

EW and Radar

EW - Research in this area focuses primarily on fundamental, low technology readiness level research to deliver a multi-functional Electronic Warfare approach to achieving enhanced survivability and Information Advantage in the battlespace. The research considers multi-layered, synchronised effects with an increased focus on deception and precision to deliver integrated, novel, multi-spectrum Electronic Surveillance, Electronic Defence and Electronic Attack options as part of a joint Cyber and Electromagnetic Activities (CEMA) enterprise across all domains.

Radar - Novel and innovative S&T research will develop and de-risk radar sensing concepts and technologies, focusing on novel and agile sensors and back-end processing. Research will focus in the following areas: wideband arrays; passive and multi-static sensing; Low Probability of Intercept/Exploitation waveforms; cognitive radar; high-Doppler resolution for detection and classification of difficult targets; Tagging, Tracking and Locating; next generation imaging techniques for complex radar applications; and, Commercial Off The Shelf devices. This research will result in an improved ability to intelligently and covertly detect, track and classify difficult targets in a cluttered, congested and contested environment will be achieved (providing adversary "overmatch").

Electro-Optics

Fundamental research to identify, develop, de-risk and demonstrate next generation ElectroOptic/Infrared (EO/IR) sensing concepts and technologies. The S&T will focus on agile sensors and novel back-end processing, not available in the commercial sector, to deliver a step change in the Detect, Track, Recognise and Identify (DTRI) of difficult targets. The sensing concepts will provide military freedom of manoeuvre by overmatching adversary capabilities and extending the ability of sensors to operate in more contested environments against a broader range of threats. The research will result in EO/IR capability in sensor assessment, sensor protection, sensor modelling and the implementation and exploitation of highly classified sensor systems and processes.

Maritime Domain Awareness

Research to develop, de-risk and integrate technology & systems so that the RSA Navy Surface Fleet are able to successfully fight in an increasingly complex information environment that exploits the application of information warfare (IW) across the full spectrum of operations including war fighting, maritime security and defence engagement, enabling the Navy to be an information-oriented navy, ready to use information as a weapon and tool.

Border Surveillance

Low Technology Readiness Level (TRL) exploratory activities to generate ideas for novel sensing and identify the next generation of sensing techniques. Research will identify, develop and de-risk Electronic Surveillance (ES) concepts and technologies to offer a decisive and/or asymmetric operational advantage to military and security forces. The focus is on agile novel sensors and the back-end processing to Detect, Track, Recognise and Identify (DTRI) difficult targets to overmatch adversary capability and enable operations across a greater

range of environments and diversity of threats. This includes ES operations in congested urban environments, understanding the Electromagnetic Environment (EME) with constrained and uncertain a prior knowledge, and determining the intent of adversaries who use global, diverse, encrypted, wired and wireless communications networks. Operating in current and future congested and contested Radio Frequency (RF) environments, these capabilities must be robust and able to overmatch those of the threat or target. It will include development of ES sensor technologies that adapt to unknown threats and are able to extract information from signals. This will permit a pervasive, autonomous and robust enterprise.

Chemical and Biological

Research to assess the implications of technological developments in the use of CBR, and work to develop intervention options across the full spectrum of effects. Work includes analysis and attribution of CB materials, understanding threat signatures and threat systems, understanding the hazard associated with CB threats and proactive defeat mechanisms, and providing advice on arms control and prevention.

Understanding the physical risks to personnel in CBR-contaminated environments and developing mitigation and protection strategies to reduce potential casualties. Development of CBR sensing technologies to better detect, locate, identify and monitor current and future CBR agents and manmade hazard threats, and advances in CBR hazard management and CB physical protection. Key outputs include increased understanding and development of medical opportunities to improve the survivability and recovery of casualties of CBR weapons, for example developing affordable medical countermeasures and medical care in complex environments. Developing early diagnosis options to support medical interventions for the treatment of deliberate exposure to chemical and biological weapons.

Anti-Material Rifle (20mm):

The requirement for the AMR capability for the both RSA and Gol. The existing technologies are outdated and there is a requirement for modernised system for Army and SF applications. There is also a requirement to develop a modern industrialisation process for this capability.

The same could be done for LMG capability