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SATELLITE DETECTION AND TRACKING CAPABILITIES OF THE AUSTRALIAN NATIONAL  
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**Abstract**

With ever rising amounts of satellites and debris in orbit, tracking capabilities need to be increased and upgraded on a global scale to keep up with the continuous growth of objects to be tracked in orbit. It is important to have more sensors distributed all over the world to support space traffic management (STM) and space situational awareness (SSA) efforts. Also needed is a variety of sensors with different capabilities accommodating the different characteristics of different satellites in different orbits, so that different features of satellites can be measured. Telescope facilities solely dedicated for the purpose of STM and SSA are expensive to build and mostly not yet commercially viable, especially when new techniques are being developed to improve detection and extent tracking times.

The Australian National University has identified how their optical telescopes can be repurposed for space situational awareness and is putting considerable effort into implementing SSA detection and tracking capability into established and newly developed facilities.

We are presenting three optical telescope facilities in this paper and show how their capability can be harnessed for SSA applications: SkyMapper, an already established optical telescope dedicated to a Southern Sky Survey in the visible, but also capable of geostationary satellite detection; the Dynamic REd All-sky Monitoring Survey (DREAMS) telescope suitable for satellite detection in low-Earth orbit in the short wave infrared (SWIR); and an optical communications ground station dedicated to develop and operate satellite laser communication technology, but also capable to host a satellite detection and tracking service in the visible.