

Professor Robert Clark
Chief Defence Scientist &
Chief Executive Officer

Defence Science & Technology Organisation
Department of Defence
Australia

10th Annual SET Conference

21 April 2009

The Australian Perspective

Unclassified

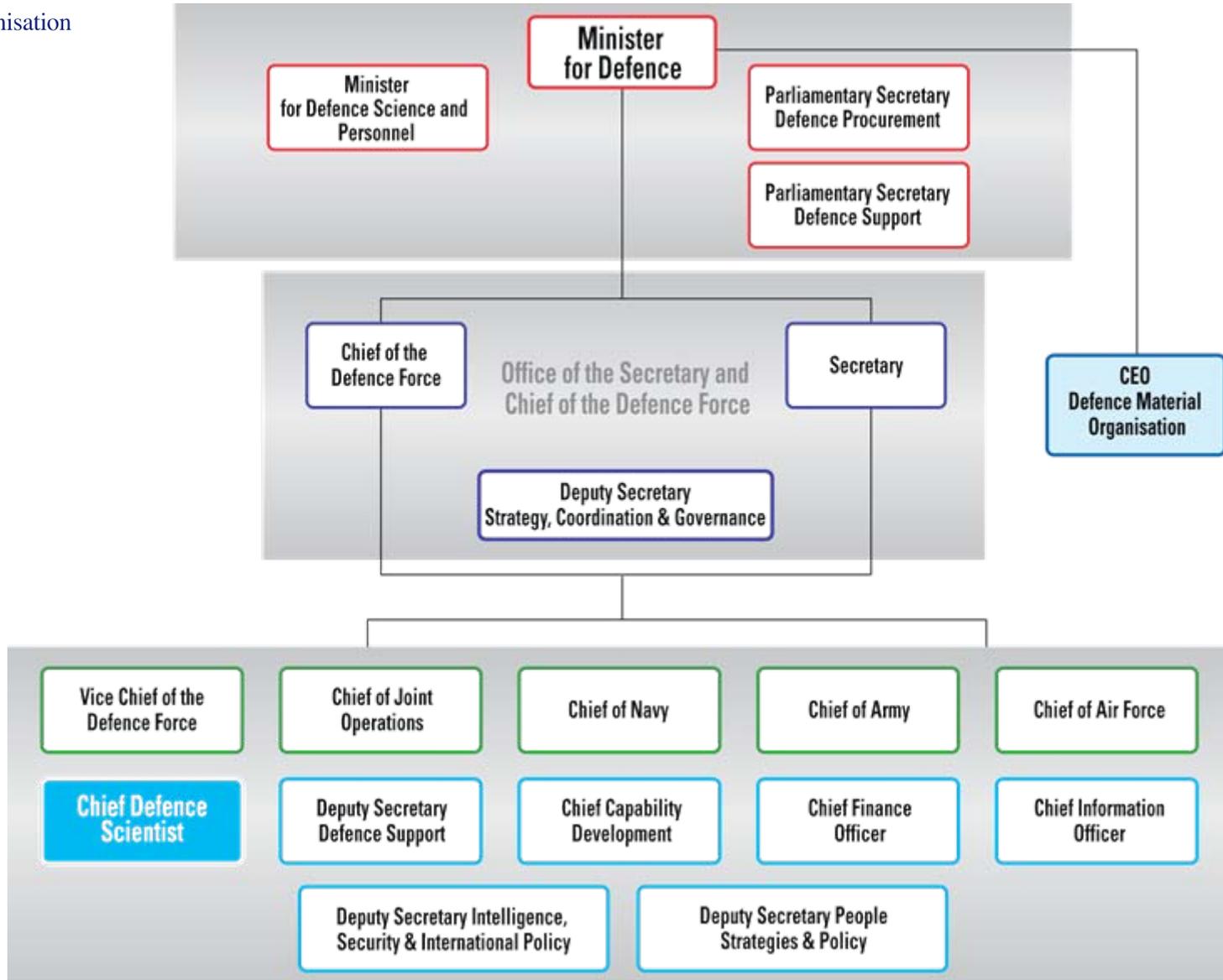


DSTO at a Glance

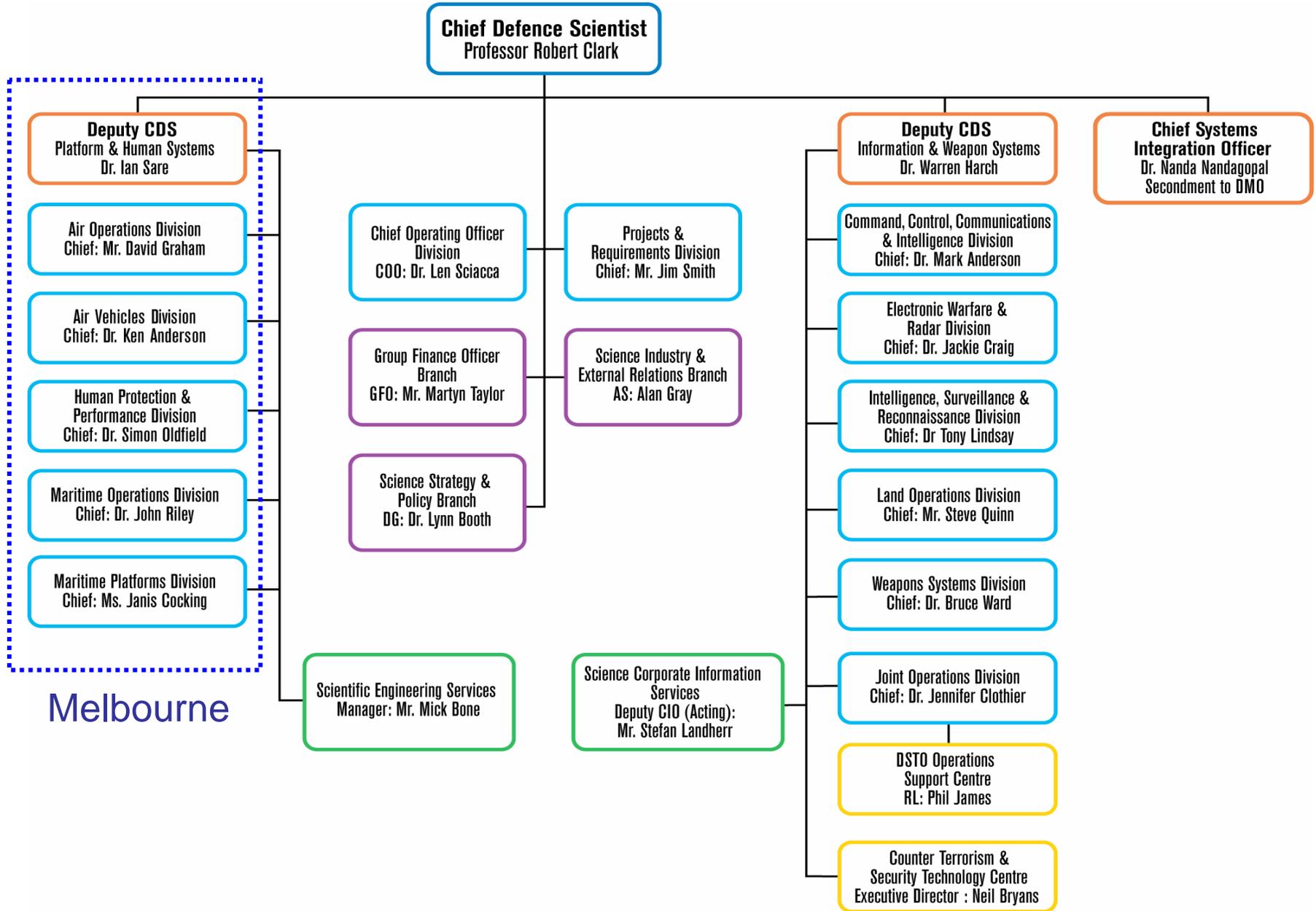




DSTO in Defence



DSTO Structure



DSTO Structure

Chief Defence Scientist
Professor Robert Clark

Deputy CDS
Platform & Human Systems
Dr. Ian Sare

Air Operations Division
Chief: Mr. David Graham

Air Vehicles Division
Chief: Dr. Ken Anderson

Human Protection & Performance Division
Chief: Dr. Simon Oldfield

Maritime Operations Division
Chief: Dr. John Riley

Maritime Platforms Division
Chief: Ms. Janis Cocking

Scientific Engineering Services
Manager: Mr. Mick Bone

Chief Operating Officer Division
COO: Dr. Len Sciacca

Group Finance Officer Branch
GFO: Mr. Martyn Taylor

Science Strategy & Policy Branch
DG: Dr. Lynn Booth

Projects & Requirements Division
Chief: Mr. Jim Smith

Science Industry & External Relations Branch
AS: Alan Gray

Science Corporate Information Services
Deputy CIO (Acting):
Mr. Stefan Landherr

Deputy CDS
Information & Weapon Systems
Dr. Warren Harch

Command, Control, Communications & Intelligence Division
Chief: Dr. Mark Anderson

Electronic Warfare & Radar Division
Chief: Dr. Jackie Craig

Intelligence, Surveillance & Reconnaissance Division
Chief: Dr. Tony Lindsay

Land Operations Division
Chief: Mr. Steve Quinn

Weapons Systems Division
Chief: Dr. Bruce Ward

Joint Operations Division
Chief: Dr. Jennifer Clothier

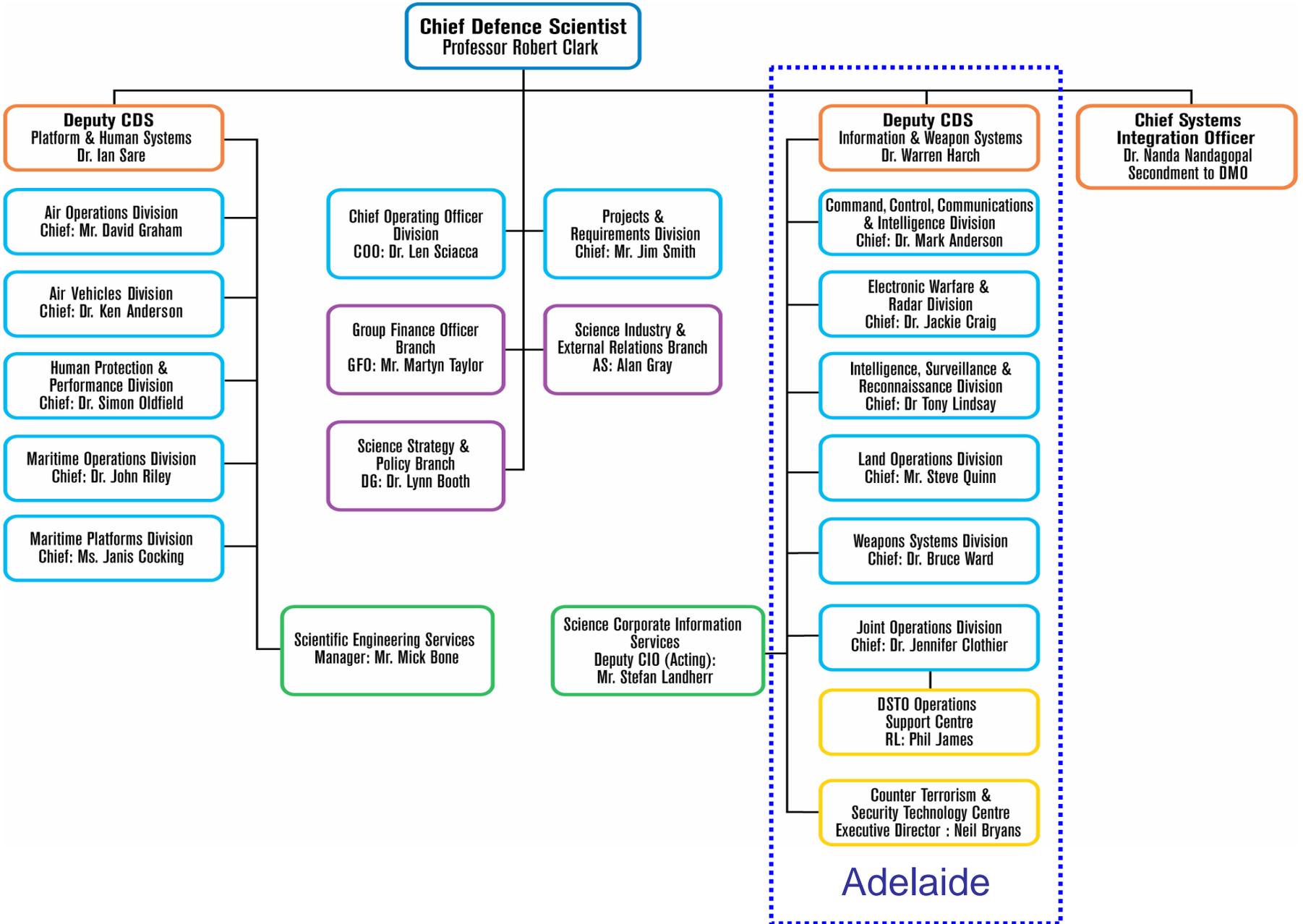
DSTO Operations Support Centre
RL: Phil James

Counter Terrorism & Security Technology Centre
Executive Director : Neil Bryans

Chief Systems Integration Officer
Dr. Nanda Nandagopal
Secondment to DMO

Canberra

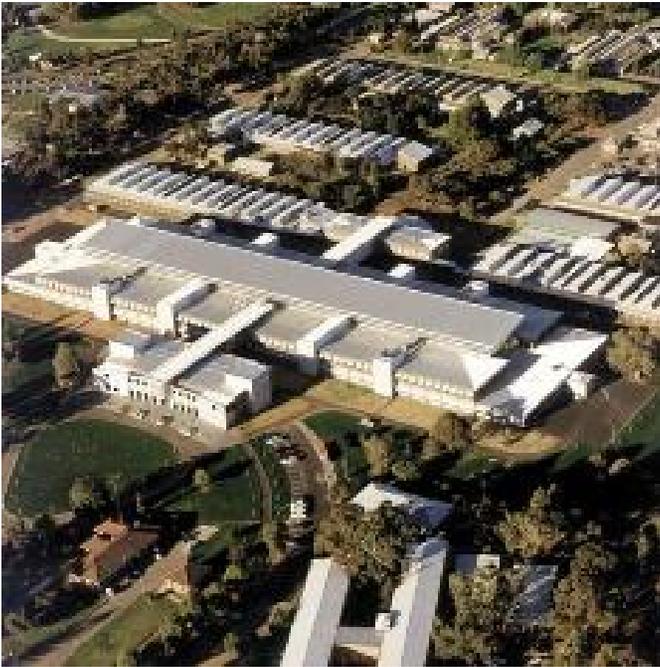
DSTO Structure





Australian Government
Department of Defence
Defence Science and
Technology Organisation

DSTO Major Facilities



Adelaide



Melbourne



Selected DSTO Achievements /1

- JORN Phase 5 Enhancement Program
- F/A-18 Hornet Structural Testing





Selected DSTO Achievements /2

- “Shapes Vector”
Network Security



- Nulka





DSTO Role

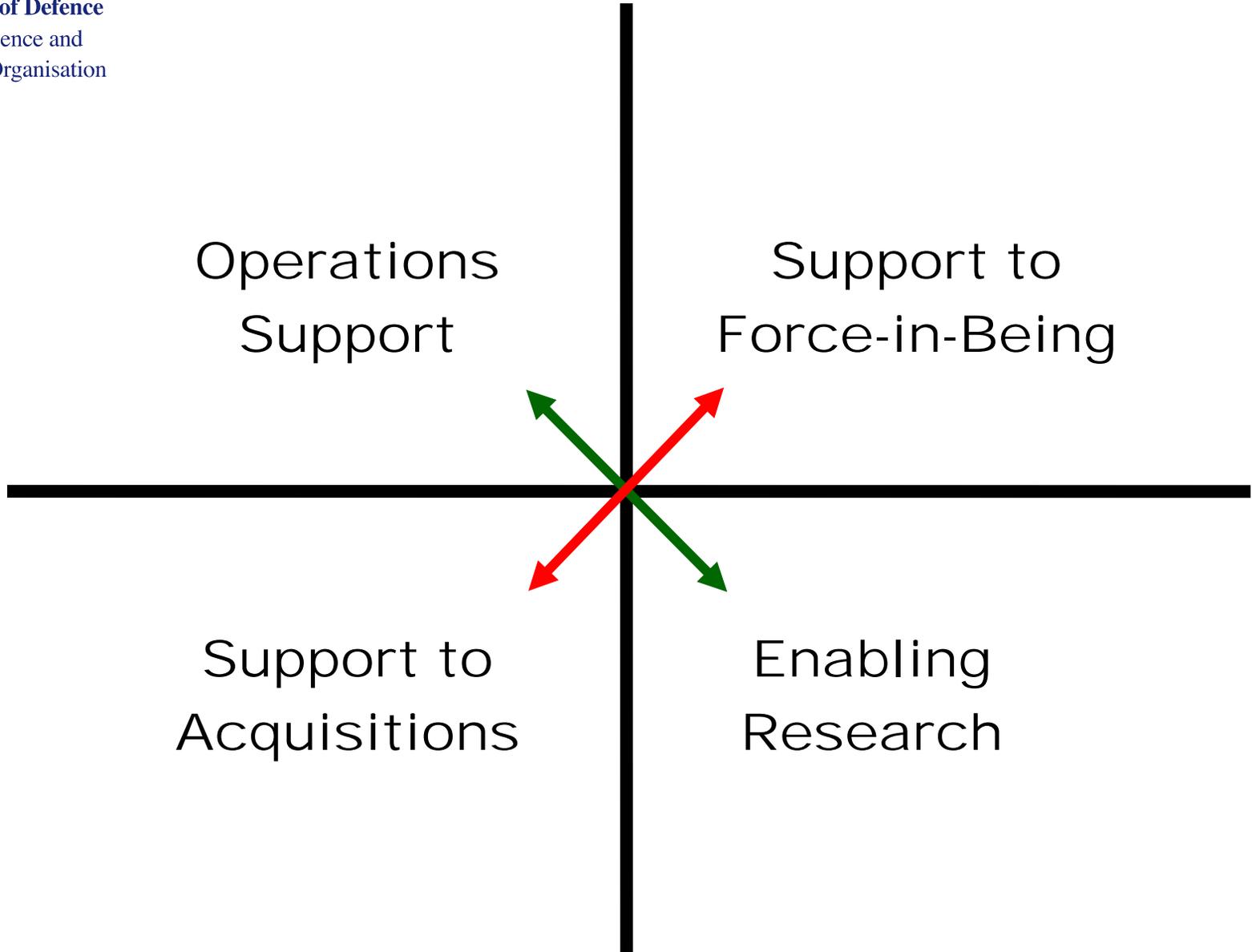
- Enhance Australian Defence and national security **operations**
- Support the **sustainment** of in-service capabilities
- Deliver key advice and technology solutions for **future capability**
- Build Defence capacity through partnerships with **industry**





Australian Government
Department of Defence
Defence Science and
Technology Organisation

DSTO Focus





I: Support to Operations /1

- Deployed Operations Analysts (OA)
 - DSTO responsible for raising, training and deploying two-person OA teams on ADF operations
 - > 60 personnel deployed to 7 countries since 2005
 - Currently maintain 4 teams around the globe
- Operational Reachback Program
 - Link between deployed analysts and broader defence science community
 - Set of dedicated and committed staff available to respond to requests for science and technology assistance





I: Support to Operations /2

Headquarters Joint Operations Command (HQJOC)



Joint Task Force Headquarters



Fighting Elements



DSTO Contributions



Battlelabs



Deployed scientists



Technology insertion



II: Operational Support for ADF Platforms

- Maximising operational effectiveness
- Support to capability enhancements
- Position for the future



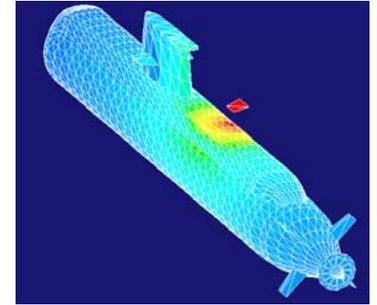


Australian Government
Department of Defence
Defence Science and
Technology Organisation

II: Shock Trial of HMAS Rankin

Outcomes: Validated static & dynamic structural performance

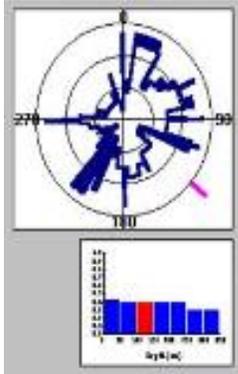
R&D advice to support safety, reliability & functionality





II: Signature Management

Threat Analyses



Measurement

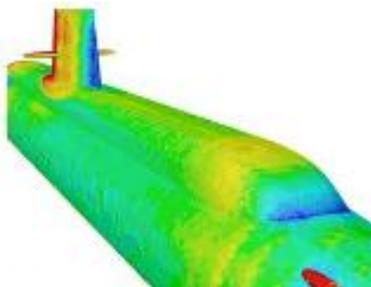


Analysis

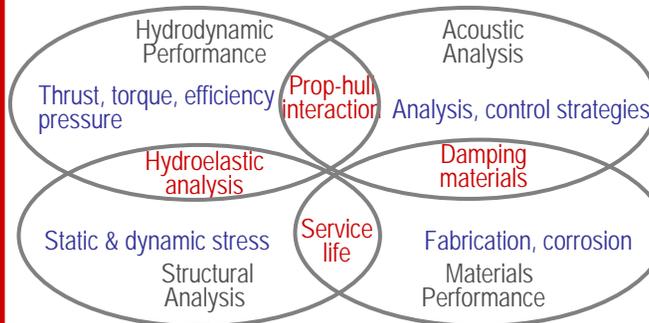


Provides essential information for complete signature awareness and management

Modelling



Propeller design



Control





II: Support of F/A-18 Structure

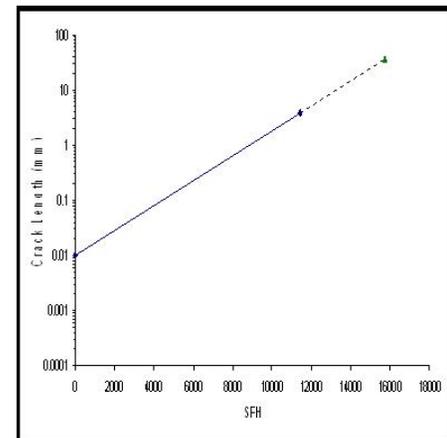
- Improve fatigue crack growth modelling
- Combined with fleet management

Outcomes:

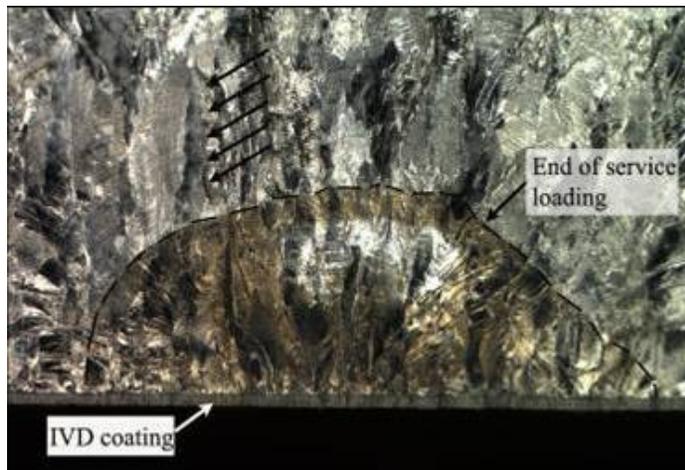
- Improved operational flexibility
- Improved availability
- Large cost savings



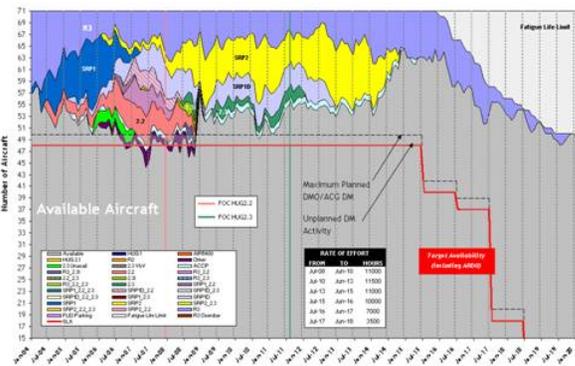
Centre Barrel in test rig



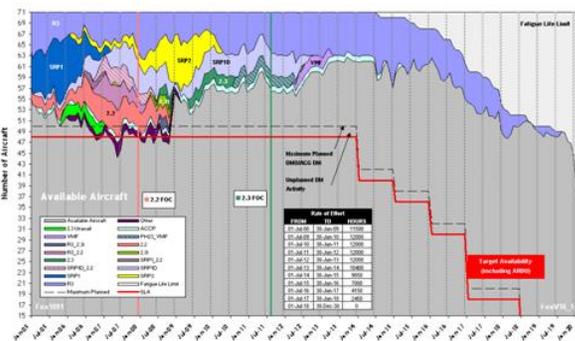
Crack growth



Fracture surface of bulkhead



Prior to program 41- 45 Centre Barrels due to be replaced



After program 10 - 15 due to be replaced



III: Support to Acquisitions

SEA 1000
Future
Submarine

SEA 4000
Air Warfare
Destroyer

AIR 6000
New Air
Combat
Capability

LAND 400
Combat
Vehicles



IV: Enabling Research

- Cyber
- Electronic Warfare
- OTHR
- Hypersonics
- CIED – Force Protection
- Signature, Power and Energy
- USW
- UAS
- Systems Integration





Collaborating to Innovate

- **Rapid Prototyping, Development and Evaluation Program (RPDE)** – collaborating with Australian Industry.
- **Defence Future Capability Technology Centre (DFCTC)** – linking government, research agencies and industry to develop Defence capability.
- **Centres of Expertise (CofE)** – helping universities to focus on research and technology areas of interest to Defence.
- **Capability Technology Demonstrator Program (CTD)** – helping industry to develop new technology with strong military potential.





Capability Technology Demonstrator Program

- Demonstrating military potential of technology.
- \$210 M invested since 1998.
- Average CTD – 3 years, \$2.5 M.
- Now CTD Extension Program with 5 successful demonstrators fast-tracked.
- US – JCTDs





RPDE

- Rapid Prototyping, Development and Evaluation Program (RPDE) – collaboration with industry.
- Seeks to accelerate the introduction of network centric solutions into the ADF.
- Harnesses expertise of 141 industry participants to respond rapidly to problems.
- DSTO involved in 75% of RPDE tasks.
- Joint effort progresses ideas quickly to a stage where acquisition can start.





Defence Future Capability Technology Centres

- DFCTC program – a new initiative between Government, research agencies and industry to develop future Defence capability.
- Defence Materials Technology Centre first under this program.
- DMTC - 14 participants, \$85 M invested.
- DMTC is test-bed for new high-tech materials for use in next generation Defence platforms.





Centres of Expertise

- DSTO Centres of Expertise in 7 universities.
- Focus on specific research and technology areas
 - energetic materials
 - systems integration
 - autonomous vehicle systems
 - photonics
 - helicopter structures and diagnostics
 - aerodynamic loading
 - structural mechanics.
- Some COEs (photonics, AVS) already making significant advances.





International Collaboration

- DSTO participates in the following multilateral agreements
 - American, British, Canadian, Australian and New Zealand Multilateral Master Information Exchange MOU (ABCANZ)
 - The Technical Cooperation Program (TTCP)
- DSTO participates in several bilateral agreements





Industry Collaboration

- DSTO and industry have common goal – to enhance Defence capability.
- DSTO enables industry to better support Defence.
- Striving for closer engagement with industry (Industry Days).
- Flexible IP policy – not implacably wedded to royalty collection but to capability innovation.





DSTO Support to National Security

- Threat anticipation
- Public safety and border security
- Crisis management & command systems
- Critical infrastructure protection, including information infrastructure
- Chemical, biological, radiological and nuclear defence
- Explosives and improvised explosive devices
- Intelligence support tools
- Exercise command and control and operations research





DSTO Advisory Board

- Strong team of experts will advise on strategic directions and S&T delivery to Defence.
- A change to welcome fresh ideas and perspectives from industry and the science/innovation community.





Australian Government
Department of Defence
Defence Science and
Technology Organisation

Questions