

BUSINESS INNOVATION SYMPOSIUM (E6)
New Space and New Science (3)

Author: Mr. Mark Hemsell
Hemsell Astronautics Limited, United Kingdom, mark@hempsellaastro.com

Mr. Julio Aprea
European Space Agency (ESA), France, japrea@gmail.com

Mr. Greg Sadlier
London Economics, United Kingdom, gsadlier@londecon.co.uk

Mr. Ben Gallagher
Reaction Engines Ltd., United Kingdom, ben.gallagher@reactionengines.co.uk

A BUSINESS ANALYSIS OF A SKYLON BASED EUROPEAN LAUNCH SERVICE OPERATOR

Abstract

The paper gives an overview of the Financial and business model conclusions of the “Feasibility Study of a SKYLON Based European Launch Service Operator (S-ELSO)” conducted for the European Space Agency.

SKYLON is a fully reusable single stage to orbit launch system under active development and is expected to reach operation in the early 2020s. The objective of the study was to explore the economic implications of SKYLON as the basis for a European launcher that would meet the requirements established by ESA for the European Next Generation Launcher (NGL). The purpose of the study was to support ESA decision making on launch service strategy by exploring the potential implications of this new launch system on future European launch capability and the European industry that supports it.

The S-ELSO would be a European entity operating two SKYLONs from Centre Spatiale Guiana (CSG) at Kourou. In addition to the SKYLONs it would require a spaceport, payload carriers and an upper stage, all of which would be procured on a commercial basis. The operator was then assumed to launch the range of mission models that were defined in the NGL requirements while charging prices that are a little below the current lowest. The S-ELSO business model showed that it could not only operate at a profit i.e. without any production or operational subsidies but also with sufficient profit to repay the acquisition costs of establishing the launch system including the purchase of the two SKYLONs.

The study also looked at the SKYLON business model assuming it was based in Europe. The SKYLON producer would not only sell to S-ELSO but to other operators (it was assumed all customers would be charged the same price). Various market sizes were considered and all showed the sales returning the development and other costs to market. However in the smaller market cases the profit levels were found to be lower than the commercial financing sources would expect on a project with this risk level, indicating that Government support for the development may be needed to de-risk and reduce the scope of private financing.