

PARTNERING WITH LAND DIVISION

Land Division engages with Australia's industry and science and technology community through a range of innovative and mutually beneficial arrangements, and actively seeks opportunities to work with industry to commercialise DST technology and transition our innovative concepts into Defence capability.

Potential areas for collaboration include:

- Gamma-ray imaging system
- Microwave Assisted Thermal Sterilisation (MATS)
- Power & Energy Systems
- Vehicle blast measurement and modelling
- Human System Integration and Performance
- Next-generation adaptive vehicle technology
- Energy bar for combat rations

For further information

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MAJOR RESEARCH PROJECTS AND ACTIVITIES

Land Combat Vehicle System

DST provides comprehensive science and technology support to the Land Combat Vehicle System under the LAND 400 project, the Australian Army's largest and most complex major capability equipment project. It will deliver network-capable close combat vehicles characterised by protected mobility and precision lethality.

DST is undertaking ongoing analysis of emerging vehicle technologies and threats, and conducting research into survivability and lethality, vehicle electronics and electronic architectures, and human systems integration.

Soldier Combat Ensemble

As a key member of the Diggerworks initiative, DST has made a vital contribution to the enhancement of the soldier combat ensemble, helping to ensure that a truly fit-for-purpose ensemble is achieved, and continues to evolve as part of an ongoing program of targeted enhancements and improved integration.

Chemical, Biological, Radiological and Nuclear Defence

DST support enables the ADF to improve its defensive capability against chemical, biological, radiological and nuclear (CBRN) threats through the protection of personnel from the harmful effects of exposure to toxic chemicals and materials and CBRN weapons.

Physical Employment Standards

With the University of Wollongong, DST is developing a set of performance standards that will enable Defence to make an accurate assessment of a person's physical capacity to perform a particular role, regardless of trade classification, rank, age or gender.

Food and Nutrition

The prime source of expertise for the ADF on meeting the nutritional needs of serving personnel, DST advises Defence on food and nutrition and provides specialised food production services.



Australian Government

Department of Defence

Science and Technology

PARTNER WITH DST



LAND DIVISION

MAJOR SCIENCE AND TECHNOLOGY CAPABILITIES (MSTC)

Land Division leads the impetus for innovation within Australian land force operations by providing science and technology advice about equipment, personnel and processes utilised by the land force. Areas of major science and technology capability are:

MSTC Land Human Systems – Develops, sustains and applies the broad cross-section of human science skills in support of ADF land operations.

Cognition & Behaviour applies psychology and social sciences to the design, integration and optimisation of those land systems for which cognitive performance and behaviour is critical to success.

Physical Ergonomics applies physiology, biomechanics and ergonomics to the design, integration and optimisation of those land systems for which physical health and performance is critical to success.

Food & Nutrition applies food and nutrition sciences to the design, integration and optimisation of the ADF's combat rations and fresh feeding systems.

MSTC Land Vehicles & Systems – Delivers novel concepts and solutions in support of land combat in contested and degraded-systems environments.

Vehicle Survivability conducts research in predictive mathematical modelling and experimental validation of vehicle survivability to mitigate evolving blast and ballistic threats with a focus on multi-role armour mechanics and structural integrity.

Advanced Vehicle Systems develops and demonstrates concepts and technologies that configure, repair and protect a combat vehicle's distributed digital systems through autonomic control in order to enhance mission resilience, tactical effect and life-time adaptability.

Systems Integration & Tactical Networking researches dynamically adaptable context-aware information systems and demonstrates disruptive innovations to provide advanced systems that will enable Land tactical commanders to gain decision superiority in complex contested operational environments.

Land Logistics researches new paradigms in logistics, focusing on impacts of emerging technologies and distributed autonomy, maintenance and sustainment performance, and Combat Service Support force design.

MSTC Chemical & Biological Defence – Research and development of defence against chemical, biological and radiation (CBR) threats.

Biosurveillance and Biodetection undertakes applied research in environmental microbiology and detection / diagnostics systems to develop / enhance biosurveillance and health monitoring capabilities, including the provision of information on the culture of endemic pathogens of interest to the ADF. Relevant S&T expertise required includes microbiology, immunology, biochemistry, analytical chemistry, mathematical data analysis and statistics

Synthesis & Analysis informs the technical threat from chemical materials by utilising skills and knowledge in the synthesis and handling of highly toxic chemicals and related materials; and utilises chromatography, MS, NMR and other analytical techniques for characterisation of highly toxic chemicals, including toxins, and related materials for purposes of attribution and verification of alleged use

Medical Countermeasures advises clients on medical countermeasures for emerging chemical and biological threats. The underpinning S&T expertise includes molecular biology, cell biology, toxicology, bioinformatics, functional genomics, pharmacogenomics and systems biology.

MSTC Land Personnel Protection – Supports soldier combat system development, and analysis of threats affecting the soldier.

Hazard Assessment the Hazard Assessment group provides a core skillset based in physics, mathematics, computer science and engineering applied to enable Defence capability and enhance personnel protection. The group provides R&D, advice, training and support to assist with CBR hazard detection, mitigation and consequence management. Areas of technical expertise include CBR hazard dispersion and effects modelling, radiological and aerosol defence and bioterrorism preparedness

Integrated Personnel Protection applies evidence-based integrated enabling research and experimentation for the protection of mounted and dismounted personnel. Areas of expertise include ballistics, blast mechanics and development of composites and textile materials and armour systems (including specifications and standards), personnel vulnerability modelling, signature management development and assessment, textile treatments and properties, flammability, battle damage assessment of personnel and vehicle systems, energy materials and power sources.

