ENHANCING & SUPPLEMENTING JORN USING GPS-R

University of New South Wales - University of Sydney

"Monitoring of the ionosphere from low Earth orbit using reflected GPS signals to enhance JORN."

Problem

A need to address the limitations of the Jindalee Operational Radar Network (JORN), used to defend Australia.

Solution

The team developed software that utilised reflected Global Navigation Satellite System (GNSS) signals to make additional ionospheric observations that can detect large surface vehicles from low Earth orbit. The enhanced GNSS receiver is capable of tracking and navigating with Galileo E1 and GPS L5 signals.

In the next stage, the team will develop hardware and algorithms that could be applied to the problem of monitoring the ionosphere from space using reflected Global Positioning System (GPS) signals.

The technology has been recognised as a sovereign Defence capability and has other applications for guidance in avionics and ammunition.

START TRL: 2
EXIT TRL: 3
DIN INVESTMENT: $349,789
EXTERNAL INVESTMENT: $691,500
NO OF RESEARCHERS: 4
NO OF NEW ROLES: 1

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DIN Pilot Project
Funding $150,000

2020

Australian Space Agency
Advanced GNSS Receiver for CubeSats, Rockets and Remote Sensing $691,500

2021

DIN Pilot Project 2.0
Funding $199,789

2023