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DSTO: Leading Science in Australia's Defence

Australian Government

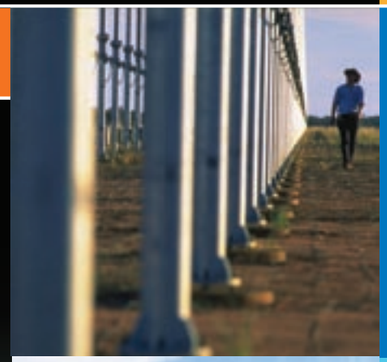
Department of Defence

Defence Science and Technology Organisation

DEFENCE SYSTEMS ANALYSIS DIVISION

DEFENCE SCIENCE AND TECHNOLOGY ORGANISATION

DSTO



S2 – Capability Analysis and Planning

Research carried out under S2 supports the capability development process for Whole of Force. Work conducted under S2 includes:

- Strategic Planning
  - Development of the strategic planning framework.
- Capability Planning
  - Development of the DCP and the DCPG.
  - Capability audit analysis.
- Strategic Preparedness
  - Strategic preparedness decision-making.

S5 – Scrutiny and Analysis

Research carried out under S5 provides advice to CDS and guidance for DSTO studies.

Long Range Research

DSAD is also committed to undertaking long-range research that helps maintain the science and technology base of DSAD. Long-range research in DSAD is currently being undertaken in:

- systems of systems engineering
- joint synthetic environment for experimentation
- campaign model development
- cultural analysis
- risk assessment.

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DSTO: Leading Science in Australia's Defence

The Defence Science and Technology Organisation (DSTO) is part of Australia's Department of Defence. DSTO's role is to ensure the expert, impartial and innovative application of science and technology for the defence of Australia and its national interest. The Defence Systems Analysis Division (DSAD) is part of the Information Sciences Laboratory, one of three R&D laboratories operated by DSTO.

DSAD was formed in 2001 as a division of the DSTO. DSAD's role is to provide increased support for Defence's strategic and capability decision-making processes.

DSAD studies encompass the whole spectrum of joint and combined operations, across the maritime, land, air and information environments, and include surveillance, situation awareness, readiness, force generation, deployment, force projection, force protection, sustainment, logistics, command and control.

DSAD comprises three branches: Strategy and Concepts Branch (SCB), Integrated Capabilities Branch (ICB) and Planning and Guidance Branch (PGB).

Strategy and Concepts Branch

The SCB program includes: analysing future technology and implications; assisting with the development of the strategic framework; assisting the definition and articulation of military strategy; linking the military strategy to military response options and military end states; and exploring new concepts and assessing their potential effectiveness in ADF operations.

Integrated Capabilities Branch

The ICB program includes: studies of interoperability; articulation of network warfare options and implications; analysis of joint and integrated capability packages; analysis of airspace battle management options; and conduct of the JSF pacific Rim C4ISR Study.

Planning and Guidance Branch

The PGB program includes: studies of force structure, balance of investment, readiness and sustainability; providing support to the development of the Defence Capability Plan and incremental changes to the Plan based on a rigorous process of priority evaluation; providing advice to CDS and FASSP to support their roles as members of senior committees on matters related to capability development; and providing guidance on the conduct of DSTO studies.

Linking strategic policy to capability development.

Commitment and Responsibility

DSAD is committed to strengthening the links between Australia's strategic policy and the plans for the development of Australia's defence capability. It is an integral member of the Australian Defence strategic and capability planning community.

Our People

DSAD values the skills and individual qualities of its people. Staff are recruited from a wide range of science and technology disciplines and are encouraged to develop further technical skills through the DSTO Continuing Education Initiative.

Locations

DSAD is based at Fern Hill Park, Canberra, with staff distributed across five sites:

- Fern Hill Park (ACT)
- Russell Offices (ACT)
- Edinburgh (SA)
- Fishermans Bend (Vic)
- Pyrmont (NSW).

Achieving Objectives

To achieve its objectives, DSAD:

- helps to frame and articulate problems, and provide analytical rigour to complex and multi-dimensional decisions;
- maintains a capacity to analyse whole-force military operations as complex systems of systems;
- assists the development of the Australian Defence Organisation (ADO) experimentation policy and capability;
- has created an environment of flexible teaming based on collaborative analysis and staff attachments across organisation boundaries;
- advises DSTO on the range and methodologies of studies to support capability development; and.
- provides a catalyst for local industry and academia to increase their ability to contribute to Australian self-reliance in defence.

In addition, DSAD is continually developing, nurturing and applying research skills in order to better inform major decisions and senior decision-makers, particularly the Defence Capability and Investment Committee (DCIC) through the Chief Defence Scientist as a member of DCIC.

Excellence – People – Innovation – Integrity – Teamwork

DSAD shares DSTO's core values of "Excellence – People – Innovation – Integrity – Teamwork."

Excellence: DSAD staff aim for S&T excellence in the areas of systems engineering, operations research and experimentation.

People: DSAD values and encourages diversity in its staff — diversity in background, experience, qualifications and skills.

Innovation: DSAD staff are encouraged to devise new ways of approaching whole-force and systems-of-systems analysis.

Integrity: DSAD staff are expected to provide professional and impartial advice to Defence clients and the DCIC.

Teamwork: DSAD encourages a flexible and task-based teaming approach. Multi-disciplinary teams are developed with staff from different branches and DSTO divisions; while staff attachments and exchange are also common and encouraged.

Better Strategy and Capability Decisions for Australian Defence.

Enhancing Defence Planning

To maintain our capability edge in the current defence and security environment, the ADO requires a rigorous program of exploration and inquiry into future contexts, concepts and capabilities. DSAD provides research and analysis to support this program.

The Defence and Security Environment

DSAD considers several factors when providing research and analysis. These include:

- changes in the global political environment, particularly economic and political developments in the Asia-Pacific region;
- changes in the Australian community, especially in demographics and expectations;
- military trends, such as the emphasis on a wider range of military operations, particularly in coalition with other nations;
- the high pace of technology advances, particularly in computing, communications and the use of networked systems; and
- the development of new and more complex operational concepts to exploit technologies in new ways.

Principal Clients

The principal clients for DSAD research and analysis are the senior Defence committees, in particular the DCIC. The key client sponsors and partners for this work are:

- Chief, Capability Development
- Head, Strategic Policy
- Chief Information Officer
- Chief Defence Scientist.

DSAD also maintains strong links with several external groups and organisations, including various defence research organisations in the USA, UK, NZ, and Canada; overseas military organisations, particularly PACOM, JFCOM and the NATO SAS panel; academic institutions such as ADFA, the University of South Australia, Monash University, RMIT, University of Canberra, ANU and the University of Wollongong; and industry groups and companies such as RAND, CORDA and Boeing.

DSAD Research

The majority of DSAD's research falls within the following research areas:

- S1: Strategy and Future Warfare Concepts
- S2: Capability Analysis and Planning
- S5: Scrutiny and Analysis

In addition, DSAD staff contribute to Maritime, Land and Air research tasks where they have appropriate skills and experience.

S1 – Strategy and Future Warfare Concepts

Research carried out under S1 supports the development of future Defence strategy and policy. Work conducted under S1 includes:

- Strategic context for CD&E
  - Enhancing the utility of the Planning Scenarios.
- Future Warfare Concept Development
  - Force 2020: supporting the implementation of Force 2020 through CD&E.
  - Network Centric Warfare: supporting the development of concepts and architectures for how networking should be implemented by the ADF.
  - Effects Based Operations: supporting the development of Effects Based Concepts, including implications for the ADF.
- Operational Capability Analysis
  - Operational Architectures: developing and testing operational architectures, and analysing against capability packages.
- CD&E analytical and technical base
  - Experimentation and Simulation: development of methods and technologies to support the overall CD&E process.
  - Future Technologies: implications of future technologies for FWC.

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