs on:
  - Mission performance vs. selected solutions

    - Structural (D4D) elements wrt. casualty risk vs. platform performance: joining technologies and materials

    - Propulsion subsystem design: demisable solutions vs. platform performance: tanks, thrusters, propulsion supporting structures
  - Necessary AOCS S/C elements, architectures and avionics configuration: RWs, MTQs, Star Trackers

MODULAR IMPLEMENTATION OF CONTROLLED RE-ENTRY

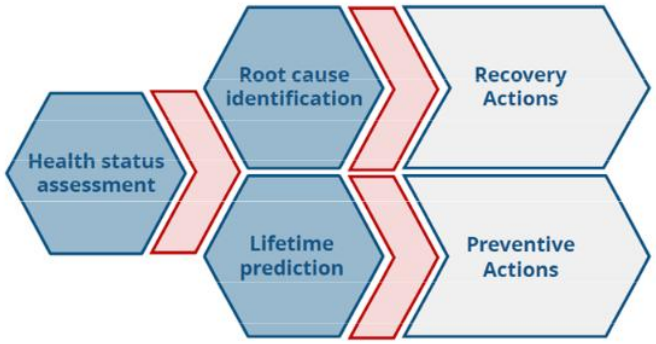


T-OBJ3 – SYSTEM RESILIENCE

TECHNOLOGIES

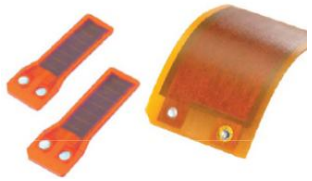
AI APPLICATIONS ON BOARD

- **Benefits**:
  - Accurate and timely detection of “incipient” failures
  - Remaining Useful Lifetime estimate to support decision-making
- **Suppliers (Europe)**: AVAILABLE
- **System impacts**: DHS (OBC), TTC



IMPACT MONITORING SYSTEMS

- **Benefits**:
  - Novel data on P/F health from external failures
  - Statistics about in-orbit environment
- **Suppliers (Europe)**: AVAILABLE
- **System impacts**: DHS, harness, thermal

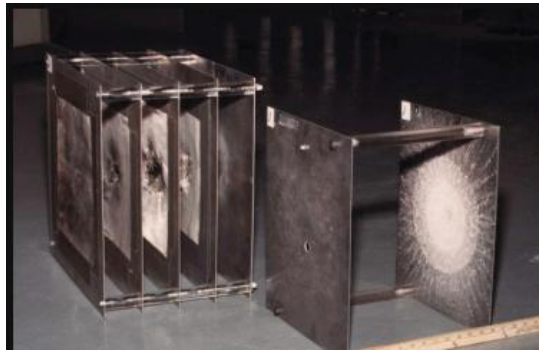


Traded technologies:

- mm-wave radars
- impact-based sensors (PZTs,…)

SHIELDING

- **Benefits:**
  - Protection of internal units from MMODs
  - Prevention of accidental break-up
- **Suppliers (Europe)**: AVAILABLE
- **System impacts**: mass, acco., thermal



T-OBJ4 – MITIGATORY OPERATIONS AND DESIGN

ACTIVITIES & TECHNOLOGIES

Points of no-return of the S/C

Enhanced passivation

EPS : no battery recharge

Propulsion:
- propellant passivation via thrusters
- pressurant passivation via valves

Fail-safe deorbiting

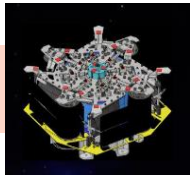
Preparation 4 Removal

Nominal mode compliant with cooperative removal D4R I/Fs on Eos

Traded-off deorbiting technologies:

Solid Rocket Motors

Drag sails



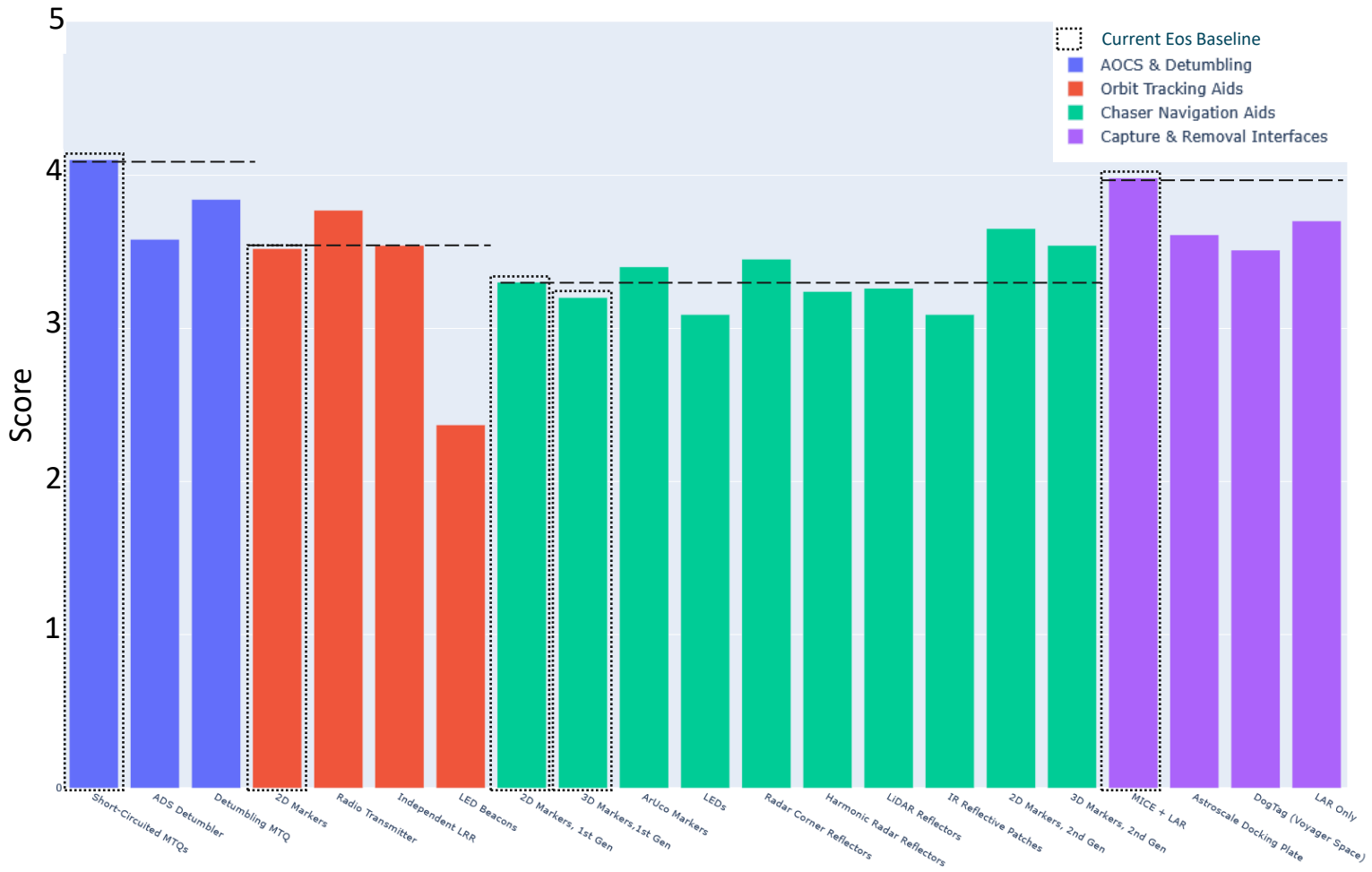
Electrodynamic Tethers (EDT)

All high system-impacts, Eos baseline propulsion module considered reliable enough for deorbiting

T-OBJ5 – PREPARATION FOR REMOVAL

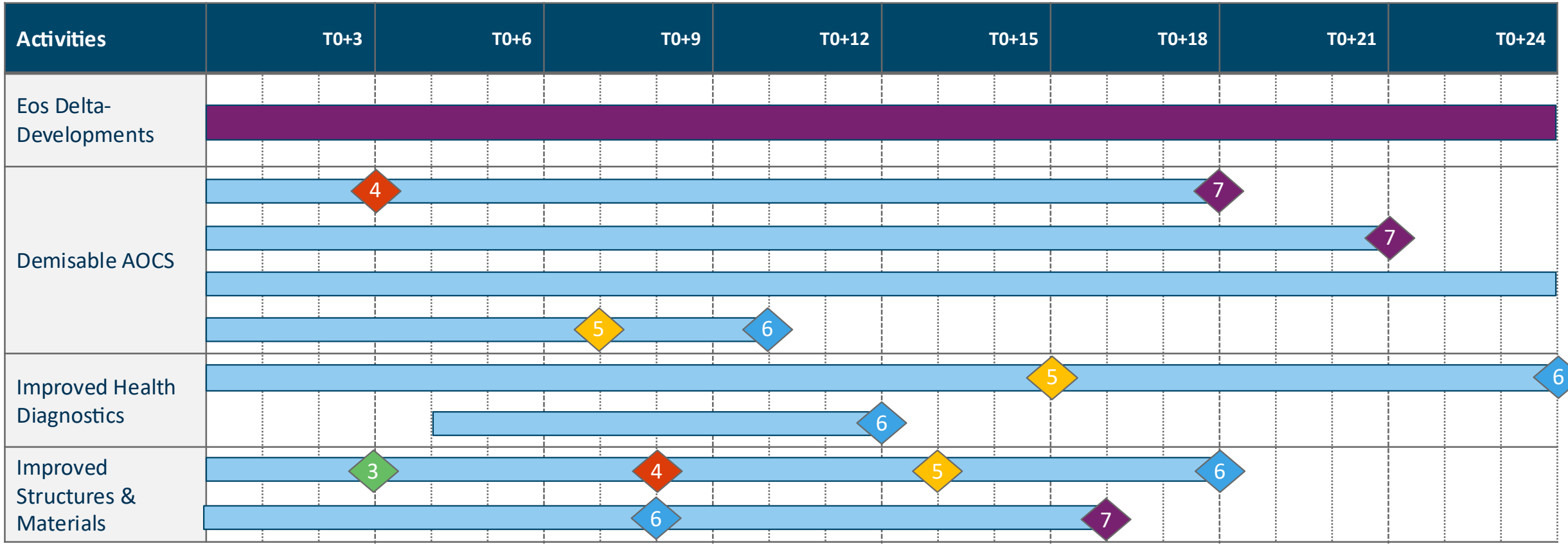
TECHNOLOGIES

- Results validated current solution
  - 2D generation MSN markers could be considered once COTS
    - Assuming unchanged interfaces
- No resulting changes to Eos baseline



TECHNOLOGY MATURATION ROADMAP

ZERO DEBRIS TECHNOLOGIES ROADMAPS



THANK YOU!

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