SMALL SATELLITE MISSIONS SYMPOSIUM (B4)
Hitchhiking to the Moon (8)

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CONCEPT FOR A LUNAR TRANSFER VEHICLE FOR SMALL SATELLITE DELIVERY TO THE MOON FROM THE INTERNATIONAL SPACE STATION

Abstract

The International Space Station (ISS) has developed as a very capable center for scientific research in Lower Earth Orbit. An additional potential of the ISS that has not thus far been exploited, is the use of this orbiting platform for the assembly and launching of vehicles that could be sent to more distant destinations. This paper reports the results of a recent study that looked at an architecture and conceptual flight system design for a lunar transfer vehicle (LTV) that could be delivered to the ISS in segments, assembled, loaded with payload and launched from the ISS with the objective of delivering multiple small and micro satellites to lunar orbit. The design of the LTV was optimized for low cost and high payload capability, as well as ease of assembly. The resulting design would use solar electric propulsion (SEP) to carry a total payload mass of 250 kg from the ISS to a 100 km lunar orbit. A preliminary concept of operations was developed considering currently available delivery options and ISS capabilities that should prove flexible enough to accommodate a variety of payloads and missions. This paper will present an overview of the study, including key trades, mission and flight system design, and notional operational concept.