



CALLISTO

Cooperative Action Leading to Launcher Innovation
in Stage Toss back Operations

Brief description

CALLISTO is a reusable demonstrator for a vertical take-off, vertical landing (VTVL) rocket stage. CALLISTO is being jointly developed, constructed and tested by DLR and CNES. The noteworthy features – compared with conventional expendable launch vehicles – are CALLISTO's landing system and its aerodynamic control surfaces.

Aims

The purpose of CALLISTO is not only to improve knowledge concerning vertical take-off, vertical landing (VTVL) rocket stages, but also to demonstrate the capabilities and technologies required to develop and exploit an operational, reusable VTVL rocket stage. CALLISTO is to carry out several flights and manoeuvres under conditions relevant to an operational launcher system.

Applications

- Demonstration of manoeuvres specific to the VTVL launcher, such as boostback or precise landing
- Demonstration of vehicle preparation between flights for next operation
- Collection of data required to optimise reusable launch vehicles

Outlook

- Cost reduction for accessing space; increased competitiveness
- Enhancing mission versatility: a broad range of payloads could be launched at low costs
- Greater environmental friendliness due to the reutilisation of rocket stages



Parties involved

DLR, CNES (France)

Facts and figures

Project term: 2017-2022
Length: approximately 15 m
Diameter: 1.1 m
Take-off weight: approximately 3500 kg
Maximum thrust: > 40 kN
Propellant: LOx/LH2
Planned number of flights: ≥ 5
Maximum flight altitude: ≥ 30 km
Launch site: Kourou, French Guiana

