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IAF SPACE EXPLORATION SYMPOSIUM (A3)
Moon Exploration – Part 1 (2A)

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LUNAR SUPPORT SERVICES – A COMMERCIAL PARTNERSHIP FOR SUSTAINABLE EXPLORATION

Abstract

Surrey Satellite Technology Limited (SSTL), Goonhilly Earth Station (GES), and the European Space Agency (ESA), are engaged in a commercial partnership to deliver supporting services for lunar exploration. The partnership is developing a low cost, commercially developed, space and ground segment suite to form an integrated set of services supporting lunar exploration and utilisation over the coming decades. The partnership will deliver a set of services that will be an enabler for self-standing small lunar missions, as well as supporting, and integrating with, larger programmes and missions. The long-term aim is to deploy a constellation of lunar orbiters providing communications and navigation services to users on the lunar surface, as well as in cis-lunar space. This will be supported by a constellation of ground stations forming the first commercial deep space ground network. Internationally defined protocols and standards will be used (both in the space and ground segments) allowing for mission flexibility and cross-support opportunities to other 3rd party missions. The orbiting assets also provide opportunities for the transport of payloads to lunar orbit. These are envisaged to be small satellites such as Cubesats, which will benefit from the transportation opportunities of being taken directly to lunar orbit as well as the aforementioned communications and navigation functionality. In addition, there will be opportunities for transport of hosted payloads to lunar orbit, providing opportunities for long-term technology demonstration and verification beyond Earth orbit. Programmatically the partnership is being approached in a step-wise fashion, with defined deployment phases, allowing a practical approach to risk sharing amongst the partners, minimising unnecessary risk exposure, whilst building the service capabilities at the same time as the lunar services market develops and matures. The paper provides a summary of the partnership architecture, the opportunities that it will provide and how these will provide mutual benefits to future lunar exploration, as well as the programmatic implementation plan and road-map for the future.