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NASA'S CAPABILITIES AND RESOURCES POTENTIALLY NEEDED IN COMMERCIAL LOW-EARTH ORBIT DESTINATIONS (CLDS) FACILITIES

Abstract

The International Space Station (ISS) is planned to be operated through 2030. To ensure a sustained US presence in Low Earth Orbit (LEO) beyond ISS end of life, NASA is enabling the development of commercially owned and operated LEO destinations. The goal is for NASA to meet its research and technology needs as one of many customers of these destinations.

The Commercial Low Earth Orbit (LEO) Development Program team at NASA Johnson Space Center has been working with NASA's research and technology community and the International Space Station (ISS) National Lab (NL) stakeholders to understand the ways in which they would like to utilize the Commercial LEO Destinations. As a result, we identified capabilities of interest in addition to estimates for the resources that will be needed from the CLDs. Through a series of one-on-one and working group meetings with NASA users/stakeholders, hardware items and facilities were identified and converted into capabilities (e.g., centrifugation, microscope, pressure chamber, etc.) to allow the CLD partners to provide innovative solutions. In parallel, resources needed to operate the research equipment (e.g., crew time, power, volume, data etc.) were estimated for the CLD providers to better understand NASA's potential future service requirements. The NASA research stakeholders include the Science, Space Technology, Space Operations and Exploration Systems Mission Directorates and Human Research Program (HRP).

The capabilities and the resources identified and summarized in this paper do not represent NASA system or utilization requirements. Instead, they constitute a preliminary set of potential capability and resource needs collated to guide CLD providers in appropriately sizing and outfitting their designs. NASA released this information in a white paper in February 2023, via the Request for Information (RFI) processİn the white paper, NASA requests feedback from industry on how these lists of capabilities and resources align with their commercial needs and that of their non-NASA customers. Information on how the capabilities/resources impact the CLDs' designs and architecture were also requested. This paper will discuss NASA's needs as well as industry's feedback to the white paper.