



Information Pack

Position Title:	Post-Doctorate Opportunities
Job Reference Number:	DST/02039/16
Position APS Level:	APS Level 6 (S&T 3-4 above) \$76,023- \$86,844
Position Location:	Various (SA, VIC, NSW, QLD)
Position/s:	Multiple
Employment Status:	Ongoing
Security Level:	Appointees will be initially engaged on a Baseline security clearance with an upgrade to a minimum Negative Vetting Level 1 upon commencement. Please refer to the individual job descriptions for the required security clearance.
Group:	Defence Science and Technology
Enquiries:	Graduate.recruitment@dsto.defence.gov.au
Closing Date:	Friday, 14 October 2016, 11:30pm (AEDT) No extensions will be granted and no late applications will be accepted.

One APS Career...Thousands of Opportunities

About this Information Pack

This information pack provides useful material regarding the role that you are applying for and further advice to guide you with your application.

Overview

DST Group *Postdoc Opportunities* provide Early Career Researchers a foundation to commence their research career.

DST Group recruits Postdocs into specific ongoing positions within priority research areas aligned with [DST Group's Strategic Plan 2013-18](#).

Opportunities are available postdocs who have completed or are about to complete a PhD degree in a relevant discipline within one of the following *broad areas of work* (BAOW):

- Engineering & Systems Science
- Human, Social & Health Sciences
- Information, Computing & Communications
- Mathematics
- Physical Sciences

What DST Group Offers

DST Group offers more than a job, it provides you with a career!

- DST Group believes in offering its staff a career, not just a job. This starts with permanent employment and generous learning and development opportunities to support you throughout your career.

Learn from the best

- Not only will you be supervised by a senior scientist, you are also encouraged to participate in DST Groups mentoring program to help gain and expand your skills and knowledge from Australia's brightest and most innovative scientists, engineers and IT specialists at the forefront of international defence research.

Work Content. More than π in the sky

- At DST Group, you will have access to leading edge technology and experience a stimulating and dynamic environment that fosters innovation and creativity. You will be proud to know that your research will contribute to Australia's future defence and national security capability.

Further Information

If you require further information please email the contact officer on the front of this Information Pack.

Organisation Description

DST Group's mission:

DST Group is the Australian Government's lead agency charged with applying science and technology to protect and defend Australia and its national interests. It delivers expert, impartial advice and innovative solutions for Defence and other elements of national security.

DST Group's vision:

To be a world leader in defence science and technology – indispensable in transforming the Australian Defence Force and Australia's national security.

To achieve its mission and vision, DST Group:

- Provides scientific and technical support to current defence operations.
- Investigates future technologies for defence and national security applications.
- Ensures Australia is a smart buyer and user of defence equipment.
- Develops new defence and national security capabilities.
- Enhances existing capabilities by increasing performance and safety, and reducing the cost of ownership of defence assets.
- Works collaboratively with other government agencies to strengthen national security.
- Assists industry to better support Defence capability needs.

Further information about DST Group is available at www.dsto.defence.gov.au.

Selection Criteria

Applicants will be assessed against the following five selection criteria:

- Academic Ability
- Science, Technology and Problem Solving Skills
- Communication, Team and Interpersonal Skills
- Motivational and Cultural Fit
- Flexibility and Adaptability

DST Group undertakes a holistic approach to the selection of candidates. Each criterion will be assessed throughout specialized activities and methods including written application, assessment center, presentation, and interview.

As part of the written application process, you are required to answer the following selection criteria questions in no more than 400 words per question:

1. SCIENTIFIC, TECHNICAL AND PROBLEM SOLVING SKILLS

The ability to apply scientific or engineering principles or concepts to define, structure and analyse complex problems.

- A capacity to undertake innovative and high quality research.
- A demonstrated understanding of relevant quantitative, modeling and/or analysis techniques to support high quality research.
- Ability and willingness to participate in field trials which maybe on land, air, or sea based platforms.
- Demonstrated ability to use professional judgment and initiative in solving technical problems.
- Ability to use creativity and sound judgment in problem solving.

Using an example from your background, please describe a significant technical problem/challenge that tested your capability.

You may wish to consider:

- How you overcame the problem/ challenge;
- The analytical tools/ techniques you used;
- What was the outcome; and
- What did you learn from this experience or would you do differently.

2. MOTIVATION AND CULTURAL FIT

- An interest in working in the Defence/DST Group environment.
- A proven level of self-motivation.
- An ability to structure work and achieve goals.
- An ability to accept responsibilities and integrate them with personal needs.
- Alignment between organisational and personal values.

Describe why you want to work at DST Group.

You may wish to provide details regarding:

- Your interest in a specific DST Group work program/ area
- How you would contribute to DST Group's Objectives
- Career plan or strategy to achieve your goals

You should be mindful that all information contained in your application must be 'UNCLASSIFIED'. Applications containing classified information will not be considered by the selection delegate.

Qualifications / Additional Requirements

- Awarded a PhD and have less than two-years postdoc experience; or have completed a PhD by 30 June 2017.
- Must be available to attend a face-to-face assessment center at the designated time (October/November 2016)

RecruitAbility Scheme

The Department of Defence is committed to supporting the employment and career development of people with disability. Our participation in the APS RecruitAbility scheme means we will progress an applicant with disability to a further stage in the recruitment process, where they opt into the scheme and meet the minimum requirements for the position.



How do I opt into the RecruitAbility scheme?

You will be asked to indicate if you wish to opt into the RecruitAbility scheme in the Diversity section of the application form. You must tick the 'opt in' box to participate in the scheme. Simply declaring that you have a disability will not automatically include you in the scheme.

Reasonable adjustments

We provide reasonable adjustments such as access, equipment or other practical support at relevant stages of the recruitment process. Please contact the Contact Officer listed on the first page of this information pack if you need any adjustments made.

Details about the RecruitAbility scheme can be found at the Australian Public Service Commission's website, see: <http://www.apsc.gov.au/disability/recruitability>.

What do we mean by disability?

For the purposes of the scheme, 'disability' is:

a limitation, restriction or impairment which has lasted, or is likely to last, for at least six months and restricts everyday activities. This includes:

- *loss of sight (not corrected by glasses or contact lenses)*
- *loss of hearing where communication is restricted, or, an aid to assist with or substitute for hearing is used*
- *speech difficulties*
- *shortness of breath or breathing difficulties causing restriction*
- *chronic or recurrent pain or discomfort causing restriction*
- *blackouts, fits, or loss of consciousness*
- *difficulty learning or understanding*
- *incomplete use of arms or fingers*
- *difficulty gripping or holding things*
- *incomplete use of feet or legs*
- *nervous or emotional condition causing restriction*
- *restriction in physical activities or in doing physical work*
- *disfigurement or deformity*
- *mental illness or condition requiring help or supervision*
- *long-term effects of head injury, stroke or other brain damage causing restriction*
- *receiving treatment or medication for any other long-term conditions or ailments and still restricted*
- *any other long-term conditions resulting in a restriction.*

The two parts of the definition are the presence of a limitation, restriction or impairment which restricts everyday activities; and the expected longevity of the condition (6 months or more). This also includes episodic conditions.

The definition covers many types of disability. You do not need evidence of your disability to opt into the scheme, but you are making a declaration to the APS that you meet the definition.

Diversity and Inclusion

The range and nature of work in Defence requires a workforce that reflects our diverse society. We welcome applications from Indigenous Australians, people from diverse cultural and linguistic backgrounds and people with disabilities. We are committed to providing an environment that values diversity and supports employees to reach their full potential.

Defence will accommodate all requests for reasonable adjustment for people with disabilities to assist in the application process and if successful, the inherent requirements of the position.

If you have individual requirements that need to be accommodated in order to participate in an interview or assessment centre please inform the contact person listed on the front of this Information Pack.

For confidential advice contact: diversitypolicyandprograms@defence.gov.au.

Relocation Assistance

For **ongoing** positions, successful applicants will be provided with relocation assistance, if required, and in accordance with Defence policy. Further information on relocations assistance will be available to the successful applicant through the Chairperson of the selection panel.

For **non-ongoing** positions, relocations assistance, if required, must be discussed with the Contact Officer for consideration.

Employment Agreement

Terms of the Engagement

The successful applicant for the position noted in this Information Pack will be engaged under the *Public Service Act 1999*.

Remuneration Package

In accordance with Defence Enterprise Collective Agreement ([DECA](#)) 2012 - 2014 the successful candidate will receive an attractive remuneration package with a salary within the range noted on the front page of this Information Pack and superannuation paid in accordance with legislative requirements.

Flexible Working Arrangements

Defence assists its Australian Public Service (APS) employees to balance their work and lives through the provision of flexible working arrangements and conditions, flexible leave arrangements and by promoting wellbeing in the [Defence Enterprise Collective Agreement 2012-2014 \(DECA\)](#).

For more information on workplace flexibilities within Defence, please refer to our Work Life Balance site at <http://www.defence.gov.au/apscareers/whatweoffer/work-life-balance.htm>.

Should you require consideration of a flexible working arrangement (e.g. flexible working hours or part-time hours) this should be discussed at interview.

Australian Public Service Values

The Australian Public Service have Values and Employment Principles that shape the organisational culture of the Public Service. The Australian Public Service is:

- Impartial
- Committed to Service
- Accountable
- Respectful
- Ethical

ICARE

The values and employment principles can be found at the [Australian Public Service Commission website](#).

Defence Values

The Department of Defence has a framework of values that work alongside the [APS Values](#) and the values of [Navy](#), [Army](#) & [Air Force](#) to reflect the traditions and identities of the Australian Defence Force (ADF) and the APS. The values underpin the Defence corporate culture, contribute to achieving organisational goals and the basis of the behaviours expected of our people and leaders; both APS and ADF.

The Defence Values:

Professionalism	Striving for excellence in everything we do.
Loyalty	Being committed to each other, our leaders and the organisation.
Integrity	Doing what is right.
Courage	The strength of character to do what is right – extending to both courage of convictions (moral courage) and courage in harm's way (physical courage).
Innovation	Actively looking for better ways of doing business.
Teamwork	Working together with respect, trust and a sense of collective purpose.

Application Instructions

We recommend you start your application on eRecruit as soon as possible. It is best to complete your Selection Criteria in Microsoft Word then copy, paste and save each criterion into the system.

For more information please refer to the [Applicant User Guide](#).

All applications must be submitted through the online application system prior to the closing date.

NOTE: Do not withdraw your application for editing. **Once you have withdrawn your application, you will NOT be able to re-submit it or submit another application for this vacancy.**

Further advice on addressing selection criteria can be found the ['Cracking the Code'](#) publication located on the Australian Public Service Commission website.

You do not need to include written referee reports with your application. However, you should include the names and contact details of two referees who can comment on your work performance. We expect that one of your referees will be your current supervisor or manager. If you don't want us to contact your referees without advising you first, indicate this in your application.

Vacancies will be extended **in exceptional circumstances only**. Applicants requesting an extension **must** contact the Contact Officer **24 hours prior** to the vacancy closing date.

PLEASE NOTE: **APS Careers @ Defence** is for job seekers only. We do not accept unsolicited resumes or applications from recruitment agencies and/or search firms and will not pay fees to any such organisations unless arranged with the provider prior to advertising the vacancy.

Withdrawing an Application

If you have submitted an application and no longer wish to be considered for the position, you must withdraw your application in eRecruit.

If you withdraw your application **after the closing date**, please **inform the Contact Officer** through the phone number and/or email address on the front page of this Information Pack.

PLEASE NOTE: Once you withdraw your application you will NOT be able to re-submit it or submit another application for this vacancy.

For more information on withdrawing your application via the APS Careers @ Defence eRecruit system, please refer to our [Applicant User Guide](#).

The Selection Process

Defence APS recruitment processes are based on merit which means that we select the best person for the job from a field of applicants. We compare and weigh-up the skills, experience and abilities of each applicant and often use different tools and techniques (such as written applications, interviews and/or work sample tests) to collect the evidence needed to make a merit-based decision.

Merit List

A merit list may be created from the list of suitable applicants which may be used to fill similar position/s in the event a position/s becomes vacant within the 12 months from gazettal date of this position.

Psychological Assessment

Some positions at DST Group require that shortlisted applicants undertake a Psychological Assessment to determine organisational suitability. Psychological assessments are conducted to determine suitability to work in a high security environment and/or to hold a Top Secret (Positive Vetting) (TSPV) security clearance. You must obtain and maintain a PV security clearance to work in designated areas of Defence.

The Psychological Assessment is an integrated assessment tool which comprises the completion of a consent form, written psychological tests, and where appropriate, a face-to-face interview(s) with a registered psychologist. You may be asked to participate in further psychological testing if required.

The assessment is administered in a manner which ensures informed consent, fair dealing with all applicants and employees, and the greatest possible degree of privacy and transparency of process. Before you submit an application you should consider your own preparedness for questions that may include the following topics: personal relationships, living circumstances, personal values, financial situation, physical and mental health history including substance use, and any civil and/or military record.

The process is necessarily more intrusive than you will encounter in most other employment applications but it is important that you be honest and accurate in disclosing details about yourself.

Eligibility

Employment with the Department of Defence is subject to conditions prescribed within the Public Service Act 1999.

Citizenship - To be eligible for employment with Defence, applicants must be an Australian citizen. Only in exceptional circumstances can this requirement be waived.

Health Assessment – The preferred applicant will be required to undergo a medical examination conducted by the Department's preferred medical provider.

Security Clearance - The preferred applicant will be required to successfully undergo the security clearance vetting process at a specified clearance level. The preferred applicant **MUST** be willing to disclose all relevant and required information.

The preferred applicant **MUST** have lived in Australia, or have a checkable background, for at least the preceding:

- **Five** years for BASELINE VETTING clearances, or
- **Ten** years for NEGATIVE VETTING Level 1 / NEGATIVE VETTING Level 2 clearances, or
- **Whole of life** for POSITIVE VETTING clearances.

Important: You must be able to provide background information to the Australian Government Security Vetting Agency (AGSVA), to cover the relevant period of time in line with the required security clearance for this position. Details of the information and documents you are required to provide can be found on the [Security Clearance - Fact Sheet](#). Please ensure that you read this information thoroughly and confirm that you are able to provide the necessary documents if you apply for the position.

The security clearance level required for this position can be found on the front page of this Information Pack.

More information on the security clearance vetting process is available on the [Australian Government Security Vetting Agency \(AGSVA\) website](#).

Thank you for your interest

Department of Defence

AD001 Postdoc: Aircraft Health & Sustainment

Location: Fishermans Bend, Victoria

Overview:

As member of DST's Aerospace Division, you will analyse the lifecycle costs and benefits of current and future Defence Air Domain capabilities. Taking a systems-level view of aeronautical capabilities and costs, you will identify best value propositions for future investment. You will contribute to the rigorous evaluation process by critically analysing complex or new future operating concepts against cost and sustainment metrics and developing new methods and tools. This will support contestability before the zero-pass stage of the new Defence Capability Life Cycle process, as called for in the First Principles Review. You should have a focus or interest in the Air Domain and are expected to develop understanding of the culture and strengths of the RAAF and the wider ADF.

Academic Requirement:

An PhD in one of the following areas:

- Mathematics
- Systems Engineering
- Informatics/Computer Science

Other related academic areas:

- Economics/Econometrics

Other Role Specific Requirements:

Demonstrated abilities in more than one of the following:

- Capacity to deal with high levels of ambiguity and uncertainty
- Structuring of wicked problems
- Analysis of complex interacting systems
- Collaboration on multi-disciplinary problems
- Modelling and simulation of complex socio-technical issues
- Analysis and synthesis to support strategic decision making

Notes:

Appointees will be initially engaged on a **BASELINE** security clearance with an upgrade to a **Negative Vetting 1 Security Clearance** required upon commencement.

Written Application Position Specific Question (400 words max)

How could you use your knowledge, skills and tools to inform a strategic decision-maker on the question: "Should Australia acquire and operate a fleet of Unmanned Combat Air Vehicles?"

AD002 Postdoc: Applied Hypersonics

Location: Pullenvale, Queensland

Overview:

As an integrated team member of the Applied Hypersonic Branch, you will undertake complex scientific and engineering tasks related to the development, design, analysis and testing of hypersonic flight and ground test hardware. Under limited direction, specific activities will include, but are not limited to:

- Performing research related activities to assist in the development of hypersonic flight hardware and air-breathing propulsion.
- Developing novel cooling techniques for hypersonic air vehicles.
- Conducting experimental ground tests within hypersonic test facilities.
- Participating in hypersonic field trials.
- Designing flight and ground test hardware.
- Scientifically analysing and interpreting hypersonic flight and or ground test data.
- Documenting and presenting work in reports and at design reviews.

Academic Requirement:

A PhD in one of the following areas:

- Hypersonics
- Aerospace / Aeronautical / Mechanical Engineering

Other Role Specific Requirements:

Demonstrated experience, or ability, in any or all of the following areas:

- Hypersonic research;
- Ground and or flight testing;
- Experiment design and analysis;
- High temperature materials research;
- Work effectively within multidisciplinary test programs;

Notes:

Appointees will be initially engaged on a **BASELINE** security clearance with an upgrade to a **Negative Vetting 1 Security Clearance** required upon commencement.

Written Application Position Specific Question (400 words max)

Considering the above mentioned overview activities, how could you use your qualifications and skills to assist the Applied Hypersonics Branch?

CEWD001 Communications Science

Location: Edinburgh, South Australia

Overview:

As a member of DST Group's Cyber and Electronic Warfare Division, you will undertake research and development in the field of military satellite communications (MILSATCOM) survivability, with the goal of enhancing and protecting the ADF's satellite communications networks. The Protected Satellite Communications science capability supports the Australian Defence Force in the provision, acquisition and operation of MILSATCOM.

The specific focus of the position is specialised satellite communications waveforms for operation in contested environments. The research and development will be undertaken within a group framework that includes related R&D programs in the areas of satellite system network defence, high mobility satellite communications and Software Defined Radio.

The successful applicant will undertake the following major duties relating to MILSATCOM survivability:

- a) Research and development in novel satellite communications waveforms;
- b) Research and development in communications signal processing;
- c) Military satellite communications system modelling and simulation;
- d) Military satellite communications system experimentation and analysis;
- e) Provision of expert scientific and technical advice to Defence clients and stakeholders and other Commonwealth agencies;
- f) Conduct of and support to demonstrations and trials.

Academic Requirement:

A PhD in one of the following areas:

- Electronic/Electrical Engineering
- Communications Engineering
- Computer Science

Other Role Specific Requirements:

Demonstrated experience or ability in any or all of the following areas:

- Communications signal processing
- Radio waveforms
- Waveforms for operation in the contested radiofrequency environment
- Satellite communications waveforms
- Spread spectrum communications

Knowledge and/or experience in the following areas is considered as advantageous:

- MILSATCOM systems
- Software Defined Radio
- Simulation and modelling of wireless communications systems
- Communications testing and trials

Notes:

Appointees will be initially engaged on a **BASELINE** security clearance with an upgrade to a **Negative Vetting 1 Security Clearance** required upon commencement.

Written Application Position Specific Question (400 words max)

How could you apply your qualifications and experience in researching and developing robust communications waveforms to operate in the contested radiofrequency environment?

CEWD002 CYBER SECURITY SCIENTIST/ TECHNOLOGIST- CYBER MISSION ANALYTICS

Location: Edinburgh, South Australia

Overview:

As a Cyber Security Researcher in the Automated Analytics & Decision Support group, within the Cyber & Electronic Warfare Division, you will work on novel techniques and software technologies to understand and improve the security posture and operational survivability of complex cyber-physical systems of importance to Australia; specifically to our Military and National Security communities.

Under guidance of senior staff, your role will include the following activities and objectives:

- Participate in R&D activities with a focus on the development of software technologies to support Defensive Cyber Operations Teams who defend mission dependent cyber-physical systems such as Military Ships and Aircraft against sophisticated cyber threat actors;
- Investigate and develop new concept demonstrators and software technology elements relevant to cyber mission modelling, impact assessment of cyber-attack, threat modelling and automated vulnerability analysis;
- Develop and deliver technology addressing the requirements of Military and National Security clients;
- Prepare to scientific publication standard, papers discussing the work undertaken;
- Assist in the installation and maintenance of group S&T infrastructure, including computer systems and networks in support of R&D and client tasks

Academic Requirement:

A PhD in one of the following areas (or similar):

- Computer Science
- Computer Systems Engineering

With specific research focus in areas such as:

- Data Science
- Artificial Intelligence
- Machine Learning
- Mathematics

Other Role Specific Requirements:

Demonstrable understanding and practical experience in several of the following:

- Artificial Intelligence & Machine Learning
- Data Analytics
- Complex Systems Analysis
- Modelling & Simulation
- Programming or Software Development

Knowledge and practical experience in the following is desirable:

- Cyber Security
- Visual Analytics

Notes:

Appointees will be initially be engaged on a **BASELINE** security clearance with an upgrade to a **Negative Vetting 2 Security Clearance** required upon commencement.

A NV2 clearance is the minimum security clearance requirement for this role although higher security clearances may be required after commencement.

Position Specific Written Application Question: (400 words max)

“Explain how your knowledge, skills and attributes can be applied to the field of cyber security research?”

You may wish to consider aspects such as:

- Your personal attributes such as problem solving , initiative, teamwork and learning ability
- Your technical knowledge in areas such as Artificial Intelligence, Machine Learning, Data Science and Cyber Security.
- Your experience in programming and developing software applications.

JOAD001 MARITIME CAPABILITY ANALYSIS

Location: Eveleigh (Australia Technology Park), New South Wales

Overview:

As member of DST's Joint and Operations Analysis Division, you will undertake analysis, develop models and conduct research in support of improving maritime warfare capability. The Maritime Capability Analysis science capability supports the Royal Australian Navy's current and future Fleets by providing balanced, impartial and timely advice that supports decisions about maritime capability. The role will contribute to key activities including:

- Experimentation to investigate future concepts and capabilities;
- Analysis to inform the needs and requirements of future capabilities;
- Analysis of options/alternatives against future capability requirements;
- Analysis of operations and exercises to generate knowledge that enables improvements in warfighting capability; and
- Research to develop innovative analysis approaches.

There is flexibility to tailor this role to skillset of the successful applicant; that is, the role could be biased towards mathematical science or modelling, simulation, experimentation and wargaming.

Academic Requirement:

A PhD in one of the following areas:

- Mathematics
- Computer Science
- Physics
- Operations Research

Other Role Specific Requirements:

Demonstrated experience, or ability, in any or all of the following areas:

- Mathematical modelling of systems;
- Developing, employing and interpreting modelling and simulation tools;
- Statistical Analysis;
- Application of Operations Research techniques to problem definition, structuring and solving;
- Undertake innovative and high quality analysis of operations and/or systems;
- Mathematical optimisation;
- Computer programming to support modelling, simulation, data capture and analysis or wargaming; and/or
- Experiment design and analysis.

Notes:

Appointees will be initially engaged on a **BASELINE** security clearance with an upgrade to a **Negative Vetting 1 Security Clearance** required upon commencement.

Written Application Position Specific Question: (400 words max)

The Royal Australian Navy is currently purchasing new fleets of Patrol Boats, Frigates and Submarines. It wants to know how many of each to buy and which existing Navy bases should be used as home bases, so that it can best perform its job.

Describe what factors you would consider in addressing the problem, and which of your skills and analysis techniques you might use in order to inform your recommendations to Navy.

LD001 Postdoc: Armour Mechanics Modelling

Location: Fishermans Bend, Victoria

Overview:

As member of DST's Land Division, you will carry out a diverse range of research and professional activities required to support the development and acquisition of Royal Australian Army vehicles, with an emphasis on physical protection against ballistic and blast threats. The Land Vehicle Survivability science capability provides support to Defence and National Security partners by providing balanced, impartial and timely advice that supports decisions about land capability, acquisition, support to operations, and future-proofing. This role will be expected to contribute in the following key areas:

- (a) Application of mathematical and numerical modelling tools to evaluate and predict the performance of armour systems against ballistic threats;
- (b) Plan, conduct, and perform analysis on experimental studies to measure the performance of current armour technologies and new protection concepts;
- (c) Formulate and conduct research to identify materials and armour concepts that offer enhanced protection to the mounted warfighter of the future;
- (d) Develop scientific methods and techniques to improve the prediction of armour system performance against ballistic threats.

The applicant will be expected to work effectively both under limited guidance and as a member of a research team on a number of simultaneous tasks, liaise and interact with other DST staff, members of the Australian Defence Organisation, and research partners.

Academic Requirement:

A PhD in one of the following areas:

- Mechanical Engineering
- Aerospace Engineering
- Materials Engineering
- Physics
- Materials Science

Other Role Specific Requirements:

Demonstrated experience, or ability, in any or all of the following areas:

- Mathematical modelling of material response under impact loading;
- Numerical modelling using explicit finite element methods;
- Penetration mechanics and vehicle survivability;
- Experimental design and analysis;
- Technical writing and publication;

Notes:

Appointees will be initially engaged on a **BASELINE** security clearance with an upgrade to a **Negative Vetting 1 Security Clearance** required upon commencement.

Written Application Position Specific Question: (400 words max)

The use of numerical and mathematical methods is critical in predicting and evaluating the performance of armour systems. Describe how these tools can be exploited, what their strengths and limitations are, and the role of experiments in their application.

MD001 Postdoc: Maritime Platform Dynamics and Control

Location: Fishermans Bend, Victoria

Overview:

As a member of the Hydroacoustics Group within the Maritime Division, you will directly contribute in the development of simulation models and control systems related to the operation of maritime platforms. This will support the Australian future submarine program and the ongoing sustainment and capability enhancement of the current surface and submarine fleet of the Royal Australian Navy.

The role will contribute to key activities including:

- a) Development of tools to simulate submarine and surface platform dynamics and manoeuvring
- b) Conduct simulations of submarine and surface platform control systems
- c) Organise and conduct experimental work to validate and complement simulations
- d) Analyse existing systems and develop new or upgraded control systems for surface and submarine platforms
- e) Participate in the upgrade of platform training simulators
- f) Participate in external and internal research collaborations linked to platform dynamics and control
- g) Conduct research to develop capabilities within the division in the above areas.

Although the position will mainly focus on platform dynamics and control systems, you will be required to work and participate in related areas such as computational and experimental hydrodynamics.

Academic Requirement:

A PhD in one or more of the following areas:

- Mathematical Control Theory
- Control Engineering
- Mechatronics
- Avionics

Other Role Specific Requirements:

Demonstrated experience, or ability, in any or all of the following areas:

- mathematical modelling of systems;
- design of control laws;
- developing, employing and interpreting modelling and simulation tools;
- innovative and high quality analysis of operations and/or systems;
- mathematical optimisation;
- computer programming to support modelling, simulation and control law implementation;
- experiment design and analysis; and/or
- presentation of information and findings through technical reports, publications, and presentations.

Notes:

Appointees will be initially engaged on a **BASELINE** security clearance with an upgrade to a **Negative Vetting 1 Security Clearance** required upon commencement.

Written Application Position Specific Question: (400 words max)

How could you use your qualifications and skills to help enhance the capability of Royal Australian Navy platforms?

MD002: Postdoc Maritime Autonomy

Location: Australia Technology Park, Eveleigh (Sydney)

Overview:

The Maritime Autonomy branch focuses on autonomous and unmanned technologies to support RAN operational capability. Within the branch, a small group concentrates on unique technologies, especially hyperspectral and multispectral imaging sensors, that enable sensing and analysis in the shallow water littoral environment, and that can be integrated on small and tactical unmanned aerial systems. Unmanned systems operated by the RAN will be the test platforms on which these sensing capabilities will be integrated. Smaller COTS UAVs will also be used for rapid integration testing and analysis.

As member of this group, you will conduct research into hyperspectral systems, their integration onto small unmanned aerial systems to be used by the Navy, and onboard processing of the data, to provide real-time bathymetry, bottom type, beach characterisation and mine detection data to the Navy.

There is flexibility to tailor this role to the skillset of the successful applicant; that is, the role could be biased towards hardware integration, development of onboard processing, or applications of novel algorithms including machine learning approaches to hyperspectral and multispectral image exploitation.

Academic Requirement:

A PhD in one of the following areas:

- Physics
- Electronic engineering
- Computer Science
- Mathematics

Other Role Specific Requirements:

Demonstrated experience, or ability, in any or all of the following areas:

- Hyperspectral and other (e.g. lidar) sensing systems;
- Sensor physics, robotic sensing, mapping and localisation;
- Use and development of hardware, algorithms and libraries used for robotics, computer vision, and machine learning;
- Control software used to implement sensor integration;
- Programming for rapid research prototyping and embedded implementation (e.g., MATLAB, C or C++);
- Linux and other operating systems;
- Mission planning and/or operation of militarily relevant autonomous systems;
- Planning and leading trials for system validation.

Notes:

Appointees will be initially engaged on a **BASELINE** security clearance with an upgrade to a **Negative Vetting 1 Security Clearance** required upon commencement.

Written Application Position Specific Question: (400 words max)

Describe the technical details and the process you followed in developing a piece of hardware or software that you particularly designed in your academic or work experience?

NSID001 Postdoc: Radar Signatures

Location: Edinburgh, South Australia

Overview:

As member of DST's National Security Intelligence Surveillance and Reconnaissance Division, you will undertake electromagnetic modelling, analysis of measured data, and conduct research into high resolution radar signatures in order to improve Defence's radar signature capabilities. You will be a member of the Signatures and Phenomenology Science and Technology Capability (STC). The STC is concerned with the radar scattering properties of platforms and other targets of interest to Defence. Investigations are carried out using computer models, scaled measurements and trials with Defence assets. In addition to determining radar signatures, the STC develops radar signature control strategies for Defence platforms, and conducts research into signature features and phenomenology with potential surveillance/counter-surveillance and target identification applications.

The STC has strong links with other parts of Defence, universities, industry and international partners.

Academic Requirements:

A PhD in:

- Physics
- Electronic engineering
- Computer systems engineering
- Mathematics

Other Role Specific Requirements:

Demonstrated experience, or ability, in any or all of the following areas:

- Computational electromagnetics
- Radar signal processing
- Computer programming to support modelling, simulation, data capture and analysis
- Design and analysis of radio frequency (RF) experiments

Notes:

Appointees will be initially engaged on a **BASELINE** security clearance with an upgrade to a **Negative Vetting 1 Security Clearance** required upon commencement.

The successful applicant will be expected to participate in field trials in remote locations.

Written Application Position Specific Question (400 words max)

How can your knowledge, skills and attributes be applied to the field of radar signatures research?

You may wish to consider aspects such as:

- Your personal attributes such as problem solving, initiative, teamwork and learning ability.
- Your technical knowledge in areas such as computational electromagnetics, radars and/or radio frequency (RF) systems.
- Your experience in programming and developing software models and data analysis tools.

NSID002 Postdoc: Information Integration

Location: Edinburgh, South Australia

Overview:

As member of the National Security, Intelligence Surveillance and Reconnaissance Division, you will undertake analysis, develop algorithms, and conduct research in support of integrated Intelligence Surveillance and Reconnaissance. The Information Integration capability supports the Australian Defence Organisation by developing and assessing novel algorithms that can deliver improved tracking and fusion performance. It provides advice on tracking and fusion effectiveness to a range of Defence clients, supporting major acquisition projects and their integration into the ADO enterprise. The role will contribute to key activities including:

- Research to develop innovative methods for information fusion;
- Implementation and testing of fusion algorithms and integration systems;
- Analysis of operations and exercises to generate knowledge that enables improvements in warfighting capability;
- Analysis of options against future capability requirements; and
- Experimentation to test methods in an operationally relevant context.

Academic Requirement:

A PhD in one of the following areas:

- Engineering (Electrical, Computer Systems, or Aerospace)
- Computer Science
- Applied Mathematics & Statistics
- Mathematical Physics

Other Role Specific Requirements:

Demonstrated ability and experience in any or all of the following areas:

- Stochastic signal processing;
- Statistical estimation;
- Control theory;
- Mathematical optimisation;
- Computer programming to support algorithm development and testing ;
- Developing, employing and interpreting modelling and simulation tools;
- Experiment design and analysis.

Notes:

Appointees will be initially engaged on a **BASELINE** security clearance with an upgrade to a **Negative Vetting 1 Security Clearance** required upon commencement.

Written Application Position Specific Question: (400 words max)

Please provide one or more specific examples of how your research has been influenced by experimental observation.

NSID003 Postdoc: Analytical Science

Location: Edinburgh, South Australia

Overview:

As member of DST Group's National Security and Intelligence, Surveillance and Reconnaissance Division, you will contribute to identifying future analytic processes for social domains of interest within a technologically mediated context. This position will work closely with multi-disciplinary teams to support Australia's National Security research programs, with mid-term (3-5 years) and long-term horizons, guided by the following considerations:

- a) Maximising the situational awareness of analysts;
- b) Understanding social context in 'Big Data';
- c) Achieving best practice for the analysis of the human domain; and
- d) Developing implementable theories of social influence.

There is flexibility to tailor this role to the skillset of the successful applicant; however applicants require a blend of human/social sciences with computational linguistics, mathematics, or computer science to be considered for the role

Academic Requirement:

A PhD in one of the following areas as well as formal qualifications in one or more of the other listed areas (or similar):

- Sociology/Anthropology
- Psychology
- Mathematics/Statistics
- Artificial Intelligence
- Natural Language Processing

Other Role Specific Requirements:

Demonstrated experience with any or all of the following:

- Sound background in social science for the development of tools that support the analysis of socio-cultural factors;
- Experience in knowledge representation and reasoning with the ability to analyse and formalise complex and abstract concepts;
- Development of theory and methods for network-oriented approaches to the analysis of social data;
- Broad computer science skills enabling the coding, querying and analysis of social context
- Development of human and social conceptual theory and methodologies relating to social influence; and/or
- Working within a multi-disciplinary team whose main focus is the development of social systems modelling techniques and analytical tools;

Notes:

Appointees will be initially engaged on a **Negative Vetting 1** security clearance with an Organisation Suitability Assessment required before commencement for upgrade to a **Positive Vetting Security Clearance**.

Written Application Position Specific Question: (400 words max)

Describe your experience with development of conceptual theories for human and social modelling, the technologies you have employed in the analysis and coding, and any software implementations of the conceptual theories you have undertaken.

WCSD001 COMBAT SYSTEM MODELLER

Location: Edinburgh, South Australia

Overview:

As member of DST's Weapons and Combat Systems Division, you will develop models of combat systems. The Weapons and Combat Systems Analysis science and technology capability enables the Australian Defence Force's current and future operational capabilities by providing balanced, impartial and timely advice to support decisions about Joint, Air, Maritime and Land capabilities.

The role will contribute to the development of models including:

- Air Mission Systems;
- Surface Combatant Combat Management Systems;
- Land Battle Management Systems; and
- Weapons Mission Planning Systems.

These models will be used to investigate future concepts and capabilities, to inform the needs and requirements of future capabilities and assess options/alternatives against those requirements.

There is flexibility to tailor the role to skillset of the successful applicant, such as emphasizing the development of new modelling frameworks or modelling specific aspects of the individual combat systems.

Academic Requirement:

A PhD in one of the following areas:

- Computer Science
- Software Engineering
- Mathematics

Other Role Specific Requirements:

Demonstrated experience, or ability, in any or all of the following areas:

- Mathematical modelling of systems;
- Computer programming to implement mathematical models, simulations, and data capture;
- Software engineering of complex systems.

Notes:

Appointees will be initially engaged on a **BASELINE** security clearance with an upgrade to a **Negative Vetting 1 Security Clearance** required upon commencement.

Written Application Position Specific Question (400 word max)

Please provide one specific example that demonstrates your practical experience that is relevant to this position?