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AURALIS: ANALYSING, EVALUATING, CHARACTERISING AND LOCATING GNSS INTEFERENCE FROM SPACE

Abstract

GNSS is being used for an ever-expanding range of applications. Modern economies are now dependent on GNSS for the provision of global, reliable and continuous position, navigation and timing information. Critical national infrastructures and vital governmental services are now reliant on access to GNSS signals. At the same time, GNSS threats and vulnerabilities are being exposed which if not monitored and managed can lead to disruption, degradation and denial of GNSS signals.

The GNSS market is made up of over 8 billion devices and is expected to grow to 250 billion by 2025. In addition, the market for GNSS jamming and spoofing technology is valued at 5 billion by 2025. The opportunity is to offer a new level of protection to secure the investments made in the GNSS markets.

In order to provide a true global monitoring capability to complement the existing ground networks, NSL is evaluating the opportunity to deploy a satellite-based monitoring service. The service would provide 24/7 monitoring of the GNSS spectrum to support regulators, service providers, infrastructure operators and end users who wish to have assurances that GNSS signals are available and reliable for use. The service will be able to detect outages, generate alerts, identify the cause and locate the source of any interferences, ensuring that GNSS-based applications remain protected.

Known as AURALIS, the system shall be based on a constellation of satellites, operating in an SSO. The system will utilise a 3U CubeSat, consisting of a GNSS receiver which monitors GNSS frequency bands and bandwidths, and an S-band communication antenna supporting a near real-time alert of GNSS threats. The system is designed to work in unison with a ground-based network, supporting global coverage. More in-depth surveys are also possible with sampling of hotspots or areas of interest.

This paper will outline the core concepts behind the technology, including areas such as satellite and constellation design, concept of operations and service delivery. It will also include discussion on target markets for GNSS interference detection and how the mission may be offered as a service.