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CHEOPS Adaptation to the Zero Debris Era

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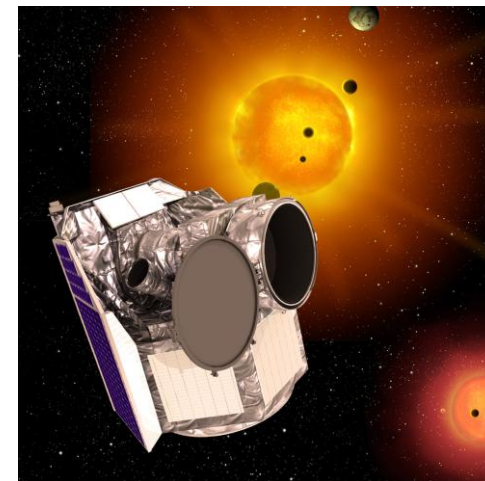
CHEOPS-INTA-OPS-PRE-072
Zero Debris Week 2026

2026/09/10



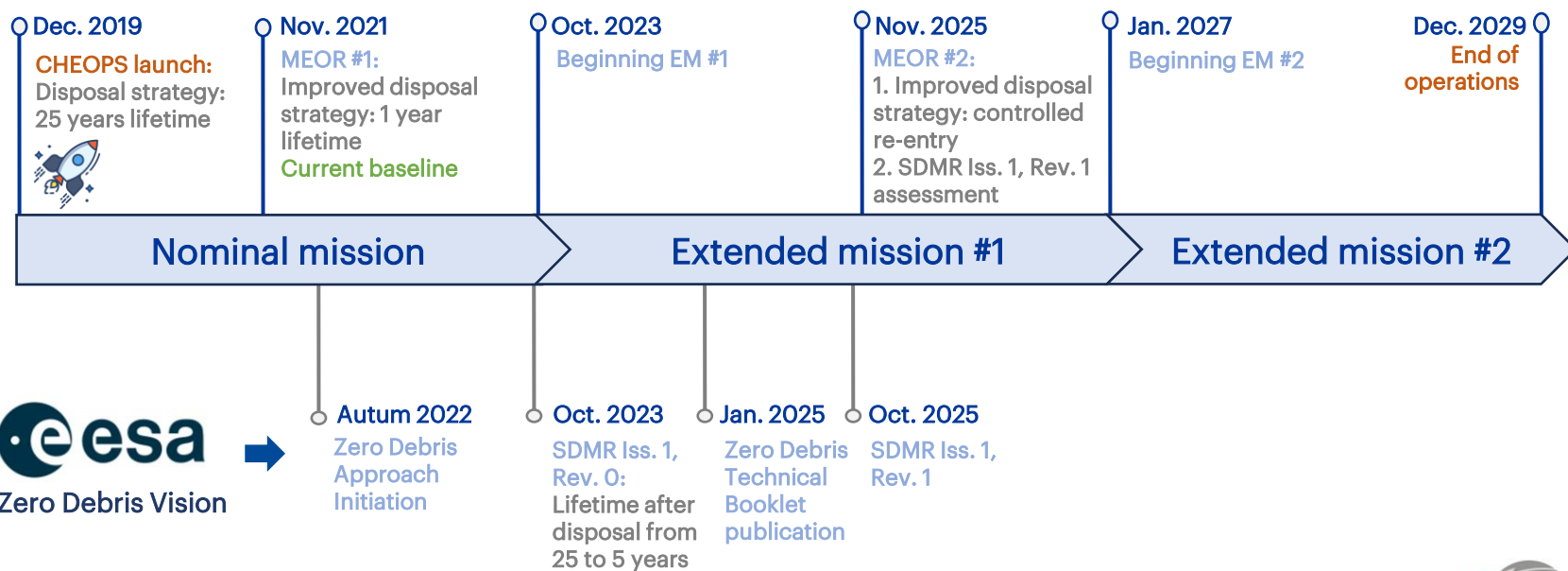
CHEOPS mission

-  **CHEOPS** (CHaracterising ExOPlanet Satellite) is an ESA mission dedicated to study already-known **exoplanets**
-  **Sun-synchronous** orbit at a height of **690 km**
-  **Mission Operations Centre (MOC)** located at **National Institute of Aerospace Technology (INTA)** in Madrid



CHEOPS: Towards Zero Debris

🇪🇸 How can a mission already in orbit adapt to the Zero Debris (ZD) vision?

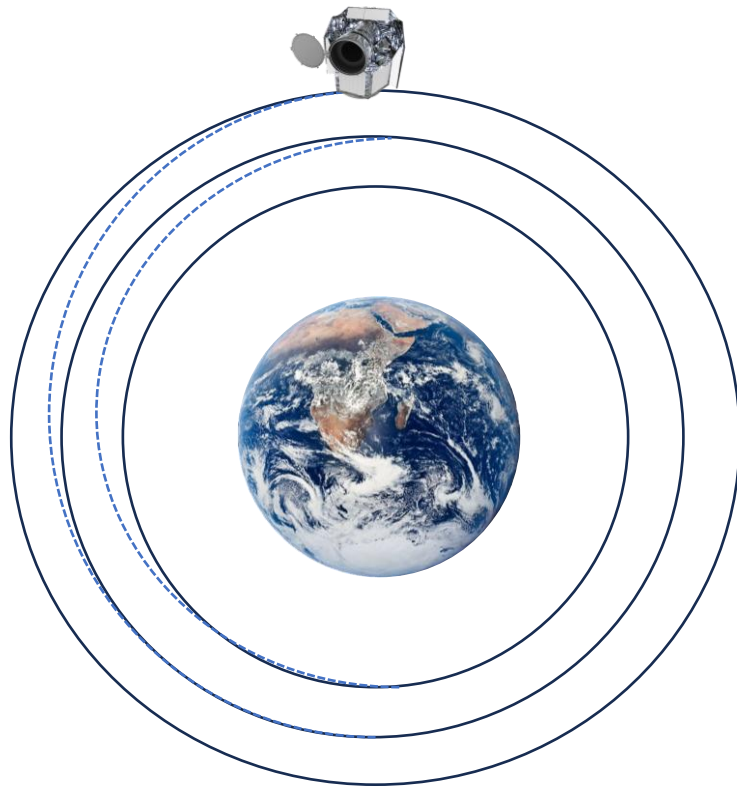


Current Disposal Strategy

Strategy at launch

- 🚀 Last orbit: 700x540 km
- 🚀 Re-entry time after disposal: 25 years

Fully compliant with SDMR
aplicable at the time



Current baseline: circular strategy

- 🚀 Last orbit: 350x350 km
- 🚀 Re-entry time after disposal: 1 year
- 🚀 Adopted as baseline in MEOR #1 (2021)

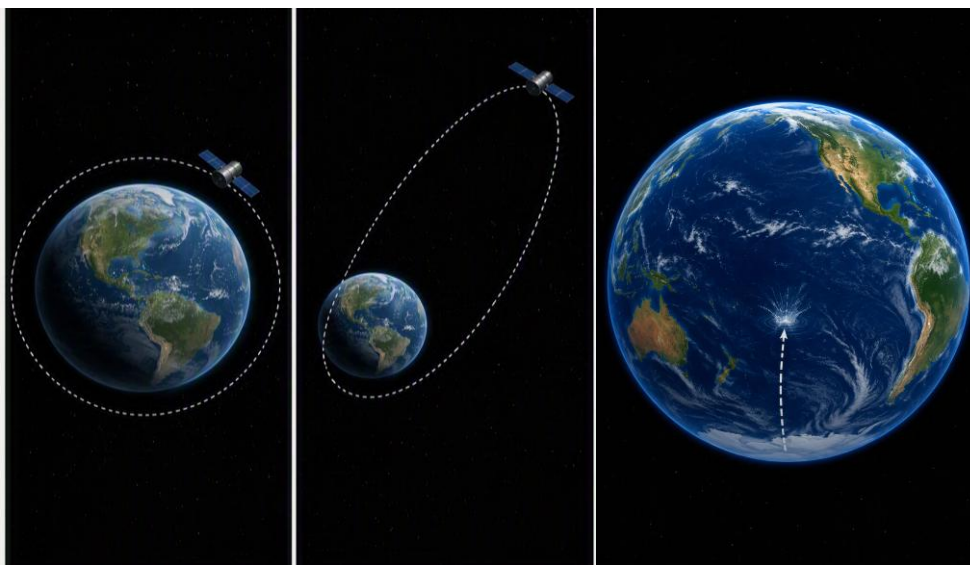
Fully compliant with current
SDMR
Aligned with ZD ambitions



Controlled Re-entry Proposal

As ZD expectations evolved, an opportunity for improvement was identified:

- 🇪🇸 INTA/Airbus proposed a controlled re-entry strategy
- 🇪🇸 ESA authorized a feasibility study to asses an updated disposal strategy



Proposed strategy in
MEOR #2 (2025):

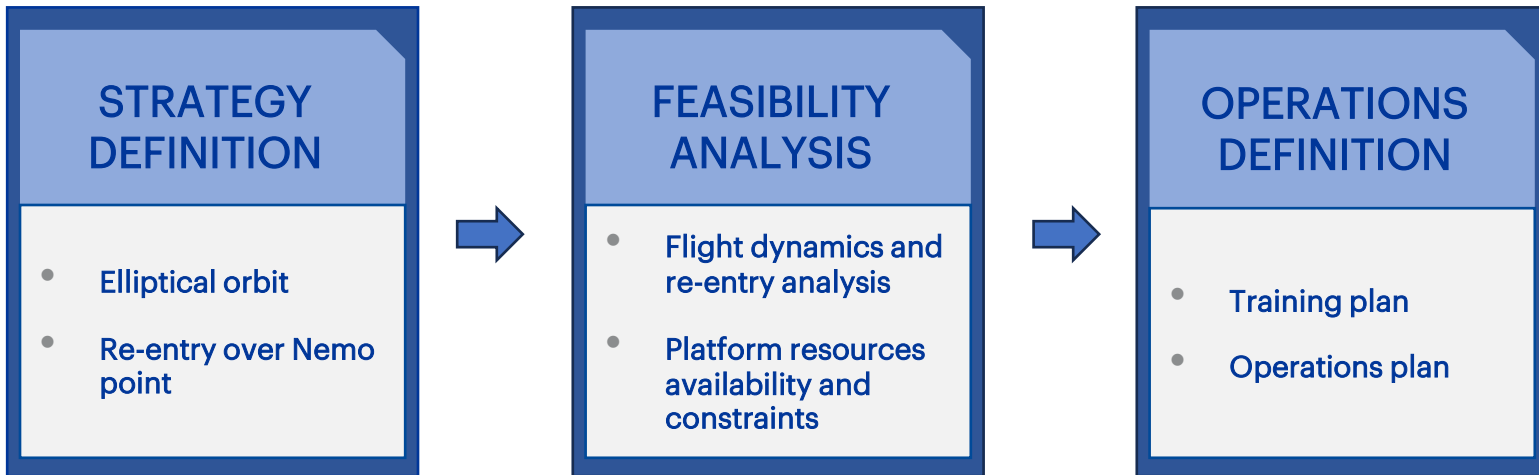
- 🇪🇸 Controlled strategy
- 🇪🇸 Re-entry time after disposal: 0



Feasibility Assessment



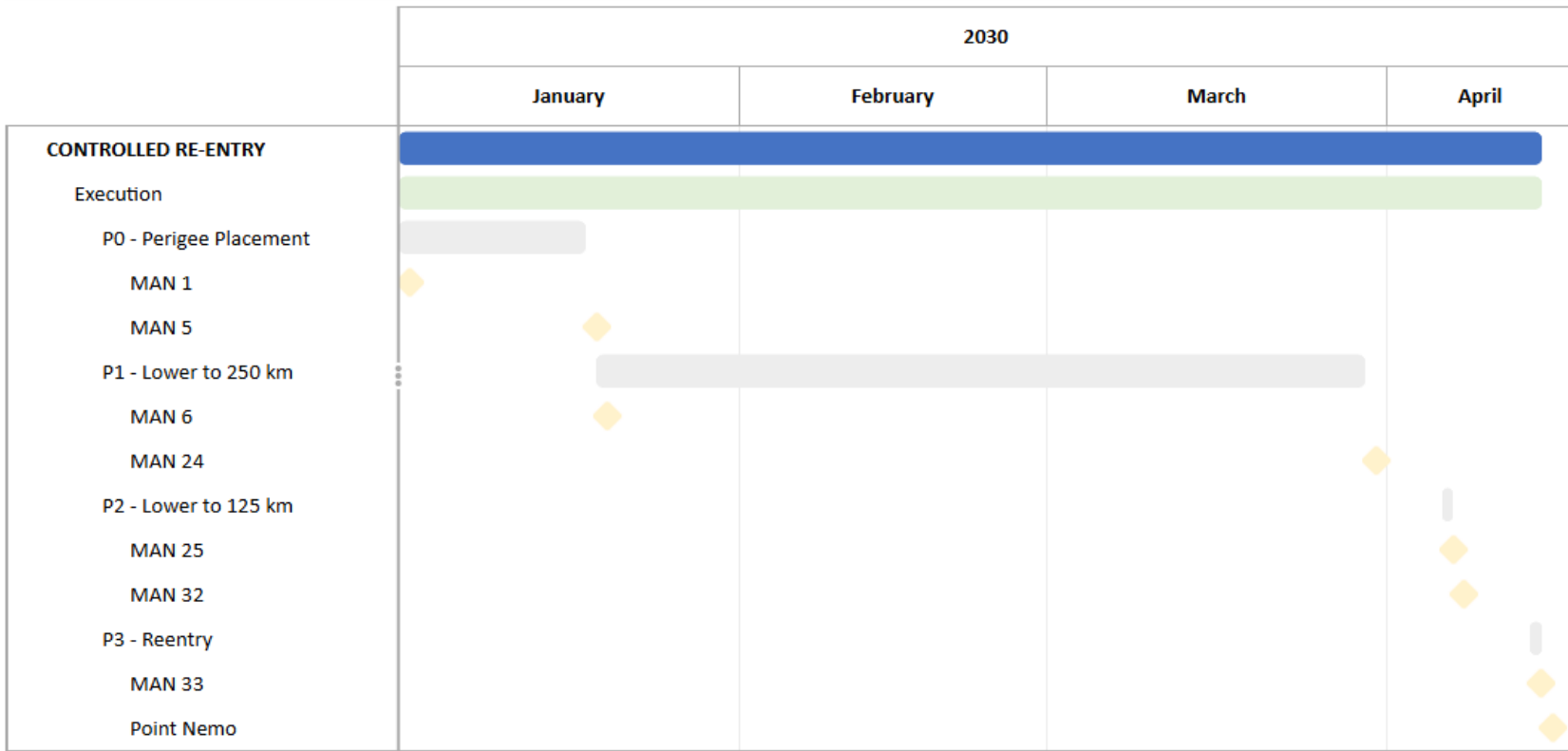
Several preliminary activities were carried out to demonstrate the **feasibility** of the controlled strategy



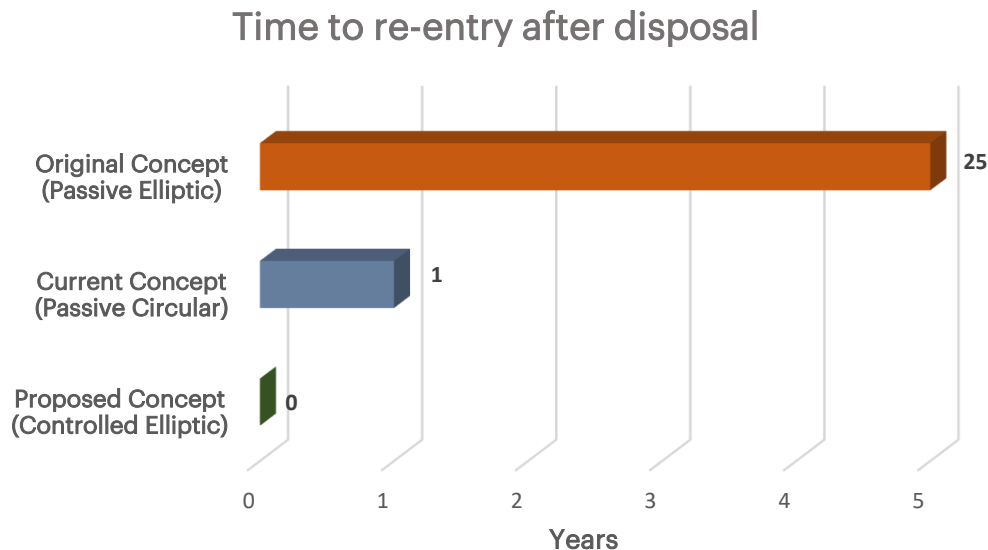


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Controlled Re-entry Timeline



From 25 years to Zero



Progressive improvement

Improved compliance with
SDMR

Further alignment with the
Zero Debris vision



Zero Debris Alignment



How does the controlled re-entry align with the Zero Debris Technical Booklet?

CHAPTER 2

GUARANTEE TIMELY
AND SUCCESSFUL
CLEARANCE



Updated disposal
strategy



Post-mission
lifetime:
25-years → 0

CHAPTER 5

PREVENT
CASUALTIES ON
GROUND



Controlled reentry
to Point Nemo



Improve disposal
safety and reentry
coordination



Minimize casualty
risk on ground

Achieving Zero
Debris objectives



SDMR Assessment



Additional ZD contribution: assessment of the **current baseline** and **controlled re-entry** strategies against the **new requirements**



Conclusion

CHEOPS is more than just a mission

-  Some **legacy spacecraft** can be adapted to **support the Zero Debris vision**
-  **Mission operations** teams play a central role in **Zero Debris** implementation
-  **Disposal strategies** can evolve with emerging needs when the **teams** are open to changes and improvements





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