

SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)
Future Space Transportation Systems Technologies (5)

Author: Mr. Guy Pilchen
European Space Agency (ESA), France

Mr. Jens Kauffmann
European Space Agency (ESA), France

Mr. Jérôme Breteau
European Space Agency (ESA), France

Mr. Guy Ramusat
European Space Agency (ESA), France

FUTURE LAUNCHERS PREPARATORY PROGRAMME (FLPP) – PREPARING THE NEXT
GENERATION LAUNCHER THROUGH DEMONSTRATORS AND TECHNOLOGIES IN A SYSTEM
DRIVEN APPROACH

Abstract

The Future Launchers Preparatory Programme (FLPP) is preparing the Next Generation Launcher (NGL) where the reduction of the exploitation cost is one of the main drivers. The reduction of exploitation cost is linked to an overall optimisation of the launch system, as well as to the introduction of relevant technologies.

The paper will introduce the general FLPP approach, which encompasses a system driven approach, and the development of technologies through integrated demonstrators. Consistently with a paper presented in session D2.4 where the system results will be presented, the logic for technology selection will be presented. This logic is based on a top-down and a bottom-up approach, the top-down approach consisting in looking for system-driven design solutions and the bottom-up approach lying on the proposal of design and technology solutions leading to substantial advantages for the system.

The paper will present the result of the selection of technologies and demonstrators as well as the corresponding objectives for technology maturation.

The paper will detail the technology development achievements. This includes maturation of various subsystems technology like reducing overall structural mass, increasing structural margins for robustness, containment of cryogenic propellants, significantly reducing fabrication and operational costs, advanced avionics, pyrotechnics, etc. to derive performing upper and booster stages targeting cost optimized launch systems. Progress in manufacturing processes, which also contribute to reduction of exploitation cost, will be emphasised as well as technologies allowing for reduction of operation costs. The development status of different integrated demonstrators will also be presented.

The perspectives of the FLPP are also presented showing how FLPP contributes for preparing sound decisions for taking on-board technologies for the Next Generation Launcher.