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Defence Innovation Network Grant Scheme: Pilot Project

MINIATURISED ACTIVE RADAR

PROBLEM

Land based force elements positioned ahead of the forward line of troops cannot solely rely on strategic assets such as radar capabilities from overhead fixed wing assets for situational awareness and high bandwidth communications. This is due to the non-permissive nature of the region of the battlespace they occupy. Such force elements are highly vulnerable to larger enemy Land forces, and further vulnerable to rotary and fixed wing close air support.

Land based force elements need an organic situational awareness/ high bandwidth communications capability when strategic assets are unavailable. This capability would give them beyond line of sight detection and early warning for larger land forces and incoming air vehicles, as well as a directional high bandwidth link within the combat team; such as a small UAS with Active Radar.

NEED AND RELEVANCE TO DEFENCE

Defence requires miniaturised phased array radar technology for use with dismounted combat forces in a non-permissive (no air superiority, communications denied) environment. This is for both a "know" and "sense" capability, as well as the maintenance of a high bandwidth tactical data link. This technology will support combat teams when they move beyond the reliable support range of strategic assets such as fixed wing radar.

RESEARCH QUESTION

Can Active Radar technology be miniaturised onto a small UAS platform for use by land combat forces in both sensing beyond line of sight (greater than 50km) and directional communications?

EXPECTED OUTCOME

A MVP to identify miniaturised active radar technology for small UAS in support of tactical ground manoeuvre elements. For example; two small UAS capable of directional communication between one another and beyond line of sight sensing capability.