



A Defence Innovation Hub program



The RPDE Program, Strategic Policy & Intelligence Group
Level 2, 18-20 Brindabella Circuit Brindabella Airport Park ACT, 2609 Australia
Phone +61 2 6127 4980
www.rpde.org.au

2015/16 **Rapid Prototyping, Development & Evaluation** Annual Report

Eight Australian Light Armoured Vehicles (ASLAV) and 25 personnel, from 2nd Cavalry Regiment (2CAV), providing a support element to 2nd Battalion, Royal Australian Regiment, conducted training and live fire manoeuvre exercises during the tactical phase of Exercise Rim of the Pacific (RIMPAC) 2016 at the Pohakuloa Training Area on the Big Island of Hawaii. *Photo: CPL Matthew Bickerton*



Operation OKRA – Lieutenant Casey Doyle briefs Iraqi Army soldiers during training at the Taji Military Complex in Iraq. Australian and New Zealand soldiers are training members of the Iraqi Army to defeat the Daesh terrorist group. They are deployed on active service to Iraq as part of the Training Task Unit of Task Group Taji. **Photo:** CPL LSIS Jake Badior



AVM Mel Hupfeld, DSC

In 2005, Defence established RPDE to find innovative solutions that would allow our warfighters to operate more effectively and in greater safety. Over the intervening years, the Program has achieved remarkable results, testament to the strength of its founding principles. Each new challenge has been met with professionalism and enthusiasm. RPDE's Board Members, management team, staff and participants have all contributed directly to the program's continuing success.

This report gives some insight into the achievements of the past 12 months, as RPDE brings Industry, Academia and Defence personnel together to find solutions to challenging and complex problems.

Chairman's Statement

RPDE continues to make a valuable contribution to the work of Capability Managers. In the last 12 months it has helped Defence analyse complex problems related to future submarines, frigates, unmanned systems and integrated air and missile defence. It has also taken big steps toward developing more effective protection for our service men and women from improvised explosive devices and toxic chemicals.

None of the above would be possible without the support of the RPDE Members. The unique collaborative environment provided by RPDE where Defence, Industry and Academia feel comfortable to share ideas and solve problems together is at the heart of RPDE's success.

I'd like to send special thanks to former General Manager, Mr Rick Shalders. His guidance and assistance helped me to transition to the role of RPDE Chair. I also wish to thank the contributions of the outgoing Board Members: Ms Kerry Lunney, Mr Peter Freed and Mr Tony Smart, and welcome three new Board Members: Ms Heidi Garth, Mr Terry Martin and Mr Will Taylor. **These new appointments are the first move toward a more diverse representation on the Board. I hope to further extend its breadth of experience by the appointment of additional Independent Directors to assist RPDE achieve the Government's increased focus on innovation.**

Organisational change is inevitable; for Defence and RPDE, this has been particularly so over the last year.

In February this year, the Government released a Defence Industry Policy Statement as part of the Defence White Paper process. In this document, the Government announced the creation of a virtual Defence Innovation Hub which includes RPDE. The Hub will be established in the Defence Industry Policy Division (DIPD) of the Strategic Policy & Intelligence (SP&I) Group.

The creation of the Defence Innovation Hub is a significant change in Defence's approach to innovation. I look forward to working with Industry, Academia and my colleagues in Defence to ensure that RPDE makes a significant contribution to the success of the Defence Innovation Hub.

I acknowledge the contributions of the outgoing Acting Chair of the One Star Steering Group (1SSG), Mr John Toohey; and welcome Ms Kate Louis, First Assistant Secretary Defence Industry Policy Division (FASDIPD), and Mr Benjamin Hayes, Assistant Secretary Defence Capability & Innovation Branch (ASC&IB) and Chair of the 1SSG.

or I acknowledge the contributions of the outgoing Acting Chair of the One Star Steering Group, Mr John Toohey; and welcome the incoming Chair, Mr Benjamin Hayes, Assistant Secretary Defence Capability & Innovation Branch (ASC&IB). I also welcome Ms Kate Louis, First Assistant Secretary Defence Industry Policy Division (FASDIPD), who will take over as Chair of RPDE following its next Board Meeting.

The coming year promises to be interesting and challenging to everyone involved with RPDE's success.

1 September 2016

M. Hupfeld.

The makeup of the new Board, which took effect on 1 July includes:

Member	Sponsoring Organisation	Tenure
Heidi Garth	BMT Design & Technology	24 months
Amanda Holt	SYPAQ Systems	12 months
Terry Martin	Queensland University of Technology	24 months
Boris Novak	Dexata	12 months
Graham Smith	Lockheed Martin Australia	24 months
Terry Stevenson	Raytheon Australia	12 months
Will Taylor	QinetiQ	24 months
Brad Yelland	BAE Systems Australia	12 months

General Manager's Statement

The past year has been an exciting period of transition for RPDE:

- We have established a new Relationship Agreement with our Industry and academic partners.
- The Government announced the creation of the Defence Innovation Hub, in which RPDE plays a key role.
- RPDE has a new home in the Strategic Policy & Intelligence Group of the Department of Defence.

All of this has happened while we have continued to provide a conduit for Defence, Industry and Academia to work together to solve complex Defence capability and modernisation challenges.

It has also been a year of transition for me personally. I'd like to echo the comments of the Chair by expressing my thanks to outgoing General Manager, Mr Rick Shalders. His willingness to share his knowledge and experience during the handover is greatly appreciated.

The new RPDE Relationship Agreement sets the foundations for collaboration between Defence, Industry and Academia. As at 30 June 2016, more than 220 organisations had signed the new Agreement. This is a strong endorsement of RPDE's value to our Members.

Over the next 12 months we will work with the new Defence Innovation Hub to ensure that the benefits of the Relationship Agreement can be used in a broader innovation framework. This includes defining how RPDE will integrate with the Defence Innovation Hub.

In 2015/16, the RPDE Board supported a trial to improve the process of bringing new technology into service. One of the challenges for innovation programs is to transition new technology into service. RPDE is working with stakeholders across Defence to realise this transition. The first of these trials is due to be completed during 2017.

Finally, I would like to recognise the outstanding team who have contributed to the success of RPDE in this past year. The dedicated team of Defence, Industry and academic staff provides a truly collaborative environment for success.



Mr Josh Polette, General Manager RPDE

RPDE joins the Defence Innovation Hub

The 2016 Defence Industry Policy Statement (DIPS) outlines a new approach to Defence innovation, which includes the establishment of a new Defence Innovation Hub.

Existing innovation programs will transition under the strategic guidance of the Hub, including:

- Rapid Prototyping, Development and Evaluation (RPDE)
- Defence Materials Technology Centre (DMTC)
- Capability Technology Demonstrator (CTD)
- Defence Innovation Realisation Fund (DIRF)
- Priority Industry Capability Development Fund (PICDF)
- Chief Information Officer Group (CIOG) Innovation Program

Funded at around \$640 million over the next decade, the Hub will rationalise and simplify the existing Defence innovation programs and establish a single pipeline for maturing innovation proposals, from initial concept development activities, through prototyping and integrated test, into operational service activities.

As a result of the new DIPS initiatives, and following the changes to Capability Development Group (CDG) as part of the First Principles Review, RPDE has transitioned from CDG to the Innovation Hub. RPDE's business processes will continue to operate under existing arrangements while Defence reviews the role of RPDE as part of its integration into the Hub, including its commercial structure and the services it provides.

Other DIPS innovation initiatives include:

- the Next Generation Technology Fund, with \$730 million in new funding to develop game-changing technologies that will shape future capabilities
- the Innovation Portal, which will be the key communications bridge, providing greater transparency on Defence innovation priorities and facilitating innovation forums that link Defence, Industry and academic/research institutions
- new culture and business practices, including contracting frameworks and intellectual property policies that support a more agile and transparent approach to innovation investment.



Mr Benjamin Hayes, Assistant Secretary Defence Capability & Innovation Branch (ASC&IB) and Chair of the 1SSG

Together, these innovation initiatives will connect partners, streamline processes and accelerate the transfer of innovative technologies into advanced Defence capability.



The Australian Special Forces Task Group (SFTG) is deployed to Afghanistan on Operation Slipper to conduct special operations in support of US-led Coalition security and reconstruction efforts in the country.

Photo: SGT John Carroll



Australia and New Zealand have been close allies as far back as the Boer War, well before either country had achieved nationhood. Today, the Australian Defence Force (ADF) and New Zealand Defence Force (NZDF) routinely train and serve together, and acquire common systems and equipment, such as the ANZAC Class frigate and the MRH-90/NH-90 helicopter.

The shared experience of the ADF and NZDF is fertile ground for identifying new requirements. This leads to opportunities to develop innovative solutions. While Australia actively promotes innovation through programs such as RPDE, there is no equivalent structure in New Zealand.

Innovation is encouraged within NZDF and their small but lively Defence Industry has spontaneously brought forward ideas, such as the development of specialised trailers for the new MAN trucks by Tidd Ross Todd and the design of customized rappelling devices for the NH-90 helicopters by Safe Air Ltd.

The NZDF and its international partners conduct a military assault against a 'Becaran highland militia' stronghold on the Rainbow Ski Field near St Arnaud in the Tasman district during *Exercise South Katipo* (SK15).

Australia and New Zealand have a long-standing Combined Force Development Working Group to share information and development of solutions to common requirements and interoperability challenges. Under this arrangement, RPDE identified an opportunity for enhanced engagement with NZDF.

The Board has formally invited NZDF to participate and agreed to allow the NZDF access to RPDE intellectual property, subject to existing bilateral agreements. NZDF has joined the RPDE One Star Steering Group. AIRCDRE Andrew Clark, Assistant Chief Capability, is represented by WGCDR Carol Abraham, Air Advisor, New Zealand Defence Staff Canberra.

Defence Industry links are also strong. For example: Safe Air Ltd, an Airbus Group Australia Pacific subsidiary located at RNZAF Woodbourne, operates a subsidiary based in Melbourne. While BECA, a New Zealand systems engineering and infrastructure professional services consultancy, with main hubs in Australia, New Zealand and Asia, engages Trans-Tasman staff as a combined pool of expertise.

"In the short term, the NZDF hopes to benefit from the achievements of RPDE. Over time, we hope to see New Zealand able to contribute to the pool of expertise." WGCDR Abraham said.

Australia and New Zealand Establish Combined Force Development Working Group

"Our forces face similar problems; deployable power and water, counter-IED, and HF Communications are examples that come to mind. And through the Trans-Tasman CER arrangements, Industry already treats many shared requirements as a larger, combined market. This is to the benefit of both countries." WGCDR Abraham said.

The assault was spearheaded by NZ infantry, 'fast-rope'd' by Royal New Zealand Air Force (RNZAF) NH-90 helicopters to take the high ground surrounding the ski-field, and a combined Australia-New Zealand ANZAC Ready Reaction Force (RRF) utilising Australian Bushmaster Protected Mobility Vehicles, which cleared and secured the rebel base.

Photo: Courtesy New Zealand Defence Force



WGCDR Carol Abraham, Air Advisor,
New Zealand Defence Staff Canberra

About RPDE

RPDE was established in 2005 to bring Defence and Industry together in a collaborative environment that could deliver innovative solutions addressing complex Defence capability development and modernisation issues.

What we do

RPDE activities aim to accelerate capability change for the ADF warfighter.

RPDE activities are projects funded by Defence and staffed by personnel from Industry and Academia. Each project activity has a One Star Defence sponsor.

There are four types of activities: Tasks, QuickLooks, QuickAnswers, and LongLooks.

- Tasks facilitate change and can include the introduction of new concepts and/or technologies. Solutions can include architectures, prototypes or proofs of concept, and would normally include consideration of critical Fundamental Inputs to Capability elements.
- QuickLooks provide options and recommendations to address complex Defence issues by bringing together experts from Industry and Academia.
- QuickAnswers respond to urgent or simple needs from Defence that require Industry input to inform, shape, guide or solve issues.
- LongLooks engage the services of key academics, noted for being Australian and/or international leaders in areas of research that align to ADF capability.

The intellectual property generated by RPDE activities is owned by the Commonwealth of Australia and is available to its Members.

RPDE Governance

RPDE is governed by a Board of Member representatives, chaired by Head Force Design of VCDF Group.

Project activities are overseen by a One Star Steering Group chaired by the Assistant Secretary Defence Capability and Innovation from the Strategic Policy & Intelligence Group.

RPDE's governance ensures that we are keeping to our mission and focusing on the challenges prioritised by Defence.

RPDE's Mission

To accelerate and enhance Australian Defence Force (ADF) warfighting capability through innovation and collaboration.

HMAS Ballarat fires a RIM-162 Evolved Sea Sparrow Missile (ESSM) at RIMPAC 2016. Twenty-six nations, more than 40 ships and submarines, more than 200 aircraft and 25,000 personnel participated. The world's largest international maritime exercise, RIMPAC provides a unique training opportunity that helps participants foster and sustain the cooperative relationships that are critical to ensuring the safety of sea lanes and security on the world's oceans.

Photo: Mass Communication Specialist 2nd Class Holly L. Herline, U.S. Navy



RPDE Board Members and observers (from rear): Will Taylor, Mark Petrusma (DST Group), Kate Louis (FASDIP), RADM Tony Dalton (HJSD), Josh Polette (GM RPDE), Benjamin Hayes (ASDCI), Terry Stevenson, Terry Martin, AVM Mel Hupfeld (HFD, Chair), Graham Smith, Heidi Garth, Boris Novak and Amanda Holt

Photo: Grace Costa Banson

Absent: Brad Yelland and Aiyaswami Mohan (CTO)

The Board

The RPDE Board is chaired by a Two-Star Defence member. Other members include up to eight representatives from the RPDE membership base. The Chair also has the discretion to appoint up to two Independent Directors.

Operating along similar lines to a corporate board, its role is to review RPDE's operations, with a focus on strategy.

The Board helps to steer RPDE in its role in the Defence Innovation Hub, to drive the rapid and efficient delivery of innovation outcomes through collaboration with Industry and Academia.

There are three committees: Strategy, Business Development and Stakeholder Engagement/Communications, and Membership.

Key functions of the Board include:

- Provide overall governance and leadership to the RPDE Program.
- Ensure RPDE is continuously improving processes and practices.
- Ensure RPDE complies with relevant legislation, Defence policies and the Relationship Agreement.

One Star Steering Group

The RPDE One Star Steering Group (1SSG) is Chaired by the Assistant Secretary Capability and Innovation Branch. Its 16 members, drawn from the Australian Defence Organisation and the New Zealand Defence Force, meet every two months. The Group's role is to verify RPDE activities meet Defence priorities. It gives Commonwealth input into the RPDE Program to inform the priorities and funding decisions.

The 1SSG is represented by RPDE's customer base – from a range of Defence organisations and stakeholders, including Capability Managers, Capability Acquisition and Sustainment Group (CASG) and Defence Science and Technology Group (DSTG). This ensures RPDE activities are considered from a Joint perspective; and that opportunities to deliver integrated and effective combined outcomes for Defence are addressed.

Key functions of the 1SSG:

- Check proposed activities are clearly defined, relevant and suitable for delivery under the RPDE Program.
- Prioritise the sequencing of RPDE activities when there are constraints on time, budget or RPDE resources.
- On behalf of the Commonwealth, recommend GM RPDE proceed/not proceed with the proposed activity.
- Monitor the progress of RPDE Tasks.



HMAS Anzac was the first Anzac Class frigate to be launched, and is capable of operating in a multi-threat environment. Anzac is fitted with an advance package of air surveillance radars, hull-mounted sonar and electronic support systems that interface with state-of-the-art Evolved Sea Sparrow Missiles and Ship Launched Torpedoes. The ship can embark a multi-role Seahawk helicopter to enhance anti-submarine, anti-surface warfare, and Search and Rescue capabilities. Embarkation of a helicopter also provides the ship with the capability to deliver air-launched torpedoes.

Anzac was the third Anzac Class Frigate to complete the Anti-Ship Missile Defence upgrade program, which includes enhanced sensor and weapons systems. The upgrade showcases Australian design and integration capability, with new Phased Array Radar technology designed by CEA Technologies in Canberra, upgrades to combat systems performed by Saab Systems in South Australia, and platform integration design by BAE Systems in Victoria.

Photo: ABIS Nicolas Gonzalez

The RPDE Team

RPDE's very capable administration and commercial staff – all permanent APS employees – support an ever-changing team of Industry and academic staff. Core team members come from our member organisations, typically staying for two years. Project team members stay for the period of their projects. Consequently, there is a continual turnover that is both a strength and a challenge. Fresh faces bring new ideas and new ways to solve the many complex assignments that Defence set us. Accumulated wisdom is not lost, as there is a constant willingness to share ideas and experiences in a remarkably collegiate work environment. This is part of what makes RPDE a success.

New Relationship Agreement

A new Relationship Agreement (RA) and Standing Offer came into effect on 31 December 2015. Changes were made in response to input from the Board and our Members. Key changes included:

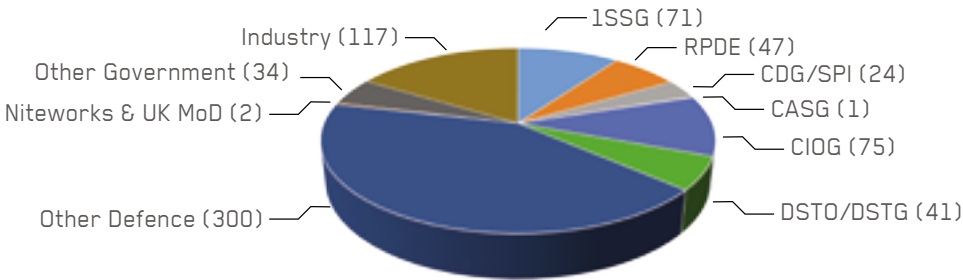
- a simpler application process
- equal status for all members
- a simplified Board structure with clearer definition of roles
- a more flexible and adaptable RA, to allow RPDE and its members to better respond to Defence policy changes.

Foreground IP Requests

The number of requests for access to Foreground Intellectual Property (IP) by Defence, Government Departments and Industry provides a meaningful indicator of the benefits the RPDE program delivers.

There was a total of 712 requests over the reporting period. This includes 595 from Defence and other Government Departments, and 117 from Industry. A breakdown of IP Requests is shown below.

Foreground IP requests 1 July 2015–30 June 2016



Australian National Audit Office Report 2016

In response to recommendations from the Australian National Audit Office (ANAO) and the Board, RPDE recently completed a review of its reporting procedures. Steps are underway to provide more transparency to its work – an initiative that will benefit its members and the Defence community. The recommencement of Annual Reporting is one example of the progress being made in this area.

The 2016 ANAO audit identified areas for improvement in records and data management. During the year, RPDE established a team to put in place more robust work practices. These include the transfer of all official records to the Defence Records Management System, as well as improved accessibility for Defence and RPDE Members.

Bi-Annual Meeting of Participants

RPDE's Bi-Annual Meeting of Participants (BMP) is an important forum for Defence to discuss key issues with our Members, and to increase their understanding of the Defence environment.

RPDE held BMPs in November 2015 and May 2016. Each meeting was attended by more than 100 Members and invited Defence staff. Presenters from the Defence community:

- Mr Tim Heenan, Joint Counter Improvised Threat Task Force presented a case study: *RPDE's contribution to the JCITTF*.
- Mr John Toohey, A/Assistant Secretary Capability & Innovation provided an update on changes to Defence policy on Industry & Innovation.
- RADM Peter Quinn, Head Joint Capability Coordination Division, VCDF Group explained The Defence Capability Life Cycle.
- AVM Mel Hupfeld, DSC, Head Force Design, VCDF Group forecast future directions: RPDE – The next 10 years.



This flypast at the home of military aviation, RAAF Williams, Point Cook reflects the dramatic achievements that flow when a sustained and disciplined commitment is applied to innovation. **Photo:** CPL Guy Young

International Engagement

Defence recently identified Industry as a Fundamental Input to Capability (FIC). This is reflected in the Defence White Paper – 2016, and elsewhere, with innovation programs providing the catalyst. Engaging with international organisations provides an opportunity for RPDE to broaden its understanding of how other countries are engaging with Industry. RPDE has continued to build its links to its counterpart in the UK, Niteworks, as well as establishing new links to the New Zealand Defence Force, which now has a representative at the One Star Steering Group.

Extending RPDE's Services

RPDE introduced two new services during 2015/16, the QuickAnswer and the LongLook. QuickAnswers respond to urgent or simple needs that require Industry input to inform, shape, guide or solve. Typically completed within days or weeks, 11 were undertaken this year. The Long Look was trialled in 2015/16. This activity enables Academia to maintain a watching brief on areas of innovation and to present its findings to Defence and Industry. Two LongLooks were commissioned this year in the areas of Force Protection and Battlespace Awareness. Their outcomes will be assessed by the Board with a view to making a decision on the ongoing value of LongLooks in the coming year.

While RPDE provides Defence with fast answers to immediate operational requirements, bringing innovative solutions into service requires many different elements to be in place, including operational concepts, commercial arrangements, training systems and maintenance systems. To improve the process of bringing new technology into service, RPDE is trialling the taking of some innovations to Technology Readiness Level (TRL) 8. Previously, RPDE engagement typically ended at TRL 6. The first of these TRL 8 activities is due to be completed during 2017.

To date, innovation activities have been undertaken by RPDE in response to requests from its Defence Sponsors. To enable its Members to take a more proactive role, the Leading Edge Administration Portal (LEAP) was established. LEAP commenced operations in May 2016. This Portal is similar in concept to that being established by the Defence Innovation Hub, which will be available to the wider Australian community. RPDE will work closely with the Hub in the coming 12 months to realise synergies between the two programs.

Activity Report

Work completed FY 2015/2016: Five Tasks, 13 QuickLooks and 11 QuickAnswers

Number	Title	Capability Stream	Sponsor	The Question
QA001	Combat Shooting/ Combined Arms Ranges and Simulation	Land Combat & Amphibious Warfare	Director-General Land Development	What exemplar technologies could support the modernisation of Army's targetry, ranges and simulation to develop combat shooting and combined arms force-on-force training in the short and long term?
QA002	Task 005 Review - Joint Force Design	ISREW, Space & Cyber	Director-General Integrated Capability Division	What learnings can be drawn from the RPDE Task 05 body of work to inform the implementation of VCDF's Integrated Joint Force Design component of the 'One-Defence' Model?
QA003	Measuring Army Performance	Land Combat & Amphibious Warfare	Head Modernisation Strategic Planning – Army	How might Army improve its performance measurement to provide contestable evidence on how it is performing and that the expected benefits of its major change initiatives are being realised?
QA004	Business Proposal for Costed Implementation Plan for QL113 (including Enclosures 1–5)	Key Enablers	Assistant Secretary. IT Service Management Branch, CIOG	What are the options to provide ICT Customer Service and a Service Desk to hearing-impaired people in Defence? What are the associated security implications?
QA005	Project Document Suite Development Assurance	Capability Life Cycle	Director-General Integrated Capability Division	What is the optimal process for critical Project Document Suite development, review and approval from Project Initiation Review Board (Gate 0) through to Capability Gate Review Board (Gates 1 and 2)?
QA006	Technology Capability Realisation Manual	Capability Life Cycle	General Manager, RPDE	What are the procedural resources and services that RPDE could provide SMEs in the Australian Defence Industry in supporting them to achieve TRL 8?
QA007	Land125-4 Soldier Combat System Risk Mitigation	Land Combat & Amphibious Warfare	Director-General Land Development	What potential risks might the Land 125-4 project encounter when progressing the soldier combat system? Note: coverage to include risks associated with liaising with and engaging Industry; and SCS system architectures.
QA008	New Capability Life Cycle Model Industry Support	Capability Life Cycle	Capability Life Cycle Team Lead	How could Industry support and contribute to the new Capability Lifecycle model?
QA010	Benefits Capture	Capability Life Cycle	Acting Assistant Secretary Capability and Innovation Strategy Branch	How could benefit capture be implemented across the CISB and RPDE in particular, to inform the likely return on the Defence investment in these programs?
QA011	Plan Jericho Knowledge Management	Strike & Air Combat	Director-General Strategy and Planning	Can we go beyond data storage & smart retrieval to dynamic knowledge management? "Dynamic" in the sense that it is a cyclical process, where the effects required are: <ul style="list-style-type: none">• Data (collect, collate, store)• Fused Operational Knowledge (from the repository of data)• Knowledge (interpreted information from the data)• Superior Decision Support (presentation of the knowledge/data) How can the data be used in innovative new visualization modes to make decision support easier? How can the data and knowledge management be 'game-ified' to drive a higher level of learning and engagement?
QA012	LAND 125-4 Gate Zero, Integrated Soldier Combat System	Land Combat and Amphibious Warfare	Acting Director-General Modernisation – Army	What are the options for implementing system design and management of the integrated soldier combat system?
QL104	SEA5000 Integration Considerations	Maritime and Anti-submarine Warfare	Director-General Maritime Development	What is the optimum level of Combat System integration for the Future Frigate?
QL110	Tactical Personal Area Networking	Land Combat and Amphibious Warfare	Director-General Land Development	What are the tactical options and implications for changes to interfaces between Digital Terminal Control System (DTCS) components within the JTAC, JFO and MFC?
QL111	JP3035-2 Core Simulation Capability	ISREW, Space & Cyber	Director-General Integrated Capability Division	Is Industry able to deliver the capability as described in the provided extracts from the Operational Concept Document (OCD), Functional and Performance Specification (FPS) and Acquisition and Support Implementation Strategy, and within the constraints of the schedule and funding bands identified?

QL113	CIOG Disability Services	Key Enablers	Assistant Secretary IT Service Management Branch, CIOG	What are the options to provide ICT Customer Service and Help Desk to hearing impaired people within Defence? What are the associated security implications?
QL114	SEA1000-5 Deep Water Tracking Range	Maritime & Anti-submarine Warfare	Director-General Maritime Development	What options exist to meet the RAN's Deep Water Tracking Range needs?
QL115	Land 125-4 Soldier Combat System	Land Combat & Amphibious Warfare	Director-General Land Development	What are the technical opportunities, human interface and performance initiatives, that will inform project challenges in creating an integrated soldier combat system for the future environment?
QL116	A Defence Innovation Strategy	Capability Life Cycle	Head Capability Systems	How can Defence Industry and Academia collaborate with Defence to establish a culture that fosters and promotes innovation across the Defence capability lifecycle?
QL117	Validate IOCD V2.0 approach	Capability Life Cycle	Director-General Integrated Capability Division	How can IOCD V2.0 be improved to inform the development of program and project level Operational Concept Documents, Function and Performance Specifications to deliver capability that is integrated by design?
QL118	CBRN Universal Canister	ISREW, Space & Cyber	Commander Counter IED Task Force	Can a single CBRN respirator canister be developed that offers protection against both TIC and CWA threats while meeting the required 170 minute requirement for CBRN defence?
QL119	SEA129 Maritime Tactical Unmanned Aerial System	Maritime & Anti-submarine Warfare	Director-General Maritime Development	What are the FIC, cost, schedule & risk implications of meeting the RAN MTUAS needs for OPV (SEA129-5) while also considering a high level of commonality with MSC? What are the risks associated with the different elements of the capability (payloads, platforms, vehicles, workforce, and integration)? Of these requirements, which ones are most likely to be major cost drivers?
QL120	Future Electronic Warfare Operational Support (EWOS) Enterprise Needs Forecast Study	ISREW, Space & Cyber	Director-General Joint Force Integration	What is the forecast Defence, Joint, Air, Maritime and Land EWOS capability as at January 2020?
QL121	AIR5077-6 Wedgetail Capability Assurance Program (CAP)	Strike & Air Combat	Director-General Aerospace Development	What upgrades to the AEW&C capability will need to be implemented by AIR5077 Phase 6 to ensure the E-7A remains operationally effective and interoperable with ADF and ALLIED forces from IOC to PWD?
QL122	Land154-3B JCIED Future Technology	ISREW, Space & Cyber	Commander Counter IED Task Force	What technology is likely to be available by 2025 to support the six CIED domains?
QL123	SEA5000 Systems Integration (QL104 Phase 2)	Maritime & Anti-submarine Warfare	Director-General Maritime Development	What are the recommended levels for integration of CMS, MFC, ancillary equipment and other systems within the SEA5000 1 Ops Room? Note: 'Levels of integration' include: 1. Full integration into the CMS 2. Partial integration (e.g. data feed) 3. Co-hosting, or other.
QL124	SEA1000 Future Submarine Threat Countermeasures	Maritime & Anti-submarine Warfare	Director-General Future Submarines	What suite of self-protection countermeasures could the Future Submarine be equipped in the early 2030's with an upgrade path to remain viable into the 2070s?
QL125	Air Movements Solution	Air & Sea Lift	Director-General Commander Combat Support Group	What COTS solution or combination of solutions could meet the ADF requirements for an air movement system?
QL126	Joint Fires in the Exploratory Force	ISREW, Space & Cyber	Director-General Joint Force Integration	How might Defence best explore issues relating to JF in the Exploratory Force and manage the supporting and derived knowledge and what tools/techniques will most effectively and efficiently support this work?
T057	AIR5405 Air Battlespace Management (ABM) System Study	ISREW, Space & Cyber	Director-General Aerospace Development	What are the necessary elements that comprise a 5th generation ABM System to achieve Principal Tasks 1 and 2 and that complement and integrate with the relevant capabilities in Force 2030?
T058	KA350 Front Right Hand Seat (FRHS) Air Combat Officer (ACO)/Aviation Warfare Officer (AvWO) Training	Strike & Air Combat	Director-General Aerospace Development	What are the options to simulate FRHS ACOTS functionality to support KA350 ACO/AvWO training?
T061	ADF Unmanned Platforms Environment	ISREW, Space & Cyber	Director-General Joint Force Integration	Phase 1: How could unmanned platforms support the provision of situational understanding, decision support and strike capability in a joint warfighting environment?

Work In Progress as at 30 June 2016

Number	Title	Capability Stream	Sponsor	The Question
LL001	Emerging Materials Technologies for Force Protection Applications	ISREW, Space & Cyber	not applicable	What will be the developments in manufacturing and material technologies that can be applied to lightweight force-protection applications in the next 2–5 years? What will be the challenges for the ADF to take advantage of these advances?
LL002	Battlespace Awareness	ISREW, Space & Cyber	not applicable	Provide an independent assessment of the changes that are occurring in the underlying technology and technical operating environment for two selected Battlespace Awareness domains: Radar and Electronic Support, with Electronic Support narrowing in on detection and tactical analysis of adversary radars and the detection and perhaps identification of digital communication devices.
QA009	Defence Innovation Ecosystem	Capability Life Cycle	Acting Assistant Secretary Capability and Innovation Strategy Branch	How can Defence implement new and effective innovation realisation pathways to ensure a healthy Defence Innovation Ecosystem?
QL128	Federated Systems Integration Laboratories	ISREW, Space & Cyber	Director-General Integrated Capability Division	What are the potential benefits to Defence if it were to establish a federated SIL engineering environment and how might it be established?
QL129	Defence Health JP2060-4 Validation	Key Enablers	Director-General Modernisation – Army	What are the likely high level requirements for JP2060 - 4 and what option or combination of options might provide an integrated deployable health capability, inclusive of an end-to-end common Electronic? Health Record (HER) from point of injury through to health support within the National Support Base?
QL130	Land 129 UAV PH4 Validation	Land Combat & Amphibious Warfare	Director-General Modernisation – Army	How could the ADF acquire, maintain and update a SUAS fleet to deliver and sustain a viable SUAS capability over the Life Of Type (LOT) and provide a greater opportunity for Australian Industry involvement?
QL131	Ship Zero Concept	Maritime & Anti-submarine Warfare	Director-General Littoral and Director-General Surface Combat A, co-sponsors in conjunction with CASG Director-General Director-General Special Ships Acquisition and Director-General Future Frigate	Are there any key FIC considerations that could affect Navy's intent to establish a Ship Zero for SEA1180-1 and SEA5000-1?
T047	JP2048 Phase 4AB - Command and Control System	ISREW, Space & Cyber	Director Joint Amphibious Capability Implementation Team and Director Battlespace Integration, Joint Capability Coordination Branch	What is the optimal system level architecture to allow the CJTF, CATF and CLF to perform command and control from the JOR in the amphibious environment by 2017?
T051	Handheld Standoff PBIED Detection	ISREW, Space & Cyber	Commander Joint Counter Improvised Threat Task Force	Can standoff IED detection technology be miniaturised and a concept demonstrator developed to enhance personal force protection for soldiers from IEDs?
T054	CIED Hand Held Detection	ISREW, Space & Cyber	Commander Joint Counter Improvised Threat Task Force	Can a single IED Hand Held Device Detector (HHDD) be developed with hybrid detection capability while retiring currently identified deficiencies and reducing the form factor to (or below) the lightest and most compact ground search devices available?
T059	Land 17-1C.2 Ammunition Storage, Handling and Distribution	Land Combat & Amphibious Warfare	Director-General Land Development	Does a solution exist for the carriage and loading of artillery ammunition (unit load ammunition carrier) through the logistics supply system from OEM to end user, including integration with various elements of the system such as transport, warehousing and transfer points?
T060	Tactical Mesh Network	Land Combat & Amphibious Warfare	Director-General Modernisation – Army	Can UWB Ranging Radio provide communications as an enabler to provide situational understanding in complex environments?
T062	Broad Spectrum CBRN Respiratory Filter Canister (BSRC)	ISREW, Space & Cyber	Commander Joint Counter Improvised Threat Task Force	Can a single CBR respirator canister be developed that maintains the current Biological and Radiological (BR) capability while providing enhanced protection against high risk Chemical Threat Agents (CTA) for ADF operational scenarios?
T063	Army Deployable Power and Water	Land Combat & Amphibious Warfare	Director-General Modernisation – Army	What are the ADF's options for deployable electrical power systems to support vehicles and field power requirements? What are the ADF's options for deployable water systems to support bulk and individual requirements? What exemplar technology options should be included within the solution development phase?