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INTEGRATING RADIO FREQUENCY AND OPTICAL COMMUNICATIONS IN A SINGLE EARTH
STATION NETWORK FOR LUNAR AND CISLUNAR MISSIONS

Abstract

Getting to the Moon is hard work but communicating with and navigating a spacecraft does not have to be. At **Kongsberg Satellite Services** - KSAT - we have expanded our existing ground network of over 200 antennas across more than 25 geographically distributed sites to provide communications support to lunar and cislunar missions. Through a single point of integration, lunar mission customers will be provided with unparalleled communications coverage extending all mission phases.

This paper will present **KSAT Lunar** services and introduce the technologies deployed for our customers going to the Moon. KSAT lunar partner network is composed of large (15+ meter) RF parabolic antennas spanning multiple continental regions and able to provide 24/7 communications to the Moon, in S, X and Ka bands. In addition, this RF product will be complemented with our newly deployed optical ground station network, which is the first such commercial solution in the market and will be able to provide Gigabit-per-second communications for lunar distances.

In order to deliver cost efficient services, KSAT Lunar brings our long experience in serving LEO missions but with a focus on standardization, modularity and new technologies. The paper will describe main key advances for providing flexibility and faster integration for our customers, including our multimission modular baseband units, the use of Software Defined networking and also KSAT's Virtualized Ground Architecture.