

LUNAR MISSION SUPPORT SERVICES

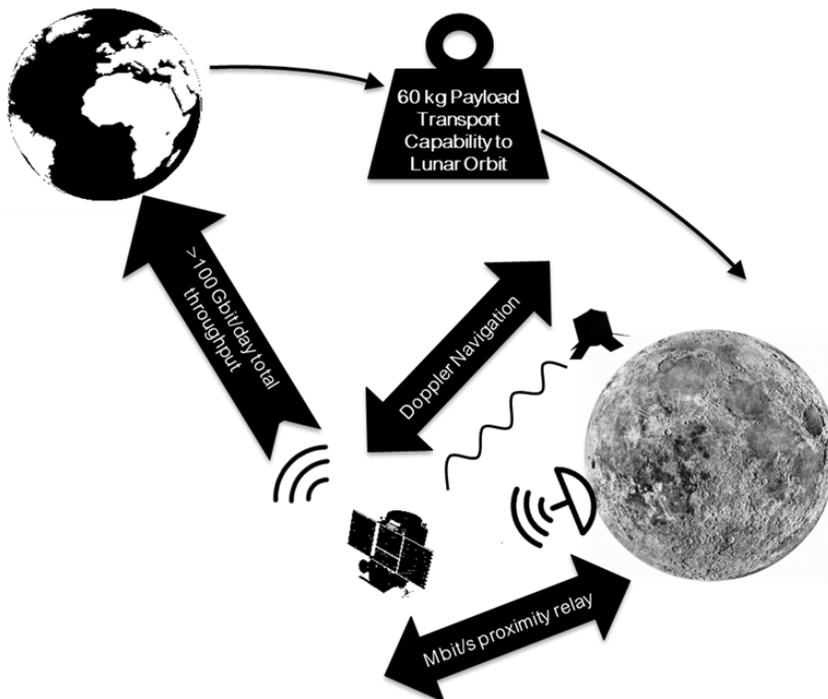
Exploration in Partnership

Surrey Satellite technology Limited (SSTL) and Goonhilly Earth Station (GES), in partnership with the European Space Agency (ESA), are developing a set of Lunar Mission Support Services (LMSS).

The LMSS partnership aims to develop communications, navigation and operations services for use at the Moon, to support both orbiting and landed lunar assets. In addition, as part of the build-up of this infrastructure, there will be opportunities for transportation of user payloads to lunar space. Services will be available to both public and private sector users, and will utilise international standardised protocols for interoperability and cross-support.

As part of the partnership a “Pathfinder” mission is planned in 2022/2023, which will be a first step in establishing the afore-mentioned infrastructure.

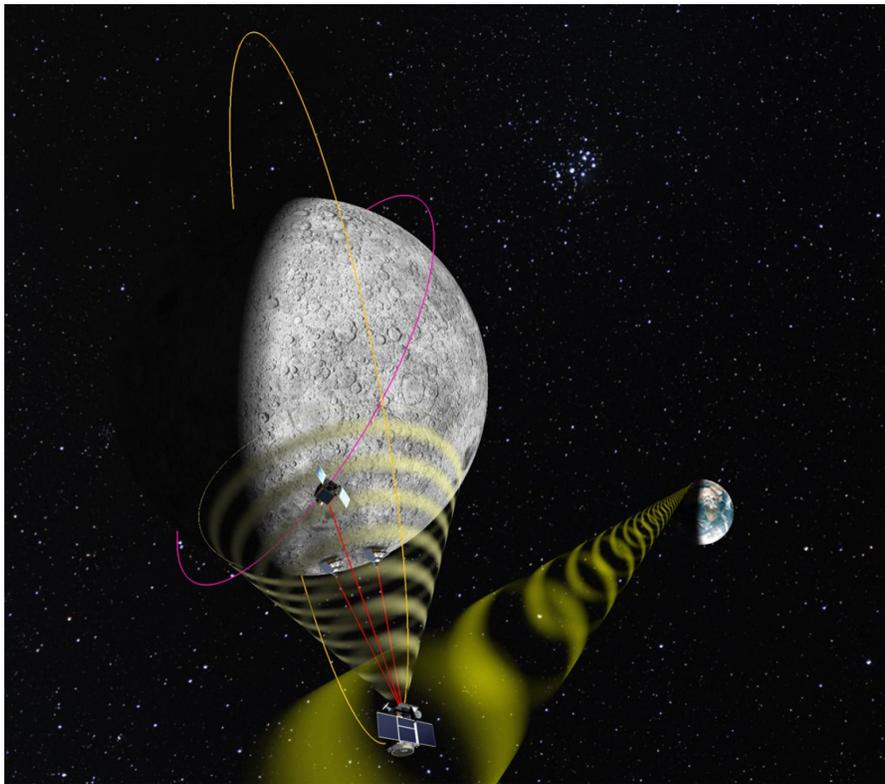
This open announcement, provides information for potential service users on the Pathfinder mission, who are encouraged to contact us for further information.



Supporting the Development of a Sustainable Lunar Presence

- Transport of your payloads to lunar orbit
- Up to 60 kg available per mission
- Opportunities for:
 - Lunar cubesats and nanosats
 - Micro landers
 - Hosted payloads
- Dedicated communications relay satellite
 - High rate X-band Earth link
 - Lunar proximity links in UHF and S-band
- Commercial deep-space ground station and low cost operations
- Internet interface to your mission and payload operations
- Integrated mission ticket pricing available (transport + comms/&nav package)

lunar@sstl.co.uk



The Value of Relay Communications

For missions on the lunar far side, the use of a relay spacecraft is the only way to communicate between a landed system and the Earth

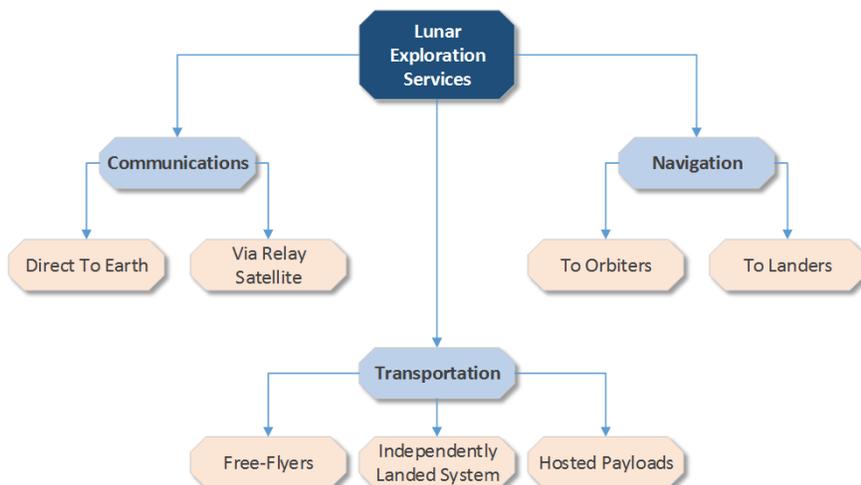
Even for near-side missions, or for those in polar regions, the use of local in-situ communications relay can out-perform Direct-To-Earth communications, especially for smaller or constrained missions, where the mass and power available to the lander for communications may be limited.

The combination of the SSTL relay spacecraft services and the Goonhilly ground segment, provides advantageous lunar surface and orbit coverage, as well as significant data throughput capacity.

Mission Enabler

Miniaturisation of technology, and advances in processing power and software have enabled an explosion of small satellite applications in Earth orbit. Similar technologies can be used to enable a new generation of novel and innovative low-cost solar system exploration systems. However these type of missions have two main inhibitors: 1) Communications over large distances, 2) Delta-Velocity needed to reach their destination

The services offered by SSTL and GES directly address these critical issues, helping to enable new mission and exploration opportunities for agencies, businesses and new ventures



Goonhilly Earth Station

Transport

The Pathfinder mission space segment provides the opportunity to transport 60 kg of customer payload mass to a high inclination lunar orbit

User payloads can be released in one of several elliptical polar orbits, for 'free-flying' missions.

Customer payloads that remain hosted on the Pathfinder relay spacecraft will reside in a highly elliptical relay orbit.

The orbit exploits natural orbital perturbations to remain frozen and stable over long time periods (years), thus offering a platform for long-term payload experiments and investigations, as well as being an ideal platform for communications



LMSS Pathfinder Spacecraft

Lunar Flight Opportunity

The Pathfinder mission offers users the opportunity to purchase a 'ticket' for their small missions and payloads, to be delivered and deployed in-orbit around the Moon, as well as being provided with command and control links and payload data relay in cis-lunar space. The ticket price is £1M/kg (1 million GBP per kg) which includes:

- 1kg payload mass allocation
- Data relay & navigation allocation
- Launch and transfer to lunar orbit
- Internet-based secure interface for dedicated mission control and data access
- Mission support and partner coordination

This mission flight opportunity aims to open up lunar exploration to a wider user community than has been typical in the past by bringing lunar missions into the price range of national agencies and institutes, small private firms and even university budgets. This will enable new science, exploration and demonstration missions to be undertaken, and increases the potential for deep space exploration to be performed in new and innovative ways.

SSTL and GES will work in partnership with customers and service users. The final mission performance will be iterated to deliver the best balance between overall mission performance, passenger manifest preferences, and price

Contact

Please contact us for more information on flight and service opportunities to support your lunar adventure:

lunar@sstl.co.uk +44 1483 803083

