

# Aerospace Europe Conference 2023

## Joint 10<sup>th</sup> EUCASS – 9<sup>th</sup> CEAS Conference

---

Abstract #XXX (to be filled by the organizers)

Preferred Topics: REUSYS

Corresponding author: DESMARIAUX Jean

e-mail of corresponding author: jean.desmariaux@cnes.fr

Type: Oral

Status of corresponding author: Regular

---

### Title

## OVERVIEW OF CALLISTO VEHICLE DEVELOPMENT STATUS

### Authors

Jean Desmariaux <sup>1\*</sup>, N. Perbet<sup>1</sup>, J. Herpe<sup>1</sup>, Y. Saito<sup>2</sup>, Adachi Hirokazu <sup>2</sup>, Minami Yoshinori <sup>2</sup>, D. Terakado <sup>2</sup>, Lars Witte <sup>3</sup>, Silas Eichel <sup>4</sup>, Jens Windelberg <sup>5</sup>

*\* Corresponding author*

*1 CNES Space Transportation Directorate, 52 rue Jacques Hillairet 75612 Paris Cedex France,*

*2 JAXA R & D Directorate, 2-1-1 Sengen, Tsukuba, Ibaraki Prefecture 305-8505, Japan,*

*3 DLR, Robert-Hooke-Str. 7, 28359 Bremen, Germany,*

*4 DLR, Stuttgart, Pfaffenwaldring 38, 70569 Stuttgart, Germany*

*5 DLR, Lilienthalplatz 7, 38108 Braunschweig, Germany*

### Abstract

The CALLISTO vehicle is a flight demonstrator for future reusable launcher stages. The program involves three countries and their space organizations: CNES for France, DLR for Germany and JAXA for Japan. The first tests will be conducted in 2024 from the CSG, Europe's Spaceport for commercial launches. The challenge is to develop, all along the project, the skills of the partners. This knowhow includes Products and Vehicle design, Ground Segment set up, and post-flight operations for Vehicle recovery then reuse.

This paper provides an update on CALLISTO Vehicle development status.

At first, program objectives are briefly listed focusing on Vehicle mission design and Vehicle life cycle, and their specificities wrt European and Japanese legacy expendable launch vehicles.

Details on flight test plan architecture and features are provided (e.g; in-flight experimentation), showing how it will both incrementally secure acquisition of key VTLV technology while preparing for high energy missions - which encompass the full scope of in-flight demonstration.

Finally, an overview of Vehicle development status is provided through a review of main architectural features including, and not limited to, load carrying structures, avionics, Rocket Propulsion System, Flight Control System, highlighting major milestones achieved over last year and progress toward first flights.

### Keywords

Reusable, Demonstrator, CALLISTO, System, design, Vehicle