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PROVIDING AFFORDABLE SPACE EXPLORATION WITH NYX, A MODULAR AND REUSABLE
ORBITAL VEHICLE - THE EXPLORATION COMPANY

Abstract

On February 11 2022, ESA has announced the selection of 11 payloads which best fit the profile of the first mission of the new generation Ariane 6 launch vehicle from Europe's Spaceport in French Guiana: 4 scientific payloads, 2 micro satellites, 3 Cube Sats and 2 demonstrators for re-entry in the Earth atmosphere. The payloads will be hosted on a 'mass dummy' featuring a large platform, inside the 14 m long version of the fairing on an Ariane 6.

One of the re-entry demonstrators is the so-called Bikini Demo as a ridesharing payload from The Exploration Company, a recently founded French- German start-up, a global endeavor starting with European roots DNA to make space exploration affordable, available.

The Bikini Demo is a passive, small-scale demonstrator of a re-entry capsule with a mass of 40 kg. This demonstrator will be the first step towards Nyx, a modular and reusable orbital vehicle that can eventually be refueled in orbit. The technical bricks of Nyx are built with open interfaces: they are available on a SpaceStore to enable space non-space companies to use them and develop new applications.

Nyx provides a wide scope of missions ranging from 6 months around the Earth (and re-entry) to landing on the Moon (and coming back), or performing 100 km hopping on the Moon. Nyx can resupply space stations and large space infrastructures. Nyx has the potential to carry humans.

This paper describes the status of the different development programs of The Exploration Company: the Bikini Demo which will fly end of 2022 on A6, the 2024 'Mission Possible' Demo Flight with a subscale capsule, the 2026 Maiden Flight with the Nyx Low Earth Orbit Capsule and the 2028 Moon Nyx vehicle.