

PARTNERING WITH JOINT AND OPERATIONS ANALYSIS DIVISION

Joint and Operations Analysis 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:

- Operations Analysis
- Capability Analysis
- Wargaming
- Complex System Evaluation
- Visualisation
- Machine Learning
- Autonomy
- Technology Futures
- Artificial Intelligence

For further information

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MAJOR RESEARCH PROJECTS AND ACTIVITIES

Force Structure Analysis

DST provides high level operational analysis on the whole of force, primarily via support to the Force Structure Review and the Defence White Paper. JOAD scientists can provide in-depth analysis of Defence capabilities and strategy, advice regarding current and future force structures, and advice on the nature and impacts of emerging science and technology. The science toolkit includes advanced simulation, war gaming and visualisation capabilities designed to aid the ADO in complex decision making. JOAD provides analysis that is both domain specific and across the joint environment.

S&T Acquisition Support

JOAD provide support to the acquisition of key Australian Defence Organisation capabilities, including S&T support to RAAF EA-18G 'Growler', Future Submarine Program (SEA 1000), Future Frigate (SEA 5000), Land Combat Vehicle System (LAND 400), Tactile Information Exchange Domain (JP2089) and Helicopters (AIR 9000). JOAD also provides applied and enabling R&D to support the ongoing evolution of the systems to meet evolving threats.

Theatre Operations Analysis

The Theatre OA Team along with embedded staff at HQJOC help harness S&T skills from across DST to apply in close support of ADF operations. Its primary mission is to prepare, deploy and manage DST personnel to operational theatres to help deliver 'in-theatre' S&T support. Its secondary mission is to manage and deliver the Operational Science and Technology Support Request (OPSTSR) program that deals with urgent S&T requests that are relevant to ADF operations, as well as providing immediate technical and analytical reach-back support to deployed DST Scientists.

Strategic Research Program

JOAD leads the strategic research initiative on Modelling Complex Warfighting which seeks to revolutionise how we undertake operations analysis in DST to better handle the interaction of complex geopolitical, social, technological, economic and cultural factors for employment of the current force and design of the future force. JOAD co-leads the strategic research initiative on Trusted Autonomous Systems and aims to enable organisations of machines and people to deal with unpredictable situations. JOAD seeks partnership opportunities with industry and academia for both Strategic Research Initiatives.

Emerging and Disruptive Technologies Assessment Symposium

A biennial event bringing together Defence, industry and academics to consider the transformational and disruptive nature of emerging technologies. The symposium brings delegates together to discuss and shape the long term vision and guide national dialogue for a defined broad emerging technology theme. The symposium considers technical and societal trends, barriers, drivers and implications using a mix of formal presentations and workshop sessions.



Australian Government

Department of Defence

Science and Technology

PARTNER WITH DST

JOINT AND OPERATIONS ANALYSIS DIVISION



MAJOR SCIENCE AND TECHNOLOGY CAPABILITIES (MSTC)

JOAD Statement: Joint and Operations Analysis Division (JOAD) undertakes rigorous, scientifically-based analysis of Defence operations and capability to provide independent, impartial and timely advice that allows the ADF to optimally exploit its equipment and personnel and provide Australia with the best possible war-fighting capability.

Aerospace Capability Analysis develops and applies analytical methods, techniques and tools to inform decisions impacting ADF aerospace capabilities.

Aerospace Organisation & Management Sciences addresses complex air power issues with broad organisational impact and significant uncertainty. The STC develops and applies a broad range of operations analysis and qualitative methods to address future air power needs.

Aerospace Computational Sciences develops and applies tools, techniques and methods from the computational sciences to solve research problems relating to Australian Aerospace Power.

Aerospace Systems Analysis applies evidence-based systems research and analysis to the development and integration of the future aerospace enterprise and capabilities.

Aerospace Mathematical Sciences applies and develops analytical and computational methods, tools and techniques from the mathematics, statistics, operations research fields to solve problems relating to the optimisation, modelling and analysis of aerospace systems and operations.

Land Capability Analysis provides relevant, credible evidence and analysis to inform decisions about the Land Force's most important and challenging issues.

Combined Arms Simulation focussed on Army's most important and challenging issues, the Combined Arms Simulation STC provides evidence-based advice on how elements of a Land Combined Arms Team contribute to close combat.

Land Design & Analysis partners with Army in the development and analysis of future Land Force options. Based on a deep knowledge of the Land domain the STC supports the development of novel concepts & designs for the future Army.

Red Teaming & Wargaming develops and applies tools and methods to enhance land force effectiveness and support evidence-based decision making within two interrelated disciplines.

Joint Warfare & Operations mitigates operational risk through the provision of expert and impartial advice in the identification of current and emerging risk and by building partnerships (including with all relevant DST MSTCs) to reduce and mitigate identified risk through innovation and technology solutions.

Joint Command & Control provides new C2 concepts and systems for joint warfare and operations. This STC looks at command and control as a complex, socio-technical system. It contains a discipline focused on research into the implications of emerging technologies such as autonomy and their integration within a 5th Gen HQs.

Social & Behavioural Sciences provides support to joint warfare and operations. This STC conducts research into the identification of emerging theatre-level risk and the anticipation, planning, conduct and evaluation of complex human-centric operations. It focuses on, and draws upon, the behavioural, social, political and management sciences and leads the Influence Activities and Assessments S&T effort.

Decision Support Analysis provides decision support for joint warfare and operations. This STC conducts research and develops tools to support decision making across the spectrum of command activities including situational awareness, logistics/sustainment, planning and preparedness. It focuses on, and draws upon, the disciplines of data science, Artificial Intelligence/Machine Learning and leads the Preparedness & Emerging Contingencies S&T effort.

Theatre Operations Analysis provides operations analysis support to joint warfare and operations. This STC provides studies and analysis to support command decision making on operations and in operational units within Australia. It is responsible for raising, training, sustaining and employing the DST Deployable OA Pool as well as embedded / deployed analysts in HQJOC, Special Forces units, Deployed Joint Task Forces and on Exercises.

Maritime Capability Analysis develops and employs scientific disciplines to analyse complex maritime systems, model maritime systems and operations to quantify effectiveness and design experiments to assess maritime capabilities.

Maritime Mathematical Sciences conducts mathematical modelling of maritime systems and operations in order to quantify and evaluate their effectiveness.

Maritime Simulation, Experimentation & Wargaming designs, facilitates and analyses experimentation, wargaming and exercise analysis activities in order to refine maritime force concepts and measure current capabilities.

Maritime Systems Analysis defines, represents, and models maritime capability from a whole-of-system perspective with a particular focus on the amphibious capability and submarines.

Strategy and Joint Force provides timely analytical advice and application of the most appropriate analysis tools for evidence-based decision-making for the design and delivery of the future force.

Futures & Concepts undertakes the identification, assessment and contextualisation of future strategic military and technology concepts and environment. This STC undertakes futures and strategy analysis to inform plausible future environments and operating concepts, and the implications of emerging and disruptive technologies.

Force Effectiveness & Experimentation develops and applies advanced experimentation and simulation approaches in order to aid the analysis, design and integration of the force. This STC develops methods, models and analytical approaches in order to develop whole of force effectiveness measures and experimentation with greater rigour and more efficiently.

Joint Force Analysis undertakes thematic strategic and force level studies which, importantly includes analytical design methodologies to provide the Strategic Centre with evidence based outcomes. This STC develops frameworks, tools and techniques to guide the department to undertake more efficient analytical studies. An important element is modelling and simulation approaches to base expert advice on.

Strategic Decision Analysis develops and applies advanced high-level decision making and analysis approaches across the strategic centre focussing on the whole-of-portfolio, supporting decisions on prioritisation, integration, strategic risk and balance of investment. This STC also includes a significant component on systems science which allows for the understanding, modelling, analysis and managing defence force systems-of-systems.