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THE HOMER TEST VEHICLE: INDUSTRIAL APPROACH TO EARLY TECHNOLOGY
VALIDATION FOR ADVANCED LANDING TECHNOLOGIES

Abstract

Astrium Space Transportation decided in 2008 to invest in a ground demonstrator vehicle to develop core technologies needed for mobility in space and end-game spacecrafts, targeting future applications like planetary landers, satellite-oriented servicing or space debris cleaning.

This HOVering ManEuveR (Homer) platform has been designed to mature and integrate key technologies which will be validated afterwards during dedicated ground test flights. The demonstrations objectives mainly focus on:

- Fast reacting propulsive subsystems, • GNC algorithms, • Lightweight integrated avionics unit. • Vehicle architecture and design drivers, • Process Method Tool improvement

Once validated, these technologies will then be transposed on the next generation of demonstrators to be financed by the European space agencies and their international partners.. The prototype will also provide a multi carrier platform to develop and to test new generation of sensors, avionics, software and integrated system elements needed to support future planetary lander, space servicing or interceptor applications.

The first ground test flight of the platform is foreseen by mid 2012. This will be the 1st European demonstrator operating guidance, attitude control, propulsion and functional chains sub systems on a single ground test platform.

The objective of this paper is to present in what extent the HOMER vehicle, as a carrier platform, could be adapted for planetary lander development purposes.

To illustrate this, the article shows the HOMER program status overview:

- vehicle main characteristics: payload and on-board computer capabilities, autonomy, safety, reliability and reusability • vehicle operability and ground support equipment, • system tests results. • first flight test plan and main objectives The HOMER platform which already involves partners and suppliers in Europe and in the US could welcome additional payloads like sensors or innovative equipment to be integrated in a advanced free flight test platform in a short term schedule.