

GLXP BMT: Lunar Lander Mission Definition & Opportunistic Science during Nominal Operations

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Abstract

The GLXP BMT “MoonRaise” mission is the Barcelona Moon Team Lunar Lander and Lunar exploration mission within the GLXP initiative. GMV is the mission technical leader and is in charge of the primary mission analysis that will later derive into the different mission subsystems and elements requirements and specifications for design and manufacturing.

The classical scientific missions pivot around the scientific requirement and most of the mission elements design have the final purpose of fulfilling with the scientific requirements. This has the advantage of producing a dedicated mission to cope with all the scientific objectives (design-to-performance). The main drawback being the usually high mission complexity and cost.

The GLXP BMT “MoonRaise” mission is a low cost mission and, thus, design-to-cost approach is used instead. Even if the “MoonRaise” mission will have some dedicated scientific objectives and dedicated resources, the maximization of the scientific content of the mission is a challenge in itself, and emphasis has to be placed in the imagination and achievement of opportunistic science while in nominal (non-scientific) operational phases.

This paper presents the GLXP BMT “MoonRaise” mission architecture and mission approach and will identify potential opportunistic science targets with minimum impact on the Lunar Lander module and Rover module systems and at quasi-zero cost. The first section/s will be devoted to analyse the mission aspects, while the later section/s will be devoted to identification of interesting opportunistic science.

1. Introduction

From a mission high-level viewpoint, the GLXP BMT “MoonRaise” mission can be described as the concatenation of the operational phases shown in Figure 1 and artistically impressed in Figure 2 and Figure 3.

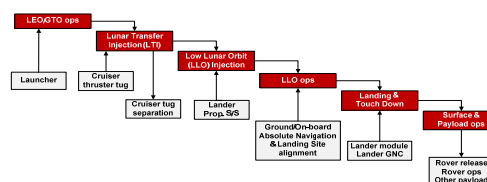


Figure 1: GLXP BMT “MoonRaise” mission architecture.



Figure 2: GLXP BMT “MoonRaise” mission phases artist impression.

