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A COMMERCIAL SPACE STATION: FEASIBILITY STUDY OF SATELLITE'S ON-ORBIT REFUELING

Abstract

Currently, the need for effective and reliable in-orbit servicing has grown due to the development of

reusable spacecraft and the rise in the number of satellite launches. However, there is a considerable lack of standardized procedures and interfaces to perform the desired activity; thus, a LEO Commercial Space Station stands out as a big prospect to host a main in-orbit servicing outpost, making use of a subsystem able to reach the position of a new set of standardized satellites, allowing an increase in their lifespan by performing refuelling operations. Therefore, the scope of this study is to examine the feasibility of developing a commercial LEO station subsystem for the use of government and commercial spacecraft, thereby contributing to an evolving and growing space economy. Consequently, a market analysis of the demand for in-orbit refuelling was performed, reviewing the available technology and cost-benefit analysis, including a detailed breakdown of the project's technical, operational, and financial aspects. This feasibility study was conducted by a group of international students from the SEEDS Master Program to lay the basis for a more sustainable and profitable space sector.