

PDC2017
Tokyo, Japan

IAA-PDC-17-05-P10

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NEOSHIELD-2: OVERVIEW AND RESULTS SO FAR

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Keywords: Near-Earth object, Asteroid deflection, Impact threat mitigation, Kinetic Impactor, NEO observation and characterisation, NEO simulation and modelling

ABSTRACT

In late 2013 the European Commission issued a call for proposals addressing “access technologies and characterisation for Near Earth Objects (NEOs)”, to succeed the activities started by the NEOShield project in 2012. This new call for proposals, in the framework of the Horizon 2020 program, resulted in the granting of funding for the 11-partner NEOShield-2 project for 2.5 years from March 2015 in order to address "Science and Technology for Near-Earth Object Impact Prevention".

The project work packages are integrated into a coherent programme of research and technology development. Building on NEOShield experience, the project is investigating in more detail key technologies crucial to space missions to deflect NEOs and for reconnaissance purposes. NEOShield-2 technical activities include the development of autonomous guidance, navigation, and control systems to allow increased targeting accuracy and relative velocity of a kinetic impactor spacecraft into a small (e.g. 100-300m diameter) asteroid, systems and procedures to facilitate navigation close to a low-gravity, irregularly shaped asteroid and demonstrate techniques for precise and rapid NEO orbit determination, and the development of mechanisms for the collection of material samples. On the scientific front, astronomical observations of selected NEOs are being carried out for the purposes of broadening our knowledge of their mitigation-relevant physical properties, concentrating on the smaller sizes of most concern for mitigation purposes, and increasing the list of suitable candidate targets for deflection test missions. Statistical analyses of recently published NEO survey data, which have already produced very

useful results in the course of NEOShield, are being further explored in NEOShield-2. Furthermore, modelling work and computer simulations are being enhanced to model the fate of ejecta produced by a kinetic impactor and to identify possible safe locations for a reconnaissance spacecraft observing the impact in the vicinity of the targeted asteroid.

We will present an overview of the objectives and status of the NEOShield-2 project, including important results achieved to date in the individual work packages. Some work items and results will be reported on in more detail in separate presentations by NEOShield-2 Consortium members.

Acknowledgments: The research leading to these results has received funding from the European Union's Horizon 2020 Programme under grant agreement no. 640351 (NEOShield-2 Project).
