

The main goal of NEO-MAPP is to provide:

Significant advances in both our understanding of the response of NEOs to external forces (in particular a kinetic impact or a close planetary approach), and in the associated measurements by a spacecraft (including those necessary for the physical and dynamical characterization in general).



European Commission



Kick-off on Feb. 6, 2020 Duration 3 years: Budget: 4 Millions Euros

Participant no.	Participant organisation name	Participant short name	Country
1 (CO)	Centre National de la Recherche Scientifique	CNRS	France
2	Asteroid Foundation	AF	Luxembourg
3	Airbus Defence and Space GmbH	Airbus	Germany
4	Aristotelio Panepistimio Thessalonikis	AUTH	Greece
5	Deutsches Zentrum für Luft- und Raumfahrt e.V.	DLR	Germany
6	FCiencias.ID – Associacao para a Investigacao e Desenvolvimento de Ciencias	FC.ID	Portugal
7	GMVIS SKYSOFT, S.A.	GMVPT	Portugal
8	Instituto de Astrofísica de Canarias	IAC	Spain
9	Institut Supérieur de l'Aéronautique et de l'Espace (ISAE-SUPAERO)	ISAE	France
10	Museum für Naturkunde Berlin	MfN	Germany
11	Royal Observatory of Belgium	ROB	Belgium
12	Universidad de Alicante	UA	Spain
13	University of Bern	UBERN	Switzerland
14	ALMA MATER STUDIORUM - Università di Bologna	UBO	Italy
15	Université Grenoble Alpes	UGA	France

P.I. Patrick Michel (CNRS)







Figure 3: NEO-MAPP timeline in the context of ongoing NEO missions and DART impact.





## **Advisory Board**

Ian Carnelli (ESA)

Michael Küppers (ESA) Aurélie Moussi (CNES)







## Makoto Yoshikawa (JAXA)







## Andy Cheng (APL) Paul Abell (NASA)



Brian May (Queen!)

In the framework of Reference Missions to be defined at the beginning of the project (**now that Hera has been selected, the project will focus on Hera**)



• **Pushing the limits of numerical modelling** of the response of NEOs to a kinetic impact, as well as of their physical and dynamical properties while maturing European modelling capabilities linked to planetary defence and NEO exploration.

• Increasing the maturity of multiple spaceborn and landed European instruments directly related to planetary defence, focusing on measurements of surface, shallow sub-surface and interior properties of NEOs.

- **Developing algorithms and simulators** to prepare for close-proximity operations and payload data analyses and exploitation.
- Developing innovative and synergetic measurement and data-analysis strategies that combine multiple payloads, to ensure optimal data exploitation for NEO missions.

• Developing and validating robust GNC strategies and technologies enabling surface interaction and direct response measurements performed by Cubesat or small/micro-lander (µLander) architectures.