

SUCCESS: Planetary defence mission Hera heading for deflected asteroid



ESA's first planetary defence spacecraft has departed planet Earth. The Hera mission is headed to a unique target among the more than 1.3 million known asteroids in our Solar System to solve mysteries associated with its deflection, and Latvia also contributed to the overall finalization of this mission.

By sharpening scientific understanding of the 'kinetic impact' technique of asteroid deflection, Hera aims to make Earth safer. The mission is part of a broader ambition to turn terrestrial asteroid impacts into a fully avoidable class of natural disaster.

Developed as part of ESA's Space Safety programme and sharing technological heritage with the Agency's Rosetta comet hunter, Hera lifted off on a SpaceX Falcon 9 from Cape Canaveral Space Force Station in Florida, USA, on 7 October at 10:52 local time (16:52 CEST, 14:52 UTC) with its solar arrays deploying about one hour later.

The automobile-sized Hera will carry out the first detailed survey of a 'binary' - or double-body - asteroid, 65803 Didymos, which is orbited by a smaller body, Dimorphos. Hera's main focus will be on the smaller of the two, whose orbit around the larger asteroid was changed by NASA's Double Asteroid Redirection Test (DART) mission, demonstrating asteroid deflection by kinetic impact, in 2022.

“Planetary defence is an inherently international endeavour, and I am really happy to see ESA’s Hera spacecraft at the forefront of Europe’s efforts to help protect Earth. Hera is a bold step in scaling up ESA’s engagement in planetary defence,” said **ESA Director General Josef Aschbacher**.

Hera will also perform challenging deep-space technology experiments including the deployment of twin shoebox-sized ‘CubeSats’ to fly closer to the target asteroid, manoeuvring in ultra-low gravity to acquire additional scientific data before eventually landing. The main spacecraft will also attempt ‘self-driving’ navigation around the asteroids based on visual tracking. The mission’s launch and journey into deep space is being overseen from ESA’s European Space Operations Centre in Darmstadt, Germany.

Latvia also contributed to the overall finalization of this mission. Latvian company Eventech collaborated with ESA during mission Hera and developed qualification and flight model of time-measuring instrument with precision down to 2 picoseconds (0.000,000,000,002 seconds). Participation in a such a level project was possible due to the investments of the Ministry of Education and Science in the European Space Agency’s programmes, within which this technology was developed. Eventech’s solutions are already used in extra precise LiDAR technologies and in 70% global stations that use lasers to detect the precise position of objects in space. However, this particular time and space mapping instrument is now available also for commercial and scientific space missions as well as applications on Earth where ultimate precision and resistance to extreme environments are required (radiation, extreme high and low temperatures, remote locations without possibility for repairs, etc.). This also means extra export opportunities for Latvia.

Furthermore, thanks to Latvia’s associate membership in the ESA and the company’s long-term collaboration with the ESA and the Ministry of Education and Science, ESA has already started negotiations with Eventech about possible future collaboration. Eventech Business Development Manager Adam Adamovitch also presented their products and developments to ESA Director General Josef Aschbacher in the International Astronautical Congress that took place in Milan, October 14-18.

Eventech CEO Nikolai Adamovitch emphasizes, that “it’s a monumental achievement for Eventech and Latvia”.

Photo: ©ESA