Capability Area	Location(s)	Title	Description	Aerospace/ Aeronautical Engineering, Naval Architecture	Chemical, Radiological, Biological, Food sciences	Computer Sciences, IT, Software Engineering, Telecommunications	Electronic/ Electrical Engineering	Materials Science	Mathematics and physics	Mechanical and Mechatronic Engineering (including robotics)	Psychology and Social Sciences	Other related areas
Aircraft Performance & Survivability	Edinburgh (SA)	Cadet: UAS Research/ Robotics	The cadet will contribute to scientific research in unmanned aerial systems and trusted autonomy; and assist in the design, development and implementation of advanced aerial autonomy software and hardware behaviours with the ultimate aim of field experimentation. This work will be carried out in specialist laboratory and test facilities using a mixture of small and micro air vehicles as well as ground support equipment.									
Aircraft Structures	Fishermans Bend (VIC)	Cadet: Risk and Reliability Research	The cadet will develop a conceptual decision-making framework (with the capacity to blend: logic, models, data, probabilistics and policies) to provide a structured approach to assessing airframe performance.									
Aircraft Health and Sustainment	Fishermans Bend (VIC)	Cadet: Robotics/ Material State Awareness	Cadets will contribute to scientific research in advanced structural diagnostic and material state awareness technologies. Cadets will assist in the design, development, testing and implementation of automated and autonomous inspection capabilities using ground-based and aerial robotics. Tasks include data processing and analysis, computational modelling and simulation, and technology development and evaluation in specialist laboratory and test facilities.									
Airframe Technology and Safety	Fishermans Bend (VIC)	Cadet: Material Science	The cadet will investigate how electromagnetic and energy storage technologies (i.e. antennas, feeds, metamaterials, frequency selective surfaces and structural capacitors) can be integrated into composite structures applicable to UAVs and other Defence Platforms. The work would ideally suit an engineer or scientist with experience in both electromagnetic modelling and composites design and testing.									
Aerospace Systems Effectiveness	Fishermans Bend (VIC)	Cadet: Computer Science	The cadet will support software development in a range of environments including Human in the Loop simulators for Aerospace applications and Human Factors laboratories used to conduct research into topics such as Team Training and Night Vision. The work would ideally suit a computer scientist with general software skills and the ability to integrate laboratory hardware is desirable.									Philosophy
Assured Communications	Edinburgh (SA)	Cadet: Protected Satellite Communications	The cadet will contribute to military satellite communications survivability research. Activities will include exploring and applying digital signal processing techniques for communications waveforms and anomaly detection algorithms for satellite system network defence. The role will include a mix of research, technical and experimentation tasks. The cadet will participate in the operation of satellite communications equipment involved with links to and from existing communications satellites. This role will require a solid grasp of basic mathematics and science concepts with a proficiency in one or more programming languages preferred.									
Cyber Sensing & Shaping	Edinburgh (SA)	Cadet: Communication Networks Research	The cadet will contribute to communication networks research, specifically in the area of routing protocols, exploit discovery and assessment. Tasks will include investigating routing protocol attacks described in literature, implementing code and conducting experiments that can be used to analyse the behaviour. The cadet will develop techniques to characterise the observed behaviour and evaluate the real world impact of the vulnerabilities explored. This role will suit an engineer or scientist that is interested in and/or has experience with computer systems, network architectures and technologies and software development.									
Cyber Assurance and Operations	Edinburgh (SA) Fairbairn (ACT)	Cadet: Active Security Technologies	The cadet will contribute to research in software systems security and the development of program analysis techniques as they apply to a diverse range of embedded and military systems. The intended outcome is to enable the discovery of latent vulnerabilities and the verification of security critical functionality.									
Systemic Protection and Effects	Edinburgh (SA)	Cadet: Military Cyber Systems	The cadet will utilise, artificial intelligence and machine learning techniques to develop software that discovers and assesses cyber-vulnerabilities of military platforms (i.e. ships, aircraft, land-vehicles) and systems. The cadet will work closely with peers and Australian Defence Force (ADF) personnel to develop novel concept demonstrators to support the generation of next-generation cyber-defence capabilities for Defence.									
Land Capability Analysis	Edinburgh (SA)	Cadet: Land Force Development and Evaluation	Understanding the impact different organisational configurations have on combat performance underpins the development of a robust and agile future Army. The cadet will contribute to the analysis of Army organisational concepts, structures and combat systems design and performance; and have the opportunity to develop a broad understanding across numerous analytical areas (i.e. future security environment, organisational concepts and designs, performance evaluation, and close combat wargaming and simulation).									Systems Science Business & Economics
Joint Capability Analysis	Edinburgh (SA)	Cadet: Sociology	The cadet will contribute to researching the significance of social conditions that contribute to the emergence of social conflict, and in particular, the construction of violent extremist identities. This work forms part of a wider research program pertaining to the identification and mitigation of future threats and conflict to support planning for ADF operations.									

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Maritime Capability Analysis	Sydney (NSW)	Cadet: Maritime Capability Analysis	The cadet will analyse, develop models and conduct research, to inform future and current maritime capabilities. There is flexibility to tailor this role to skillset of cadet; that is, the role could be biased towards mathematical science, modelling and simulation, statistics/data analysis, or similar. The cadet will have scope to explore and take modelling risks, and gain knowledge in not only leading edge modelling techniques, but also work with experienced scientists.									Operations Research
Land vehicles & Systems	Edinburgh (SA)	Cadet: Advanced Vehicle Systems	The cadet will work with the Autonomous Land Systems team and will support the development of autonomic/autonomous resource managers and controllers in networked land systems, such as tactical communication networks, logistics supply chains and "networks of things" (mission systems) on land vehicles. The cadet will apply software design/engineering, artificial intelligence, control theory, self-aware computing, robotics and/or other suitable methods in a supportive team environment to develop, test and evaluate concept and technology demonstrators that support the modernisation of the Australian Army and the development of Australia's future military land capabilities.									
Land Human Systems	Edinburgh (SA)	Cadet: Cognition & Behaviour	The project includes working with other team members to conduct research (reviewing literature, designing experiments, collecting data and reporting) to identify metrics that indicate human cognitive state and performance levels. Once identified and validated the metrics may be integrated into simulation systems and used to assess the effectiveness of selection and training interventions for Army roles. A good understanding of cognitive functions (and how these may vary across individuals), and learning and behaviour is required.									
Land Personnel & Protection	Fishermans Bend (VIC)	Cadet: Hazard Assessment	The cadet will work in a small team analysing the effects on personnel of a chemical, biological, radiological or nuclear (CBRN) release using computer based simulation packages to support Defence and National Security operations. Activities will also include developing empirical or physics based mathematical models and algorithms to improve DST's ability to predict the effects of CBRN releases, in areas including CBRN weapons effects, atmospheric dispersion, source back-tracking using CBRN detector networks and casualty estimation. The cadet would ideally have a mathematics or physics background, and if suits excurity cleared would work both in the operational reach-back and model development areas of the program									
Land Personnel & Protection	Fishermans Bend (VIC)	Cadet: Integrated Personnel Protection	The cadet will be a part of the team to investigate a virtual environment that is capable of visually representing the electromagnetic energy signatures across different bands from both sensor measurements in the field and modelled signatures from computational simulations. The aim is to allow virtual assessment of target signatures within an operational environment across a broad spectrum of wavelengths. The work would suit an engineer or scientist with experience and proficiency in programming background coupled with data and imaging analysis ability. An understanding of IR physics, Artificial Intelligence with focus on pattern recognition and simulation are desirable.									
Sonar Technology & Systems	Stirling (WA)	Cadet: Real-Time Sonar Systems	The cadet will contribute to developing prototype sonar processing and graphical user interface applications for Royal Australian Navy (RAN) submarines and/or ships. The prototype program has a very important role in the continuous improvement of the RAN's current and future sonar capability. The cadet will support adapting and extending commercial computing technologies to enable the rapid development, installation and evaluation of prototype sonar processing and user interface enhancements in land based sites and at sea on RAN submarines and/or ships. There is flexibility to tailor this role to develop expertise in a particular area.									Signal Processing
Non-acoustic Signature Management	Fishermans Bend (VIC)	Cadet: Infrared Signature Materials	The cadet will contribute to the design, development, and manufacture of innovative infrared signature management materials for naval and other defence platforms. This may involve field trials with RAN and other defence personnel. The cadet, will also support platform designs based on IR signature prediction and the performance of IR signature management technologies through computer modelling activities (i.e. CAD models of platforms, bespoke and commercial software for signature analysis)									
Maritime Platform Performance	Fishermans Bend (VIC)	Cadet: Naval Architecture	Working in a team of naval architects and systems analysts, the cadet will contribute to developing whole- of-boat performance and integration impact analysis techniques and advice in support of Navy's surface ship acquisition programs. This includes the assessment of performance and risk aspects related to sea-way loads on existing and proposed ship concepts, the analysis of global structural reliability and degradation related to operational loads; and advice on the maturation of requirements to be used for future surface ship acquisition programs. The cadet is also expected to participate in experimentation and numerical modelling programs for this aim.									

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High Frequency Radar/ Surveillance and Reconnaissance Systems	Edinburgh (SA)	Cadet: Electrical Engineer	The cadet will develop and apply electronic engineering skills to process RF signals to extract information, develop and field radar hardware, firmware and software. The cadet will engage in a wide range of activities, both in the laboratory and in the field, including participation in experimental and operational trials around Australia and engagement with wider Defence, universities, industry and international partners. Work will be conducted in a team environment and involve computer based algorithm development, plus participation in data collection experiments using instrumented and military surveillance radars operating all domains (air, land and sea). This is an exciting opportunity to be a part of the science & technology support provided to the Australian Defence Organisation, which operates tactical radars installed on almost every major platform acquired now and into the future.									
National Security /Intelligence Analytics	Edinburgh (SA)	Cadet: Speech Processing	The cadet will work in several areas of speech processing to support pivotal activities within Language Technology and Fusion Group. The work will encompass a range of activities including R&D into voice biometrics, emotion recognition from speech, design of novel voice analytics interfaces, and general speech system evaluations and speech data modelling. There will also be an opportunity to be involved in technical aspects of audio acquisition and processing for collaborative style spaces and meeting rooms.									
Information Integration	Edinburgh (SA)	Cadet: Computer Systems Engineer	The cadet will contribute to the software development effort of an Integrated ISR capability. This capability will be used in a campaign of trials with the ADF to demonstrate future integration concepts. The role will require a solid understanding of software engineering (specifically using Java & Javascript) and some knowledge of systems integration.									
Weapon Systems Technologies	Edinburgh (SA)	Cadet: Tactical Machine Intelligence	Current weapon systems are becoming increasingly less effective for the future complex battlespace. Next generation weapons will be highly networked, with access to far more information and processing power. The cadet will contribute to future weapon concepts development and tactics using the state of the art intelligent and autonomous systems technologies designed to outsmart the enemy's decision cycles. This will involve development of concepts, algorithms and models for collaborative and autonomous weapons within Simulink and their testing in our indoor flight facility. The work would ideally suit a scientist or engineer with knowledge or understanding of machine learning or artificial intelligence techniques and programing skills in Python and Simulink.									
Tactical Systems Integration	Edinburgh (SA)	Cadet: Advanced System Architectures	The cadet will research novel and emerging software techniques and technologies applicable to next-generation military tactical mission system architectures that are inherently agile, modular and distributed. This includes research into middleware technologies, open service oriented architectures, time-critical traffic management and distributed autonomous decision making architectures.									
Energetic Systems and Effects	Edinburgh (SA)	Cadet: Transformative Energetic Scientist	The cadet will contribute to the Transformative Energetics Research Program to explore innovations in energetic materials that could lead to disruptive change in weapon systems. This includes the use of nano materials and emerging manufacturing methods to deliver highly solids loaded and/or structured materials to achieve enhanced performance, safety and novel effects. Research that the cadet may be involved in includes investigation of nanomaterial properties, coating of nanomaterials to enhance reactivity, the development and characterisation of multi-component formulations and consolidation methods to optimise energy density in challenging configurations. The multi-disciplinary program has a significant experimental component, supported by literature studies and modelling.									
Research Platforms Services	Fishermans Bend (VIC)	Cadet: High Performance Computer	Working in a team, the cadet will contribute to supporting the High Performance Computing (HPC) system comprising of hardware and associated software tools, high capacity local storage and network infrastructure. Activities will include installation, configuration and maintenance of large computer clusters/servers, HPC software stacks and tools, diagnosis of system operational problems, generate system utilisation data and maintain/ monitor the security of the HPC systems and servers. The work would ideally suit a cadet with a computer science background and/or software programming in any language.									