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FIRST OPTICAL GROUND STATION INTEGRATED IN A SERVICE PROVIDER NETWORK

**Abstract**

At present, there exists a global gridlock in the optical downlink domain due to both, a lack of industrialised ground stations made available for regular service and an insufficient number of spacecraft using optical downlinks.

To unlock this situation, KSAT and partners have initiated the creation of an optical ground station network, called Optical Nucleus Network, which will become the first such network worldwide.

Whilst some reference optical ground station solutions are currently in operation, they are built for the purpose of single mission support and scientific evolution of the downlink as well as for measuring channel behaviour.

Available optical ground stations do not fully meet the requirements of a service provider in terms of complexity and industrialization, i.e. automatization and remote operations, capability to support multiple missions, cost-optimization etc. Therefore, a new optimized ground station solution had to be engineered.

This paper will give insights about the novel design and capability of the first industrialized optical ground station which has been recently built. Furthermore, initial performance results from the commissioning testing will be presented, as well as deployment plans to increase optical downlink capacity of the ground network in the future.