Australian Government
Department of Defence
Defence Science and
Technology Organisation

Strategic Plan 2013-2018






2014 update

DSTO | Science and Technology for Safeguarding Australia

Message from the Secretary and CDF

▲ *Dennis Richardson, AO*
Secretary of Defence

▲ *Air Chief Marshal*
Mark Binskin, AC
Chief of the Defence Force

We are proud of the accomplishments of the Defence Science and Technology Organisation (DSTO) in addressing defence and national security challenges and ensuring the Australian Defence Force maintains a capability edge.

Australia's modern defence force is increasingly reliant on advances in science and technology. To maintain a capability advantage and allow our warfighters to excel, we must continue to exploit science and technology. DSTO has the unique combination of research excellence, specialist knowledge of Defence needs and rigorous independence to deliver cutting-edge capabilities to the Australian Defence Force.

In the past year, we have been impressed with DSTO's efforts to reshape its organisational structure and improve the management of its client program. We know change is never easy. We have also been pleased with the increased effort to revitalise DSTO's linkages with our academic and industry sectors, the establishment of the Defence Innovation Realisation Fund and greater engagement with the national security S&T community.

DSTO has also made substantial progress in modernising its research ICT systems. Noting that we all have a long way still to go, we also commend DSTO for its implementation of *Pathway to Change,* particularly in increasing diversity, improved leadership and mentoring. The DSTO Strategic Plan keeps the focus on the vision of DSTO being a valued adviser, collaborative partner and innovation integrator while making minor adjustments that enable the organisation to adapt to changing circumstances and actions.

The DSTO Strategic Plan 2013-18 provides a clear vision and strategy to guide DSTO efforts in ensuring that Defence maintains its technological edge. The plan enables DSTO to meet the challenges and opportunities of the future and build upon its proud legacy of achievements in defence science.

We are confident that the DSTO Strategic Plan 2013-18 will position DSTO to remain a world leader in defence science and technology. We fully support the continued implementation of the DSTO Strategic Plan 2013-18.

Dennis Richardson
Secretary
Department of Defence

Air Chief Marshal Mark Binskin
Chief of the Defence Force

Message from Chief Defence Scientist

▲ *Chief Defence Scientist Dr Alex Zelinsky*

DSTO plays a critical national role as Australia's lead defence science and technology agency, with responsibility for ensuring that our nation's defence and national security capabilities remain at the leading edge. We should all be proud of our efforts over more than 100 years in major projects such as the Jindalee Operational Radar Network (JORN) and Project Nulka. Our recent efforts in supporting Australian Defence Force operations, such as our counter improvised explosive devices work in Afghanistan, have been outstanding. Similarly, our efforts in providing Technical Risk Assessments to support Defence acquisitions, such as the Joint Strike Fighter and the Future Submarine programs, are first-rate. Through our role in future proofing Defence, we are developing world-class capabilities in significant strategic areas such as the cyber domain and hypersonics. Our newest role in whole-of-government coordination of science and technology for national security has opened a fresh vista of opportunities for collaboration with other government departments and agencies.

We currently face a changing global environment with significant resource constraints. I believe that DSTO is up to the challenge. We have the chance to build on the brilliance of DSTO and we will fully embrace the opportunities before us. By becoming more collaborative and innovative, DSTO will be better placed to help tackle Australia's defence and national security challenges.

The DSTO Strategic Plan 2013-18 is an important step in taking us into the future. The core of our strategy is about re-focusing our efforts towards future Defence capability and, through partnerships, taking a stronger role in knowledge integration and innovation.

Four themes underpin the implementation of our strategy:

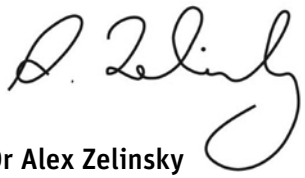
- ***delivery*** *of science excellence and outcomes for Defence*
- ***shaping*** *defence and national security*
- *creating the opportunities and anticipating the challenges of* ***tomorrow***
- *being a valued* ***organisation*** *with a more collaborative and innovative culture.*

Our strategy emphasises the importance of building significant new global partnerships and programs with other governments, academia and industry as well as enhancing our current partnerships. We plan to launch a new major cross-disciplinary collaborative initiative, Grand Challenges for Safeguarding Australia, which will support research into significant defence and national security challenges.

I am confident our strategy and its underlying actions will set DSTO on a path to becoming an even better organisation than it is today. In steering towards that goal, we will remain committed to becoming an effective and efficient organisation by improving our processes, performance management and ICT infrastructure, and investing in our talented people.

In creating this strategy, we have consulted with key stakeholders from around Australia and worldwide from government agencies, academia and industry. We have also listened to our staff members through surveys and workshops and online conversations.

I extend my sincere thanks to everybody who has contributed to the development of the DSTO Strategic Plan 2013-18.



Dr Alex Zelinsky
Chief Defence Scientist
12 March 2013

2014 update from Chief Defence Scientist

The core of our strategy is about ensuring that DSTO is **a valued adviser, collaborative partner and innovation integrator.**

DSTO has gone through significant changes since the DSTO Strategic Plan 2013-18 was first launched in April 2013. We have reshaped our organisation to align with and deliver the DSTO Strategic Plan, enabling us to meet future challenges. This began with a new client-facing structure for our research divisions and Deputy Chief Defence Scientist Groups. We have also implemented a single, consistent way of organising and managing our skills and expertise using our major science and technology capabilities (MSTC) as the fundamental unit of organisation.

At the end of 2013-14, we undertook an annual review of the implementation of the strategic plan. This review provides us with the opportunity to take stock of our implementation progress and make any course corrections that will help us adapt to changes in our environment and achieve the aims of the strategic plan.

As a result of the review, it has been necessary to make some minor adjustments to some strategic initiatives and their intensity of activity to ensure our strategy remains relevant and current. However, overall, the direction and intent of the strategic plan continues to be sound, which is a testament to the rigorous development process with staff and stakeholder consultation.

Implementation of the DSTO Strategic Plan will enable us to meet our future challenges and preserve our position as a world leader in defence science and technology. The D1 (Science and technology excellence) and D2 (Strategic engagement with client focus) strategic initiatives will work together to improve our science and technology excellence to ensure quality, high-impact client outcomes.

I commend everybody for their efforts in the first year of implementing the strategic plan. We have already seen some key achievements such as the 2013-14 prioritised client program, the development of a science and technology foresight report, finalisation of strategic alliances with our primary industry partners, setting up the Defence Innovation Realisation Fund, and greater engagement with the national security S&T community.

We have also seen key improvements in creating a more collaborative and innovative culture aligned with the intent of Defence's Pathway to Change. This includes the establishment of a DSTO mentoring program, improved leadership programs, increased diversity in our workforce, improvements in the modernisation of our ICT systems and streamlined processes.

I would like extend my sincere thanks to everybody who has helped develop and implement the plan to date. We have taken the first, vital step in our five year journey of implementing the strategic plan.

I look forward to working with you on the continued implementation over the next four years.

Dr Alex Zelinsky
Chief Defence Scientist
21 *July 2014*

Our overall progress in 2013-14

In 2013-14, DSTO has made excellent progress in implementing the DSTO Strategic Plan 2013-18. Some of our key achievements include the 2013-14 prioritised client program, a science and technology foresighting report, establishing strategic alliances with our primary industry partners, setting up the Defence Innovation Realisation Fund, and greater engagement with the national security science and technology community.

We are also seeing key improvements in our organisation, which are helping us align with the cultural intent of Defence's *Pathway to Change*.

All of the strategic initiatives have made solid progress in the first year. Some initiatives have been rated amber or red due to delays to some key actions; however, the delay is not expected to affect the overall implementation of the plan.

We have taken the first, vital step in our five-year journey.

INNOVATION INTEGRATOR

COLLABORATIVE PARTNER

VALUED ADVISER

Key strategic initiative achievements in 2013-14

Key: On track. Mostly on track. Off track.

DELIVER to Defence

D1. Science and technology excellence

- Implemented a consistent, defined way to describe our science and technology capabilities using Major Science and Technology Capabilities (MSTCs).

D2. Strategic engagement with client focus

- A 2013-14 prioritised client program, transparently agreed with senior clients.
- Changes to client engagement roles and responsibilities.
- Business process modelling analysis underway.

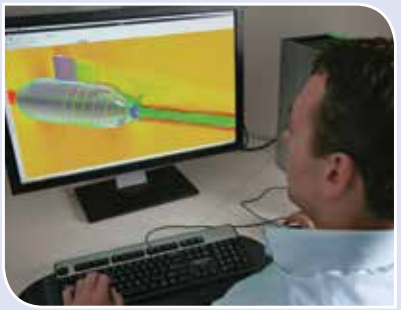
SHAPE defence and national security

S1. Big picture analysis on the shape of Defence

- Science and technology foresighting report examining emerging trends developed. (Forward 2035: Foresighting Study).

S2. Grand Challenges for Safeguarding Australia

- Strategic alliances in place with most of our primary industry partners.
- Grand Challenges Framework under development.



Create and anticipate TOMORROW

T1. Fostering innovation

- Established Defence Innovation Realisation Fund.
- Defence Innovation Forum planned for July.

T2. Invigorating Australia's research efforts in national security

- Developed draft policy framework, including governance model and national security science and technology priorities, through workshops held with external organisations.

A valued ORGANISATION with a more collaborative and innovative culture

O1. Leadership, accountability and performance management

- Extraordinary Leader program rolled out to DSTO leadership.
- Leading Teams Through Change program rolled out.
- DSTO Mentoring Framework launched.

O2. Talent, diversity and career development pipeline

- Improvements to DSTO's diversity through indigenous apprenticeships, cadets and scholarship programs.
- Women in science/engineering scholarships set up.
- PhD internships established.
- Improved science, technology, engineering and maths promotion in schools to build DSTO's career pipeline.
- Industry placement program for DSTO staff launched.

O3. Transformation of ICT to drive innovation and collaboration

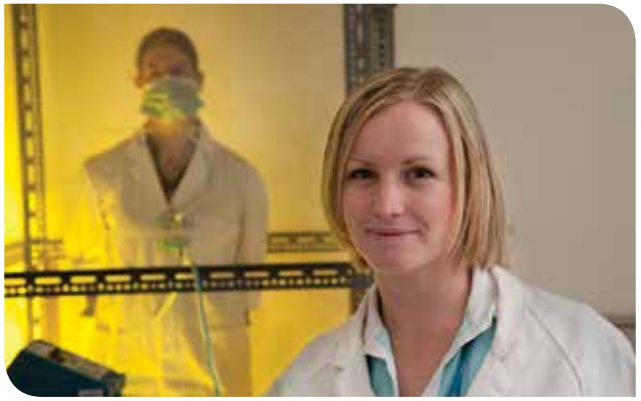
Significant improvements to DSTO's research ICT systems, governance and processes including:

- Providing wireless internet access for unclassified research purposes.
- Additional videoconferencing systems to enhance collaboration.
- Win7 rollout across research networks.
- Searchlight access to electronic scientific resources and subscriptions.

O4. Best practices for business processes and administration

- Successful streamlining of several key processes to reduce unnecessary administrative burden, while still operating within Defence and APS regulations.
- Review of Scientific Engineering Services (SES) undertaken.


DSTO



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Executive summary

Strategic context

The global and regional context for Australian defence will undergo significant change in coming years. Key challenges facing DSTO include the increased blurring of state and non-state threats, military modernisation in the Asia-Pacific region, global access to commercial off-the-shelf technology and the rapid progression of cyber capabilities and other disruptive technologies. These external challenges coincide with a tightening resource environment for Defence and DSTO.

The DSTO Strategic Plan 2013-18 sets the high-level direction for DSTO for the next five years. The plan allows DSTO to meet the challenges through focussing our efforts on solving the highest priority defence and national security challenges and becoming a more streamlined and efficient organisation.

The strategy

*The core of our strategy is to build on our strength of being a **valued adviser** to government and to focus our efforts towards future Defence and national security capability by being a **collaborative partner** and an **innovation integrator**. We will leverage other world-class capabilities both in Australia and internationally through strategic alliances and partnerships. Through our partnerships we will take a stronger role in integrating knowledge and best practices to deliver innovative outcomes.*

We will continue to support and develop our talented workforce. We will also seek to be a more efficient and effective organisation. The strategy aims to support the future capability edge for Defence and national security while maintaining our support of the current Defence force as our highest priority.

The strategy is built on the vision that DSTO will continue to be a world leader in defence science and technology – indispensable in supporting and transforming Australian defence and national security. It will ensure that we remain a valued adviser at the forefront of defence science and technology for Australia.

Partnerships with research and industry participants, both nationally and internationally, will be vital to achieving this goal. We will seek to maintain and enhance our current partnerships as well as building new partnerships, particularly in the Asia-Pacific region.

The strategy identifies ten key strategic initiatives and underlying actions that we will undertake from 2013 to 2018 to achieve our goal. The strategy also provides the trajectories for our science and technology capabilities over the five years to maintain our relevance and to be responsive to Defence and national security needs.

DSTO roles

We have re-examined our fundamental role statement to better describe all facets of our activities. Our core roles remain centred around providing expert and impartial advice and support for the conduct of operations, for the current force and for acquisition of future Defence capabilities. These core roles are complemented by a greater emphasis on future Defence capability and a more outward-facing stance for DSTO. This includes a stronger role in knowledge and innovation integration, which will be strengthened through partnerships, as well as a formal whole-of-government role in coordinating science and technology for national security.

Executive summary continued

Strategic initiatives

Part II of the plan describes four themes which underpin the core strategy: **delivery** of science excellence and outcomes for Defence, **shaping** defence and national security, creating the opportunities and anticipating the challenges of **tomorrow** and being a valued **organisation** with a more collaborative and innovative culture.

The **delivery** theme is about the fundamental tenets of DSTO support to Defence. Supporting this theme are two strategic initiatives that seek to build upon our science and technology excellence and relevance to address the highest priority challenges of our Defence partners:

- D1. *Science and technology excellence*
- D2. *Strategic engagement with client focus.*

The **shaping** theme is oriented towards the future defence and national security science and technology landscape and building strong partnerships. The two underpinning strategic initiatives will grow our capability to contribute to the future shape of Defence, guide investment in our science and technology areas and implement a program to focus our partnerships on the big science and technology challenges facing defence and national security:

- S1. *Big picture analysis on the shape of Defence*
- S2. *Grand Challenges for Safeguarding Australia.*

The **tomorrow** theme focuses on building a DSTO innovation culture, the translation of innovation into Defence capability and our longer term goal of building a critical mass of science and technology support to national security. Partnerships are fundamental to the two underlying strategic initiatives:

- T1. *Fostering innovation*
- T2. *Invigorating Australia's research efforts in national security.*

The **organisation** theme supports the delivery of the other six strategic initiatives by creating a more collaborative and innovative culture for DSTO. The initiatives are:

- O1. *Leadership, accountability and performance management*
- O2. *Talent, diversity and career development pipeline*
- O3. *Transformation of ICT to drive innovation and collaboration*
- O4. *Best practices for business processes and administration.*

Science and technology directions

Part III of the plan describes the broad science and technology capability directions for DSTO over the 2013 to 2018 time period. These directions were informed by analysis of future trends and Defence priorities. Areas of future growth are identified to be cyber, surveillance and space systems and autonomous systems.

Our growth in capabilities will be funded by a redirection of investment from other areas, with reductions being offset through a combination of internal efficiencies, greater external partnering and a more focused prioritisation process (through the D2 initiative). Areas earmarked for a reduction of investment are: propulsion and energy, platforms, weapons, human sciences and operations analysis.

Changes to our science and technology capabilities and to our Strategic Research Investment program will be implemented through a capability management plan, as part of the D1 initiative.

Implementation

Part IV of the strategic plan describes a phased implementation over five years, which will be supported through an annual business planning and budget cycle. Regular reporting will be provided to assess DSTO performance and progress against key actions. The strategic actions and business plans will be reviewed annually.

Our vision, purpose, people and values

Our vision

DSTO aims to be a world leader in defence science and technology – indispensable in supporting and transforming Australia's defence and national security.

Our purpose

DSTO is a national leader in safeguarding Australia by delivering valued scientific advice and innovative technology solutions for Defence and national security.

Our people

DSTO has diverse, professional and specialised staff members who work in offices, complex laboratories, test facilities, weapons ranges and operational theatres. DSTO provides a work experience that is both challenging and career-developing and treats a safe, healthy and secure working environment as a key priority.

Our values

The following set of DSTO values guide our behaviour and decision making and help us to demonstrate the attitudes and actions for organisational success.

Excellence in science – *we strive to lead, and be proud of, all our scientific undertakings.*

People – *we develop and support each other to achieve organisational deliverables in a safe environment.*

Professionalism – *we strive for excellence in everything we do.*

Loyalty – *we are committed to each other, our leaders and the organisation.*

Integrity – *we are trustworthy and honourable in all our interactions.*

Courage – *we act with strength of character, both in the courage of our convictions and in our intellectual courage.*

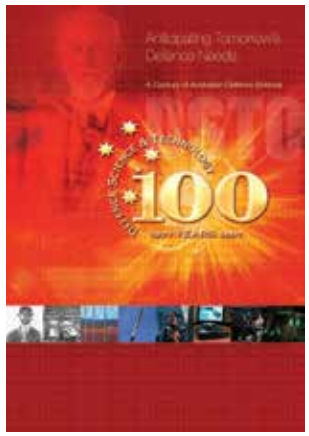
Innovation – *we actively and consistently look for better ways of doing business.*

Teamwork – *we work together with trust, respect and a sense of collective purpose.*

Introduction and context

Part I

Introduction



Defence science work has been conducted in Australia since 1907 and today DSTO is our nation's second-largest publicly funded research agency. One aspect of our organisation that has remained constant over the past century and more has been the outstanding calibre of our people and the high-quality outcomes of our work.

For organisations, as much as for individuals, track record is a strong indicator of future performance. DSTO has shown resilience and innovation over the past hundred years as we have continued to build on our legacy of achievements. Over this time, we have continued to step up the drive to find scientific and technological solutions to help meet Australia's defence and national security challenges. The scale and significance of our activities are testament to our talented, innovative and dedicated people.

The following snapshot of achievements can give only a partial picture of some of the many activities that DSTO has undertaken in the past. We have also had many significant classified achievements for Australia that cannot be discussed publicly. Together these discoveries, insights and accomplishments build on the proud heritage that we carry with us into the future.

Key achievements in Defence science

- Developed the Jindalee Operational Radar Network (JORN), using world-leading over-the-horizon radar technology
- Invented the black box flight recorder
- Developed the Australian Defence Force Physical Employment Standards
- Developed the one-piece chemical, biological, radiological and nuclear protection suit
- Supported operations in theatres of war
- Developed the world's first operational minesweep system
- Provided support to the Collins class submarine – the world's best conventional submarine
- Developed innovative evaluation technologies for camouflage testing
- Developed Starlight, a world-first system that allows users of secure computers to access insecure networks such as the internet
- Led the world in hypersonic scram jet technology (HIFiRE)
- Developed an active missile decoy for protecting ships from missiles (Project Nulka)
- Designed and launched Australia's first satellite to orbit the earth (WRESAT)
- Developed world-leading technologies for managing aircraft long term sustainment for the F-111
- Enhanced the survivability of occupants of the Bushmaster Protected Mobility Vehicle
- Conducted the Australian Defence Force Lift Study which shaped the acquisition of Defence's current strategic lift capability.

DSTO – More than a century of achievement











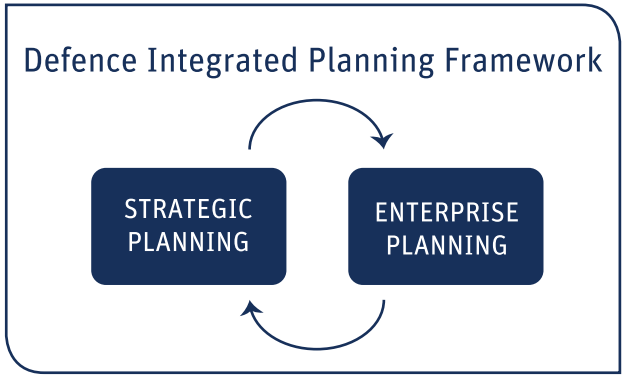




Our strategic context

DSTO operates within the strategic context set by the Australian Government and the Department of Defence.

The broader picture is one in which the world's political, economic, social and technological environment continues to evolve at a rapid rate. Over the past three years, this global pace of change has meant that key trends identified in the 2009 Defence White Paper are now emerging as strategic concerns much earlier than anticipated. Examples of such trends include the increased blurring of state and non-state threats, military modernisation in the Asia-Pacific, global access to commercial off-the-shelf technology and the rapid progression of cyber capabilities and other disruptive technologies. The Australia in the Asian Century White Paper describes the Australian Government's vision for repositioning Australia in our region and shaping our future. The Australian Government's National Security Strategy along with the Government's ongoing assessment of national research priorities defines the context for defence, national security and the role of a science and technology organisation.



Defence is meeting these challenges in a resource-constrained environment by setting clear priorities through its multiyear strategic and annual enterprise planning cycles. Defence's strategic priorities and overall direction will be updated over the next five years through strategic documents such as the 2013 Defence White Paper, 2015 Defence White Paper and Defence Planning Guidance, as well as enterprise documents such as the Defence Corporate Plan and Defence Annual Plan. Defence is continuing its business and cultural reform programs (through the Strategic Reform and Pathway to Change programs) and the associated drive for enhanced governance, accountability and diversity. DSTO will continue to align with Defence's priorities as outlined in these planning documents.

Overall, the plan will help us position ourselves to meet current and future challenges and priorities for Australian defence and national security. These future challenges will, as the Jindalee Operational Radar Network has done, address issues of significant scale and risk, require breakthroughs innovation and science excellence, and need to be met in partnership with Defence, industry and academia. This will ensure that Defence continues to have timely access to the right scientific advice and associated technologies to ensure that Defence can maintain its capability edge.

Distilling the strategic issues

- Stakeholders
- External expert perspectives
- Survey of science trends and literature
- Defence guidance
- DSTO staff surveys
- Staff workshops

Top strategic issues that DSTO must address:

1. major **defence and national security needs** including cost drivers
2. key **Asia-Pacific** and **global trends**
3. the **challenges** that DSTO is uniquely able to address
4. being strategic in our **client relationships**
5. the need for greater **collaboration and partnership** with other science organisations and industry
6. prioritisation of **investment** within a **resource-constrained** environment
7. the need for **innovation, science excellence and leading-edge technology** to improve competitive position
8. the necessity for **business-ready services** and **infrastructure** to support productivity and quality delivery
9. the needs of a demanding **knowledge-intensive workforce**
10. the expectations of a high-performance organisation that requires quality **leadership and accountability**.

Our purpose and roles

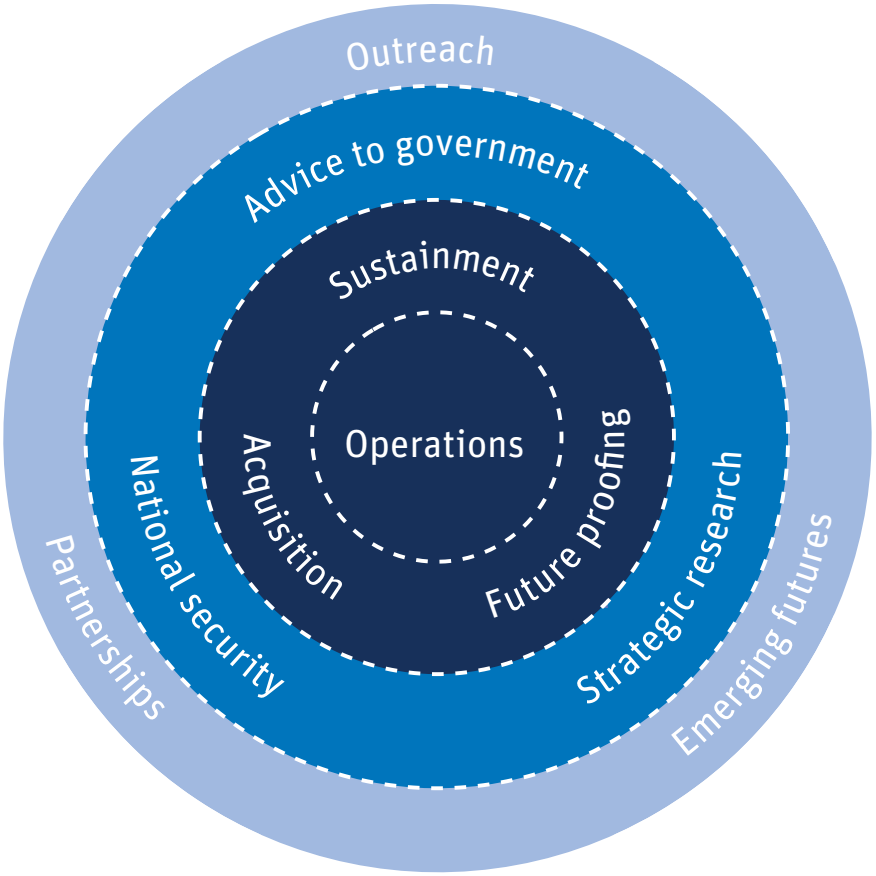
DSTO is a national leader in safeguarding Australia by delivering valued scientific advice and innovative technology solutions for Defence and national security.

	Role	Description	Change over the next five years
CORE	Operations	Supporting operational capability with science and technology expertise.	Maintain the absolute priority given to supporting the current operational capability.
	Sustainment	Providing support to Defence to sustain and enhance current capability.	Increase partnerships with industry to sustain Defence capabilities.
	Acquisition	Providing support throughout the genesis, development, acquisition and introduction to service of major capability projects.	Tailor our acquisition support to enable the majority of resources to be directed at the most complex and high technical risk projects.
	Future proofing	Investigating client-focussed future concepts, contexts and capability.	Grow the program of client-focussed future concepts and capability.
EXTENDED CORE	Advice to government	Shaping defence and national security strategic policy through expert and impartial advice.	Grow this role through more big picture analysis and advice on national security.
	National security	Leading the coordination and delivery of science and technology to enhance whole-of-government national security.	Cement our role in whole-of-government national security science and technology coordination.
	Strategic research	Conducting research into high-impact areas for future Defence capability.	Consolidate our investment in strategic research.
SUPPORTING	Emerging futures	Scanning the environment to gain an understanding of emerging science and technology threats and opportunities.	Invest in developing a coherent and strategic horizon-scanning program.
	Partnerships	Enhancing our impact by collaborating with research and industry partners, nationally and globally.	Build new partnerships, especially in the Asia–Pacific region, and reinvigorate existing partnerships, particularly to focus on important defence and national security problems of the future.
	Outreach	Promoting defence science and education in the broader Australian community.	Larger role in reaching out to the broader Australian community, particularly developing and shaping science, technology, engineering and mathematics capabilities.

DSTO enablers

Effective organisational enablers are vital to the success of DSTO in providing a capability edge to Defence. DSTO has three types of enablers:
1) technical services; **2)** science and technology training and sustainment; **3)** research services.

DSTO roles



DSTO ENABLERS

TECHNICAL SERVICES	SCIENCE AND TECHNOLOGY TRAINING AND SUSTAINMENT	RESEARCH SERVICES

DSTO strategy

Part II

Our strategy

Our excellence in science and technology is fundamental to ensuring Defence's capabilities remain leading edge. Our strategic plan will position us to address the challenges ahead and embrace the opportunities that will help deliver world class science and technology solutions to meet Australia's current and future defence and national security needs.

The core of our strategy is to build on our strength of being a ***valued adviser*** to government and to focus our efforts towards future Defence and national security capability by being a ***collaborative partner*** and an ***innovation integrator***. We will leverage other world-class capabilities both in Australia and internationally through strategic alliances and partnerships. Through our partnerships we will take a stronger role in integrating knowledge and best practices to deliver innovative outcomes.

We will continue to support and develop our talented workforce. We will also seek to be a more efficient and effective organisation. The strategy aims to support the future capability edge for Defence and national security while maintaining our support of the current Defence force as our highest priority.

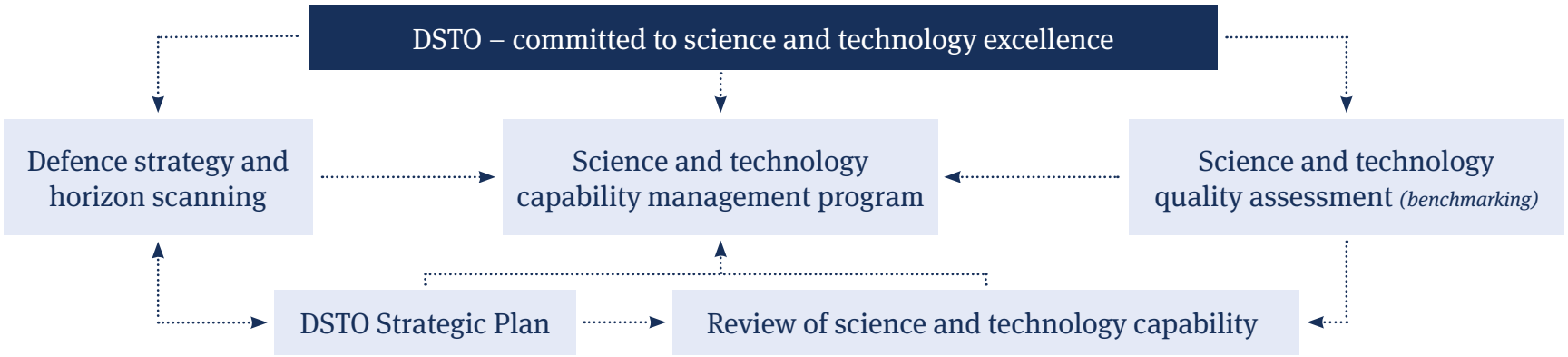
We will achieve our strategy through the implementation of strategic initiatives in the following four thematic areas over the next five years.

- ***Delivering*** *to Defence:* We will grow our science and technology excellence by focusing on relevant and distinctive science and technology capabilities as described in Part III of this plan. We will have a more collaborative and focused approach to our client engagement. These initiatives will improve on work we are currently doing to ensure we continue to meet Defence's needs in the years ahead.
- ***Shaping*** *defence and national security:* We will take a more strategic and collaborative approach to partnering so that we can address significant defence and national security problems of the future. We will also increase our ability to provide big picture analysis and advice to shape future Defence strategy and capability. We will accordingly expand our investment and effort in this area.
- *Creating and anticipating* ***tomorrow****:* We will play a leading role in knowledge integration and innovation for Defence. We will also position ourselves as a leader coordinating the delivery of national security science and technology in Australia.
- *A valued* ***organisation*** *with a more collaborative and innovative culture:* Underpinning our delivery in the first three themes will be a more focused but highly capable, streamlined organisation. We will improve leadership and accountability, nurture the talent and diversity of our people, implement modern and innovative ICT systems and reduce administrative overheads. Through implementing best practice in our business enterprise, we will ensure that we have an efficient, effective and high-performing organisation.

These initiatives will make DSTO a more valued, collaborative and innovative organisation. Changes to our science and technology capabilities (to be implemented through the strategic initiative D1 – Science and technology excellence) over the next five years will ensure that we have the right science and technology capabilities to ensure Defence continues to maintain its capability edge.

Our strategic initiatives

Initiative D1 – Science and technology excellence

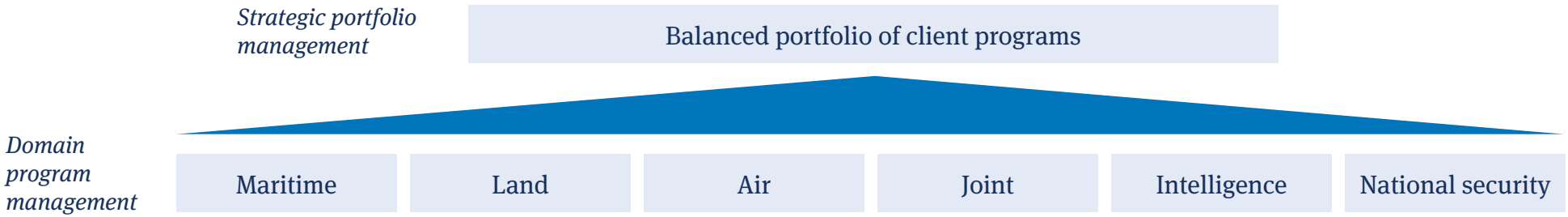


The initiative	Key actions
We will grow our science and technology excellence by investment in our people and facilities in priority areas of capability. We will ensure that our research capabilities have adequate capital equipment and supplier budgets. Benchmarking, client guidance (see D2), and big picture analysis (see S1) will guide our science and technology capability investment priorities.	***Invest in science and technology excellence*** • Develop a science and technology capability management plan for managing investment in specific capabilities, balancing investment in a skilled workforce, and research infrastructure. This plan will make annual investment and prioritisation decisions from 2014-15 based on the directions of Part III of the plan. • Rebalance the proportion of the DSTO budget allocated to capital equipment and suppliers in order to sustain future research capability. • Rebalance our investment in strategic research, including commencing initiatives in space and autonomous systems by end of 2014-15. • Improve understanding of academic and industry partner capabilities, and those of our international partners, to supplement DSTO's science and technology base by end of 2014-15. ***Science and technology benchmarking program*** • Implement an annual rolling benchmarking program to review and validate the excellence and quality of DSTO science and technology capabilities, including developing metrics, to start in 2014-15.

Success measures

- Strategically driven science and technology capability that is managed holistically and resourced for success.
- High-impact science and technology through transitioning to capability and technical solutions.
- Measurable improvement in research quality and client outcomes.
- Continuous improvement in DSTO science and technology capabilities via annual benchmarking, external peer review, client feedback and assessments.
- Access to state-of-the-art equipment and facilities in DSTO.

Initiative D2 – Strategic engagement with client focus



The initiative	Key actions
We will, through better client engagement, improve our contribution to Defence outcomes by taking into account client priorities at a strategic level. The science and technology program will be partner-focussed and managed by domain at the Defence enterprise and client levels. We will implement an effective process to elicit and use client feedback to guide the continuous improvement of our support.	***Strategic prioritisation of client science and technology requirements*** • Undertake more explicit analysis and discussion of strategic Defence priorities with senior Defence stakeholders focusing on outcomes, beginning in 2013-14. • Manage the science and technology program with a team of Domain Program Managers. • Improve robustness and transparency of the process for identifying and confirming client priorities beginning 2013-14. • Rationalise client requirements and group into higher level themes, consistent with strategic guidance, beginning in 2013-14. ***Improving the management of the DSTO client program*** • Define the roles of Domain Program Managers and clarify and strengthen the roles of Scientific Advisers to build stronger rapport with clients beginning in 2013-14. • Develop a mechanism for ensuring the science and technology program is balanced appropriately across client groups in accordance with Defence strategic guidance beginning in 2014-15. • Review and improve the program planning and reporting frameworks, the underpinning policy and implement an improved client feedback loop on the quality and timeliness of DSTO support by end of 2013-14.

Success measures

- Science and technology program aligned with Defence strategic guidance.
- Processes for planning, managing and reporting of the science and technology program are consistent and efficient.
- Measurable quality and timeliness of the program outputs and increased client satisfaction.

Initiative S1 – Big picture analysis on the shape of Defence

The initiative	Key actions
We will enhance our provision of analysis and advice to shape future Defence capability, strategy and structure. This will be supported by broader strategic analysis of future opportunities, threats and risks to ensure that Australia can maintain its competitive position in defence and national security.	***Shape future whole-of-Defence strategy and capability*** • Engage with Defence on strategic issues for shaping of future Defence strategy and policy from 2014-15. • Develop a DSTO standing capability that addresses whole-of-force design and capability options, informed by broader analysis of strategic global factors, potential threats, and emerging technologies by end of 2014-15. • Develop an organisational capability for longer-term horizon scanning to support future Defence capability, including acquisitions, and for guiding investment decisions in DSTO science and technology capability in 2014-15. • Develop a process that involves working with clients to migrate strategic issues analysis to initiate new activities in the Defence client program by end of 2015-16.

Success measures

- Credible and robust program for forecasting and analysing future challenges and opportunities for Defence.
- Impact on DSTO science and technology capability decisions through big picture analysis.
- Greater impact on Defence strategy, force design, the development of capability options and Defence outcomes through big picture analysis.

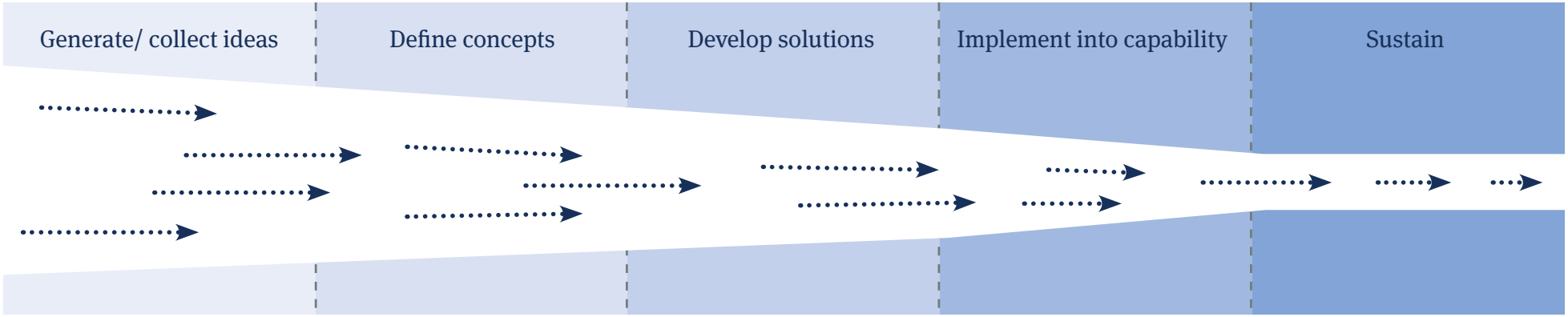
Initiative S2 – Grand Challenges for Safeguarding Australia

The initiative	Key actions
We will establish a limited number of substantive, cross-disciplinary initiatives supporting research into defence and national security challenges of significance to Australia. These initiatives will be high-impact, scientifically complex and involve working more collaboratively within DSTO and with external partners.	***Establish the framework for Grand Challenges for Safeguarding Australia*** • Establish a Grand Challenges framework by end of 2013-14: – Candidate areas will be large in scale, require deep scientific and technical expertise, cross-disciplinary, involve collaboration both within DSTO and with external partners, and have the potential for significant outcomes for Australia's national benefit. • Staged investment in priority areas to begin in 2015-16. ***Strengthen external engagement*** • Streamline and strengthen existing methods of collaboration by end of 2013-14. • Develop a strategy for supporting the Grand Challenges program through external engagements with industry, academia and other governments by end of 2014-15.

Success measures

- A national research community that is focused on defence and national security challenges of significance to Australia.
- Deep, integrated, trusted and productive collaborations with industry, academia and government.
- High-quality outcomes that shape Defence capability.
- Appropriate internal and external governance structures and arrangements.

Initiative T1 – Fostering innovation

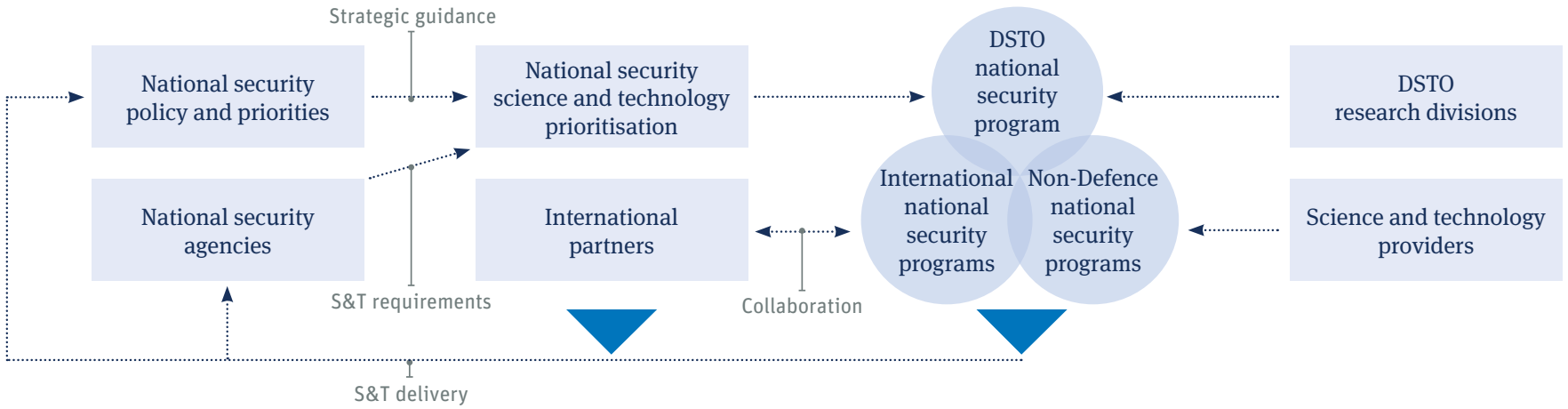


The initiative	Key actions
We will work with recognised Australian and global leaders to improve innovation in all areas of our business. We will work with Defence on programs to aid the rapid transition of innovative science and technology into Defence capability.	***Establish a DSTO innovation program that supports Defence*** • Provide leadership in the development of an innovation program for Defence, focusing on capability development and acquisition in partnership with industry, academia and other government research agencies. • Create a Defence Innovation Forum that will draw on input from industry, research agencies and academia, where appropriate, to improve innovation within Defence. • Improve the timeliness and agility in transitioning ideas from DSTO and the national innovation sector into Defence capability. • Annually benchmark against relevant international best practice from 2014-15. ***Encourage innovation in all aspects of the organisation*** • Work with global leaders to develop best practice approaches to foster an innovation culture across all aspects of DSTO by end of 2014-15. • Benchmark progress through staff feedback sought from the periodic DSTO Insights Survey, beginning in 2013-14.

Success measures

- Innovative solutions for Defence delivered more often and more rapidly with a visible DSTO role.
- Recognition of DSTO as an innovative organisation, both within Defence and externally.
- Ability to benchmark and continuously improve our innovation effectiveness against relevant international best practice.
- A culture of innovation embedded throughout DSTO.

Initiative T2 – Invigorating Australia's research efforts in national security



The initiative	Key actions
We are the lead agency for national security science and technology. We will enhance the coordination and delivery of science and technology to non-Defence national security agencies, which is a new whole-of-government role for DSTO. We will work with stakeholders to develop a compelling business case to address national security science and technology challenges.	• Establish an initial national security science and technology delivery framework by end 2014-2015. • Develop a national security science and technology policy statement and program for endorsement by Government through the Defence White Paper 2015 process. • Enhance our engagement and influence through national and international collaboration and fostering 'communities of trust' by end 2015-2016. • Establish a transparent national security science and technology funding model by end 2015-2016.

Success measures

- Respect for and recognition of DSTO as the lead agency for coordination and delivery of national security science and technology.
- Sustainable and appropriate funding for national security science and technology.
- International recognition of DSTO and Australia as a valued collaboration partner in national security science and technology.

Initiative 01 – Leadership, accountability and performance management

The initiative	Key actions
We will improve our leadership, accountability and performance management at all levels within the organisation.	***Establish improved leadership*** • Establish a DSTO mentoring program, with corporate support and encouragement, to underpin improved leadership by end of 2013-14. • Expand leadership development programs for our future leaders by end of 2014-15. ***Culture of accountability and considered decision making*** • Revise structure, roles and responsibilities for DSTO management by end of 2013-14. • Provide greater transparency to key decisions, including appropriate consultation, by end of 2014-15. • Empower staff decision making by adopting principles for delegating authority and a risk-based decision making framework by end of 2013-14. • Embrace a culture of performance excellence and accountability through improved training and the provision of tools over the five-year strategy. ***Develop skills to improve delivery of outcomes*** • Develop a stronger project management culture in DSTO by end of 2015-16. • Provide training for appropriate skill sets for project delivery by end of 2014-15.

Success measures

- Strong leadership demonstrated by DSTO management.
- Clarity and transparency in DSTO decision making.
- Accountability and excellence, with a focus on the delivery of outcomes, to be the new cultural norm.
- Staff members empowered to execute the responsibilities delegated to them.

Initiative 02 – Talent, diversity and career development pipeline

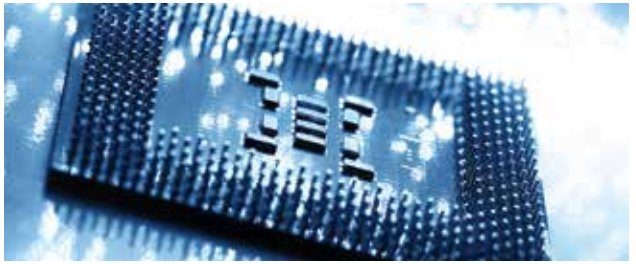
The initiative	Key actions
We will nurture the talent of our people to be future leaders, support their career development and embrace workforce diversity. We will reach out to foster the development of our future talent.	***Career paths for staff*** • Develop a flexible career pathways framework, including improving talent management, by end of 2014-15. • Increase proportion of staff with PhDs, professional and technical qualifications including broader industry and/or academia experience by 2018. ***An agile and diverse workforce*** • Develop a strategy to balance permanent and non-ongoing staff, including post-doctoral, visiting fellows and industry placements, by end of 2014-15. • Develop mechanisms to improve mobility and exchanges of staff across DSTO, the Australian Public Service and the national innovation sector, including industry and academia, by end of 2014-15. • Develop an Indigenous employment strategy for DSTO by end of 2013-14. ***Priming the career development pipeline*** • Involve staff to promote science, technology, engineering and maths in schools and the community from 2013-14. • Develop a strategic cadetship and scholarship program by end of 2014-15. • Promote science, technology, engineering and maths disciplines through greater staff outreach and collaboration with others in the national innovation system to grow the talent pipeline and improve gender balance and diversity, by end of 2014-15.

Success measures

- Increased numbers of staff with industry and academia work experience.
- Improved gender and cultural diversity.
- Increased level of qualifications and skills across the organisation.
- Improved mobility for DSTO staff members across DSTO, the Australian Public Service and the national innovation sector.

Initiative 03 – Transformation of ICT to drive innovation and collaboration





The initiative	Key actions
We will transform our ICT systems and implement modern and innovative technologies that enable improved productivity and promote collaboration and knowledge sharing. Corporate functions will be transitioned to the Defence Restricted Network. Separate research networks will be developed and maintained. We will improve our knowledge management culture and develop tools that allow staff members to share their knowledge as an enabler for innovation.	***ICT transformation*** • Develop an ICT strategy and operational plan in early 2013-14 to exploit leading-edge information technologies for supporting science and technology. Outcomes to include: – improved governance, architecting and management of DSTO information environment by 2013-14 – improved videoconferencing across all sites in DSTO by end of 2013-14 – improved access (including wireless) to unclassified and classified networks by end of 2013-14 – improved and expanded support for multiple ICT platforms by end of 2014-15 – improved corporate and science and technology collaboration tools by end of 2014-15 – in cooperation with the Chief Information Officer Group, transition of corporate functions to the Defence Restricted Network by end of 2015-16 – initial provision of enterprise solutions for compute and storage services by end of 2015-16. ***Invest in knowledge management and sharing*** • Develop a knowledge management strategy to enable innovation through shared information resources, to be endorsed by end of 2014-15, to include: – provision of an enterprise managed data repository for scientific data by end of 2015-16 – improved knowledge sharing tools to be implemented by end of 2015-16.

Success measures

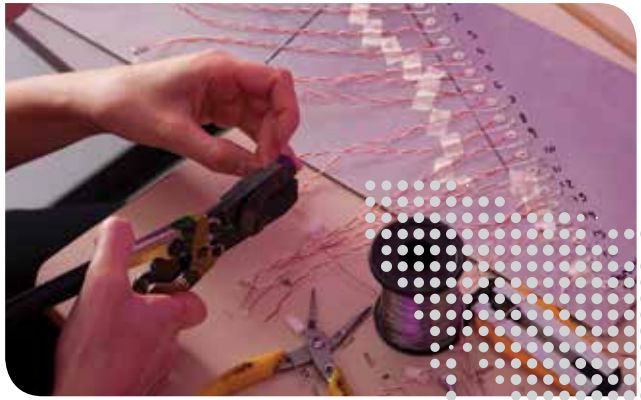
- Improved business efficiency and knowledge management.
- ICT and the knowledge management systems valued and appreciated by staff, as reflected through the results of the DSTO Insights Survey.
- Through benchmarking, DSTO recognised for having world-class ICT systems that enable business efficiencies, science and technology advances and innovation acceptance.
- An up-to-date ICT infrastructure.

Initiative 04 – Best practices for business processes and administration

The initiative	Key actions
We will streamline our policies, processes and procedures to reduce administrative overhead. We will seek to implement best-practices in all parts of our business, including clarity of guidance provided. We will continue to operate within Defence and Australian Public Service policies and regulations.	***Recasting DSTO policies, processes and reports*** • Clarify, streamline and/or eliminate unnecessary corporate policies, processes and reports to achieve quick wins by 2013-14. • Conduct a full review (including Divisional policies, processes and reports) by end of 2014-15, then put in place a biennial review process. • As part of the full review, implement a central register of DSTO corporate policies and processes to be visible to all staff by end of 2014-15. • Develop and implement a better practice guide for developing and implementing corporate and Divisional policies and processes by end of 2013-14, then review this guide annually. ***Streamlined corporate services and business models*** • Implement a simplified set of business models (see Annex) for the DSTO client program by end of 2014-15. • Implement a common delivery mechanism for all DSTO corporate services, such as Scientific Engineering Services by end of 2014-15.

Success measures

- Streamlined organisational structure and research program business models.
- Single model for all DSTO corporate services.
- DSTO policies and processes are uniform, succinct and easy to understand and align with Defence and whole-of-government policies.
- More efficient operation of our core business and reduced transaction costs.
- DSTO staff are clear about what policies and processes to follow and are aware of mandatory policy and reporting requirements.



Directions in DSTO science and technology capability

Part III

Setting our priorities and directions

Our assessment

DSTO must ensure that we continue to maintain our relevance and be responsive to Defence and national security needs, while responding to budget pressures and resource constraints.

It takes many years to build genuinely world class science and technology capabilities, based on both deep professional expertise and suitable research facilities. Our assessment, using in-house analysis and extensive consultation, has therefore been forward-looking, based on where DSTO capability needs to be in five to ten years time.

We reviewed two aspects of our science and technology base.

1. Eleven broad priority areas which apply across our whole science and technology delivery program (see page 36 and 37).
2. Strategic Research Investment program, which is DSTO's future-focused research program (see page 38).

We will build capabilities which are distinctive and sustainable and which demonstrably create impact. The assessment specifically examined both science and technology excellence and the relevance to Defence and national security, both now and into the future.

The changes are broad directions that will be progressively implemented over the five years of the strategic plan. Each year, the senior management of DSTO will determine how the changes will be implemented in the following year. The D1 strategic initiative (S&T excellence) will manage the science and technology transition, the S1 strategic initiative (Big picture analysis on the shape of Defence) will inform future assessments and the D2 strategic initiative (Strategic engagement with client focus) will ensure the changes are aligned with Defence guidance.

The importance of partnerships

Assessments were also made regarding whether the capability is best delivered internally or through partnering. In-house DSTO capabilities will be those where DSTO has extensive, unique domain knowledge and science and technology excellence, and where Defence must retain a sovereign capability.

The core strategy emphasises the essential role of external partnering to strengthen our ability to integrate knowledge and innovation for defence and national security capability. The majority of DSTO's science and technology capabilities are amenable to supplementation by external partners, to an extent dictated by issues of security classification, probity and budget.

Setting our priorities and directions continued

Defence drivers
Strategic and operational priorities

Review of current position against drivers

- **Client program**
  Domain requirements
- **Current science and technology capabilities**
  Capability prioritisation
- **Business models**
  Single coherent framework

Directions for science and technology capabilities

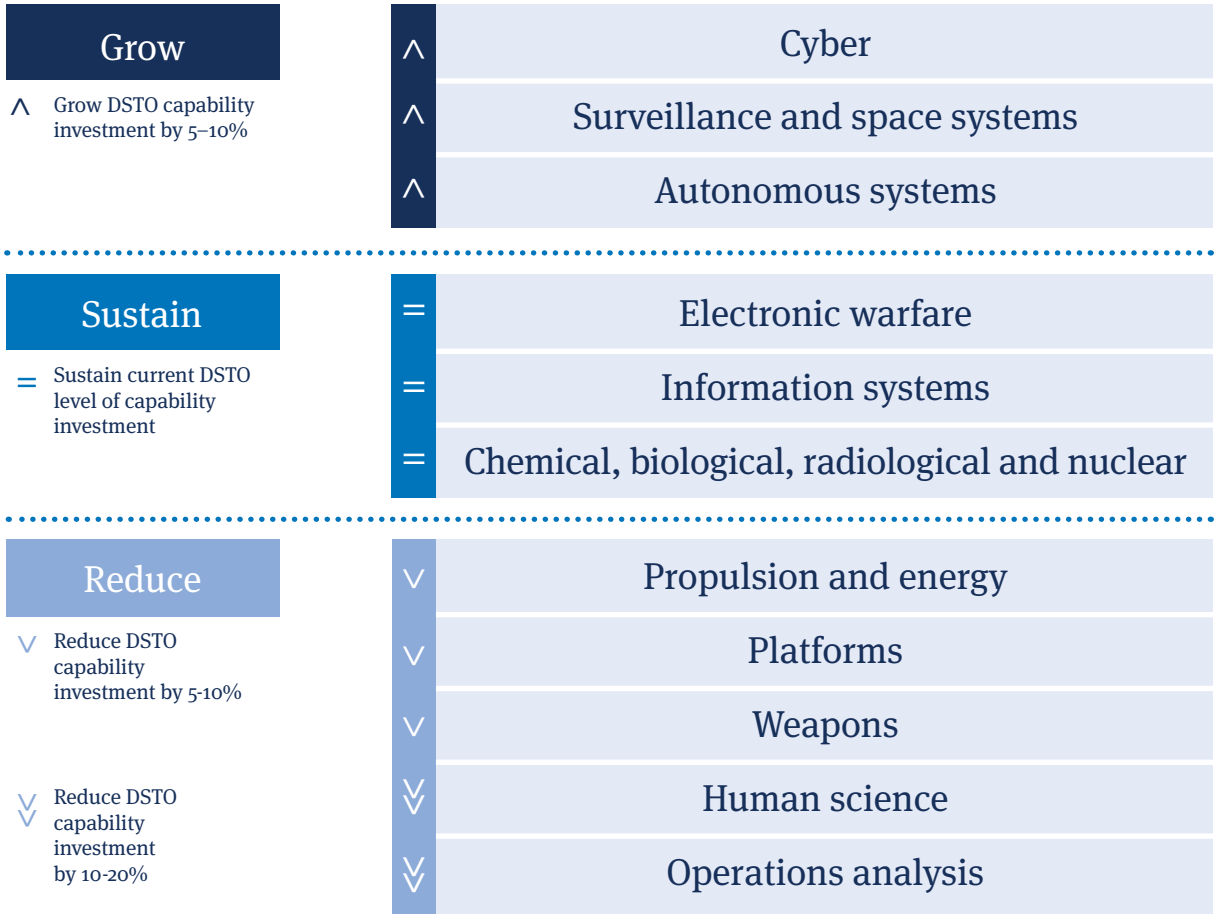
Characteristics of DSTO capabilities			
	Capabilities that *are*:		**Capabilities that *are not*:**
✓	Distinctive	✗	Generic
✓	Sustainable	✗	Easily imitated
✓	Able to create impact	✗	Commodities
✓	Demonstrable	✗	Limited in usefulness
✓	Able to be leveraged	✗	Vague

Our broad directions for capability over the five years

The following table shows the broad science and technology trajectories for specific capability areas over the five years of the strategic plan. A number of these trajectories will be implemented through greater external partnering.

Area	Trajectory
Cyber	Priority area for DSTO. Modest increase in cyber investment. This will be partially offset by a redirection of capability from in-military communications and tactical command and control.
Surveillance and space systems	Priority area for DSTO. Modest increase in space-related capability investment and seeking to leverage external partnerships. Maintain current levels of investment in broad surveillance and detection systems.
Autonomous systems	Priority area for DSTO. Modest increase in overall investment across DSTO. Focus on consolidation with enhanced coordination and leadership.
Electronic warfare	Maintain total level of investment in electronic warfare, while seeking complementary and synergistic opportunities between electronic warfare and cyber.
Information systems	Maintain total scale of capabilities, but with modest rebalancing between Maritime, Land, Air and Joint domains, and emphasis on modern system architectures.
Chemical, biological, radiological and nuclear	Maintain total level of investment and explore potential for greater collaboration in biological sciences and in modelling and simulation capabilities.
Propulsion and energy	Modest reduction in effort focused in the area of engine and fuel integrity, and increased effort in power and energy systems for the Future Submarine Program.
Platforms	Modest reduction in the areas of aircraft structural integrity, aerodynamic facilities support and platform sensors and prognostics.
Weapons	Modest reduction in areas of weapons effects and greater external partnering, particularly for conventional testing.
Human science	Consolidation of capabilities in human factors into a more client-centred model with domain centres of expertise, and greater external partnering for delivering part of the capability.
Operations analysis	Efficiencies through greater interaction between domain-oriented operations research and systems analysis capabilities across DSTO. Greater collaboration with academia and industry to build national capability and seek to assist the growth of basic in-house Australian Defence Force operations analysis capabilities. This remains an important and enduring role for DSTO across all domains and a priority area for Defence, with specific growth opportunities for supporting new capability in big picture strategic analysis.

Our broad directions for capability over the five years continued



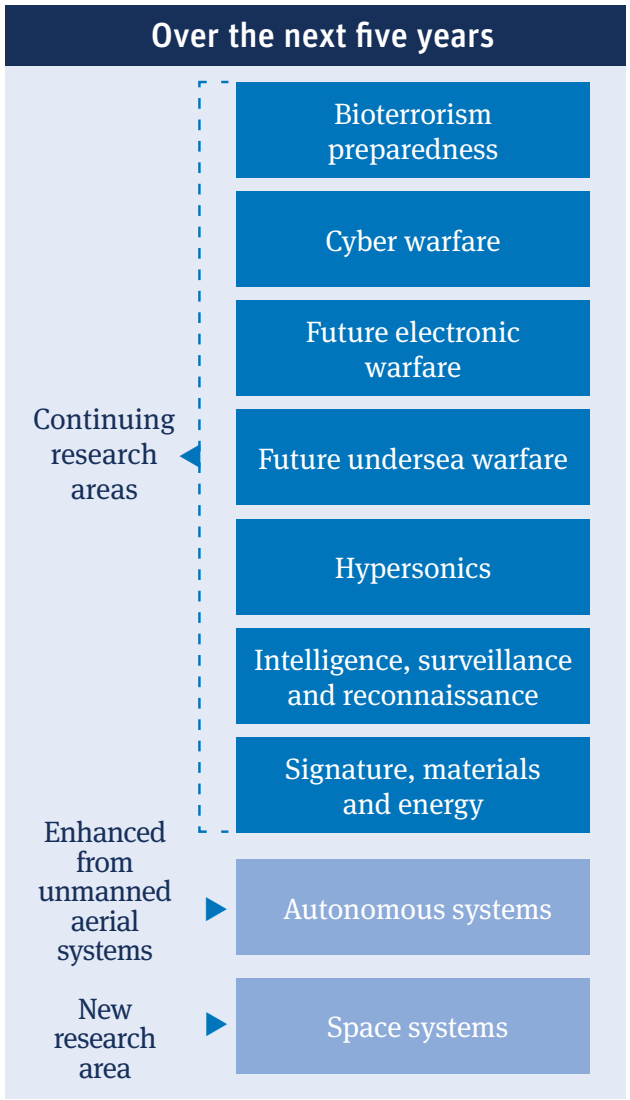
Our Strategic Research Investment program

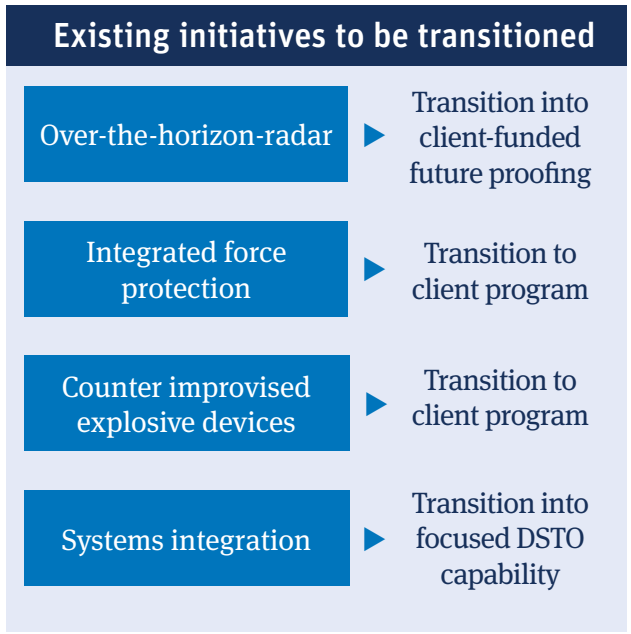
DSTO conducts strategic research in key areas that are likely to provide a game-changing capability for Defence in the longer term. These strategic research areas cut across the science and technology capabilities described in the *Broad capability directions over the next five years* diagram (see previous page) and also shape their future focus.

We have reviewed our Strategic Research Investment (SRI) program to focus on high impact priority areas for future Defence capability. This has resulted in broadening the focus of unmanned aerial systems research to autonomous systems and commencing new research in space systems. An analysis of Defence's space needs will inform the scale and scope of DSTO's investment in space research.

Our SRI program will be managed through the science and technology capability management plan, as described in the strategic initiative D1: Science and technology excellence. International peers will review individual strategic research programs during the course of the strategic plan.

The SRI program was previously called the Corporate Enabling Research Program (CERP). DSTO also undertakes Divisional Enabling Research Programs and Branch Enabling Research Programs, which are designed to allow more exploratory and curiosity-driven research.





Implementation

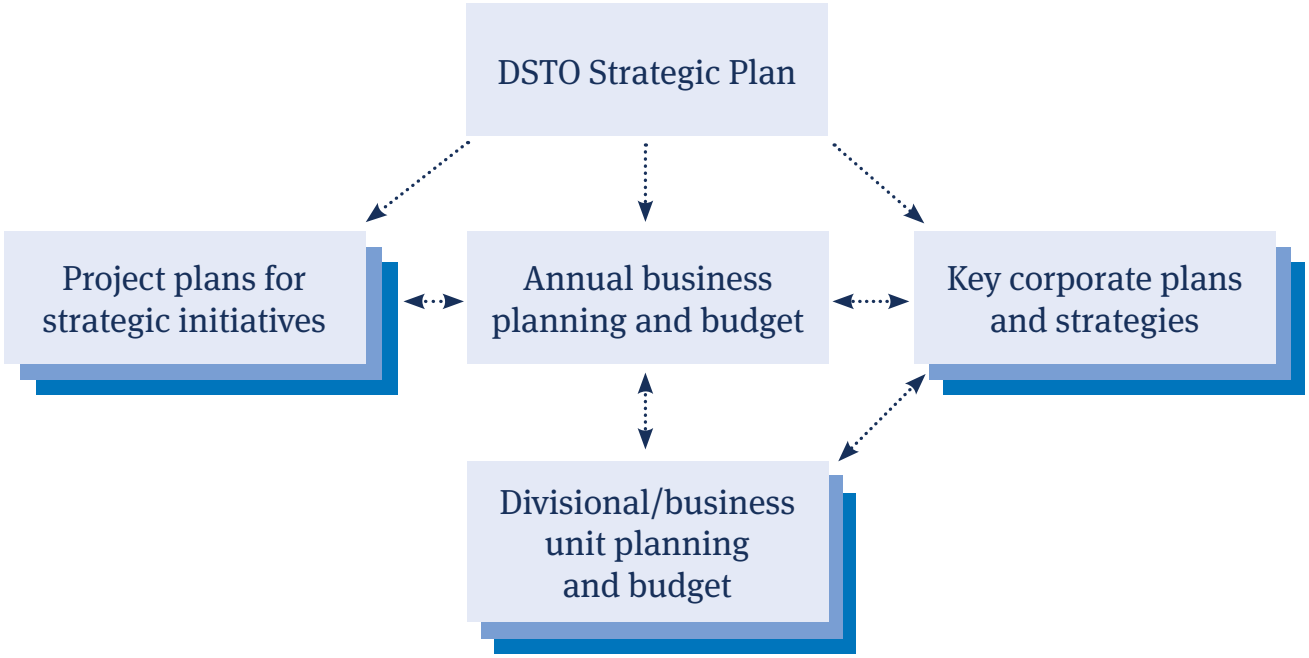
Part IV

Implementation of our strategy

DSTO will undergo considerable change as a result of implementing the initiatives in this strategic plan and through aligning with our broader science and technology capability directions. As an organisation, it is vital that we manage the change effectively through a well-focused transition plan. As individuals, we need to understand, accept and adopt the changes to our strategy, structure, systems, culture, policies and processes.

Our strategic plan is ambitious and cannot be implemented in a single step. Accordingly, the implementation is phased over five years with the amount of effort and resources dedicated to specific strategic initiatives varying from year to year, reflecting annual priorities. The most vital and enabling initiatives will be implemented in the first two years (see the table on the next page).

For example, our people and leadership initiatives (O1 and O2) will help drive the culture change in our organisation and are a priority in the first two years. Our investment in modern ICT and information management systems (O3) must start early because they will underpin our internal business process efficiencies (O4) and support a more collaborative and communicative approach to our work. Strategic client engagement (D2), a priority for the first year, will drive the shape and resourcing of our S&T program (D1).



Remaining on track with implementation is key to creating a more innovative and streamlined organisation. The implementation of the strategic plan will occur through an annual business planning and budget cycle. Regular reports will be provided to DSTO senior management to assess DSTO performance and progress against key actions. We will review our strategic actions and business plans annually.

Intensity of our activity

DSTO strategic initiatives			Intensity of activity over 2013-18				
			Year 1	Year 2	Year 3	Year 4	Year 5
DELIVER to Defence ➡ More valued	**D1.**	Science and technology excellence					
	D2.	Strategic engagement with client focus					
SHAPE defence and national security ➡ More collaborative	**S1.**	Big picture analysis on shape of Defence					
	S2.	Grand Challenges for Safeguarding Australia					
Create and anticipate **TOMORROW** ➡ More innovative	**T1.**	Fostering innovation					
	T2.	Invigorating Australia's research efforts in national security					
A valued **ORGANISATION** with a more collaborative and innovative culture	**O1.**	Leadership, accountability and performance management					
	O2.	Talent, diversity and career development pipeline					
	O3.	Transformation of ICT to drive innovation and collaboration					
	O4.	Best practices for business processes and administration					

KEY

- Significant effort
- Medium effort
- Minor effort/ business as usual

Pathway to success – strategy, structure and people

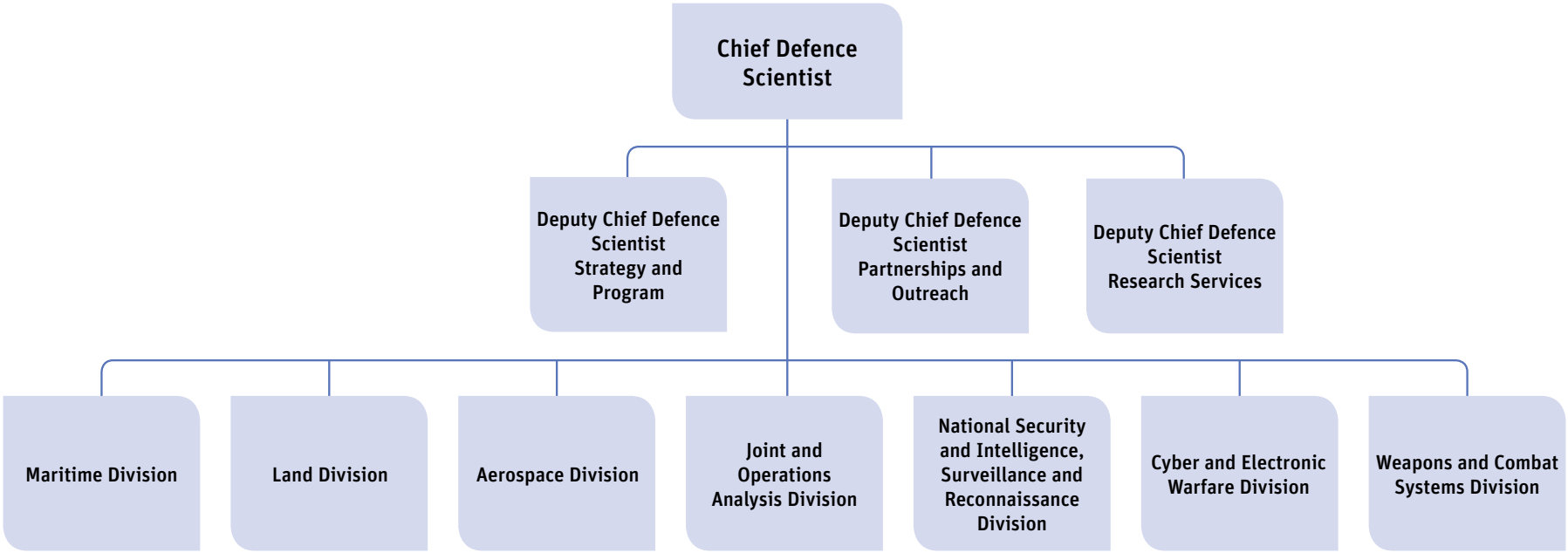
DSTO has shaped its organisational structure to align with and support the delivery of the DSTO Strategic Plan. This was undertaken in several steps, starting with a new client-facing structure for research divisions and Deputy Chief Defence Scientist Groups.

Subsequently, DSTO implemented a single consistent way of organising and managing our skills and expertise using our Major Science and Technology Capabilities (MSTC) as the fundamental unit of organisation. This will allow us to determine the right size and shape of MSTCs for delivering science and technology excellence and a high impact client program now and into the future.

Each MSTC comprises people, infrastructure, science and technology knowledge and partner relationships in a combination of a science and defence domain. The science component comprises the specialist knowledge, skills and experience of staff in the domain, as well as infrastructure and partnering. The defence component is the context in which our specialist knowledge, skills and experience have impact, including the particular physical aspect or operational context.

The strategic plan includes a summary of our MSTCs and our Deputy Chief Defence Scientist Groups that will work together to implement our strategic plan and deliver enhanced engagement with our Defence and external partners.

Overall, these organisational changes have been made to ensure that DSTO is more client-focussed, best organised to achieve science and technology excellence, more efficient and effective, and to support our staff to work as one organisation across all locations.



Major Science and Technology Capabilities (MSTCs)

Each MSTC comprises people, infrastructure, S&T know-how and partner relationships in a combination of a science and defence domain. The science component comprises the specialist knowledge, skills and experience of staff in the domain, as well as infrastructure and partnering. The defence component is the context in which our specialist knowledge, skills and experience have impact, including the particular physical aspect or operational context.

Deputy CDS groups
Responsible for corporate duties in order to shape strategic direction and enhance engagement with Defence and external partners.

DCDS Strategy & Program
Develops science policy, formulates client and strategic research programs, and oversees resource investment into S&T capabilities.

DCDS Partnerships & Outreach
Coordinates and develops interactions with industry, academia, overseas agencies and other Australian government agencies. Promotes defence science in the education and wider Australian communities.

DCDS Research Services Delivers enabling services including science information management and technology, research infrastructure, scientific engineering and support, laboratory emergency management, safety and security.

Maritime Division (MD)
Provides support and solutions to enhance the operational performance and survivability of defence platforms in the maritime domain.

Sonar Technology and Systems Undertakes research, development, test, evaluation and prototyping of undersea acoustic sensors, systems and concepts to counter undersea threats.

Signature Management
These two MSTCs conduct research into **1. Acoustic and 2. Non-acoustic** (radar, infrared and visible) signature treatment and control.

Maritime Autonomy
Leads the development of systems operating independently in complex environments, and intelligent sensor payloads.

Undersea Command and Control
Enhances ADF undersea warfare effectiveness.

Naval Architecture Enhances the capability requirements definition, performance, safety and through-life management of ship and submarine structures and propulsion systems.

Platform Survivability
Enhances defence platform survivability through vulnerability and recoverability analysis.

Land Division (LD)
Provides support and solutions for ADF personnel by applying expertise in human sciences, vehicle and systems sciences, and chemical and biological warfare.

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

Land Vehicles & Systems
Applies vehicle and systems sciences in support of land vehicles and systems.

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

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

Aerospace Division (AD)
Provides support and solutions to enhance the operational effectiveness, performance, survivability, availability and safety of ADF aerospace capabilities.

Aerospace Systems Effectiveness
Supports Defence outcomes in capability, efficiency and safety by providing advice and solutions where humans and air platforms or systems interact.

Aircraft Performance and Survivability Conducts performance and survivability modelling and experimentation for flight, propulsion, signatures and stores carriage and clearances.

Aircraft Health and Sustainment
Supports aircraft health management systems and technologies, engine and fuel integrity, and aerospace systems sustainment analysis.

Airframe Technology and Safety
Works to ensure aircraft safety and availability, reduce fleet cost of ownership and advises on acquisition projects.

Aircraft Structures
Provides safety-critical aircraft structural integrity and airworthiness advice and solutions to the ADF.

Applied Hypersonics
Supports technology for propulsion used in air vehicles traveling at speeds in excess of Mach 5.

Joint and Operations Analysis Division (JOAD)
Analyses Defence operations and capability to provide independent, impartial and timely advice.

Three JOAD MSTCs develop and apply analytical methods, techniques and tools to inform decisions impacting: **1. Aerospace Capability, 2. Land Capability and 3. Maritime Capability.** This encompasses specification, procurement, command and control, underpinning technologies, force structure and training, and their contribution to operational effectiveness.

Joint Capability Analysis
Supports joint capability issues, including through the DSTO operations support centre by immersion and experimentation with warfighters.

Strategic Capability Analysis
Informs strategic policy and capability decisions by applying analysis, concept development, risk assessment and technology forecasting.

Decision Sciences
Enhances military decision making at individual, team and organisational levels in terms of intent, capabilities, awareness and control including human and machine perspectives, and their integration.

National Security Intelligence Surveillance & Reconnaissance Division (NSID) Enhances the national capability for accurate, relevant and timely actionable intelligence for Defence and Government decision makers.

Intelligence Analytics Develops situational awareness capabilities for intelligence analysts and conducts domain-specific research into human, open-source and all-source analysis techniques.

Information Integration
Supports the integration and application of intelligence, surveillance and reconnaissance (ISR) systems.

Intelligence Systems
Develops intelligence systems for geospatial intelligence and measurement and signature intelligence, and imagery-based capabilities.

Surveillance and Reconnaissance Systems Conducts research into surveillance and reconnaissance systems and assesses their application to defence and national security needs.

High Frequency Radar
Enhances long-range over-the-horizon radar as part of the national intelligence, surveillance and reconnaissance system.

National Security
Provides a whole-of-government coordination program for science and technology needs relating to national security.

Cyber and Electronic Warfare Division (CEWD)
Provides expert advice and technology solutions in the cyber domain and electronic warfare environment.

Cyber Assurance and Operations
Supports enhanced performance in the presence of threats and unauthorised activities on computer resources.

Cyber Sensing and Shaping
Develops techniques for accessing, characterising and shaping communication networks to enable cyber operations.

Assured Communications
Provides solutions for robust communications in contested, complex and dynamic environments.

Systemic Protection and Effects
Analyses and supports critical cyber physical systems, with respect to systemic electronic attack.

Spectrum Sensing and Shaping
Supports enhanced situational awareness in complex RF environments, and defeating the future networked EW, cyber and kinetic threats.

EW Operations
Provides countermeasures for detecting and defeating threats using the electromagnetic spectrum.

Weapons and Combat Systems Division (WCSD)
Applies science and technology to the development and operation of highly effective weapons systems for Defence.

Weapons Guidance Technology
Undertakes research, development and analysis of the guidance systems of modern weapons.

Combat and Mission Systems
Develops combat and mission systems for maritime and airborne platforms, and the tactical networking between air, sea and land platforms.

Weapons and Combat Systems Assessment
Assesses individual weapon system performance and end-to-end combat system effectiveness.

Land Weapons Systems and Effects
Supports all aspects of ADF unguided weapons.

Energetic Materials and Systems
Research into the delivery of appropriate destructive energy to targets.

Financial profile, 2013-14 to 2017-18

The DSTO Strategic Plan 2013-18 recognises budgetary austerity in a tight fiscal environment, whilst striving to maintain and continue to build our excellence in science and technology.

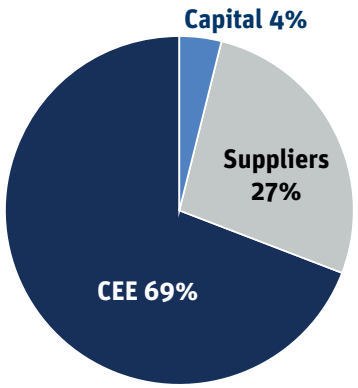
Our financial profile goal reflects best practice to balance the proportions of our budget directed to civilian employee expenses, suppliers and capital expenditure, while driving greater efficiencies in resource proportions dedicated to scientific support services. This will provide greater impact for the size of our organisation and sustain genuine capability while providing our staff with sufficient resources to ensure quality delivery.

Based on global benchmarks for science investment categories, over the five-year period of the strategic plan, DSTO will strive to progressively move to an annual position of 33% of expenditure on suppliers and capital expenditure of approximately 8% relative to salaries. This investment is over and above project-specific funding.

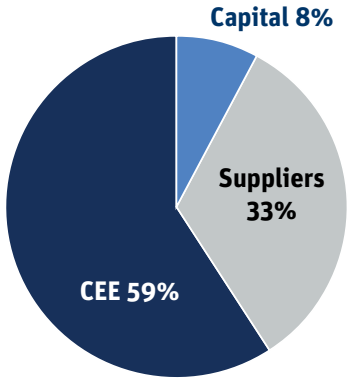
These changes will reflect the rebalancing and reprioritising of DSTO capabilities to those areas where deep expertise is most needed to achieve a capability edge for Australia's defence and national security. Savings and efficiencies will be made from streamlining the organisational structure and business practices, prioritising capability along with a greater contribution to service delivery reforms in Defence and by balancing investment in scientific support services.

The plan will be reviewed annually against funding guidance to ensure DSTO delivers on reshaping the financial profile.

Cash Actual Result
2013-14



Global Benchmarking for S&T
2017-18



Definitions

Civilian Employee Expenses (CEE): Salaries plus employee on-costs

Suppliers: Discretionary services, including contracts and travel.

Capital: Physical assets and investment in research infrastructure.

	2014-15	2015-16	2016-17	2017-18
Indicative budget *($million)*	443	460	447	445
Revenue *($million)*	–35	–36	–37	–38

Note:
1. 2012-13 the cash actual result was CEE $316m; Suppliers $132m; Capital $26m
2. 2013-14 the cash actual result was CEE $310m: Suppliers $121m; Capital $20m
3. 2014-18 indicative accrual budget as reported PBS 2014-15

Detail on DSTO roles and business models

Annex

Operations

Supporting operational capability with science and technology expertise

Description of role

DSTO responds to operational requests for scientific advice and provides Fly Away Teams to address specific issues in theatre, both offensive and defensive. DSTO maintains current capabilities by addressing deficiencies of existing systems and platforms to meet current operational needs.

How valuable is this role?

This role is critical and represents the highest priority work undertaken in DSTO. Our work has saved lives and enhanced the operational capability and effectiveness of the Australian Defence Force in both its offensive and defensive capacities.

Why DSTO?

Our nation's warfighters who are placed in harm's way must be provided with the best protection possible. The deep domain expertise and leading-edge capabilities of DSTO can be leveraged to provide unique life-saving technologies and solutions.

What does DSTO need to do to be successful?

- Continuously seek innovative ways to improve DSTO support to Australian Defence Force operations through deep collaborative arrangements.
- Provide timely, effective, objective and accurate responses to operational requests.

Exemplar: Counter improvised explosive devices

With the prevalence of and damage done by improvised explosive devices in Iraq and in Afghanistan, DSTO has worked closely with the Counter Improvised Explosive Devices Task Force and Australia's allies to develop and deploy technologies to defeat the improvised explosive device threat.

Sustainment

Providing support to Defence to sustain and enhance current capability

Description of role

DSTO exploits its domain knowledge to develop and apply technologies and solutions for the sustainment, operational effectiveness, improvement and life extension of Defence capabilities, including creation of tools to help develop tactics, techniques and procedures.

How valuable is this role?

This role is vital to improving operational effectiveness, enhancing safety, maximising asset availability and delivering significant savings in total cost of ownership.

Why DSTO?

DSTO has a unique combination of skills, facilities, knowledge, network of contemporary specialists, access to classified government data and a reputation that brings credibility and acceptance.

What does DSTO need to do to be successful?

- Develop and manage science and technology capabilities effectively to exploit DSTO domain knowledge to ensure successful sustainment and remediation of the current force.
- Leverage the knowledge of external partners (particularly industry) where needed, and facilitate the development of this knowledge to support Defence.

Exemplar: Aircraft life extension

DSTO enjoys a world-class reputation for extending the service life of Australia's military aircraft through our expertise in structural integrity and fatigue testing. DSTO has developed and assessed more accurate and advanced fatigue life prediction methodologies to provide the ADF with improved fleet life estimates, using in-service data, fatigue test results and fundamental material research.

Acquisition

Providing support throughout the development, acquisition and introduction to service of major capability projects

Description of role

DSTO provides a broad spectrum of support to the development, acquisition and introduction into service of Defence major capability projects. For the largest and most complex projects, such as the Joint Strike Fighter, this includes advice on technical risk, laboratory analysis of specific components of the capability, support to risk mitigation activities, studies into and analysis of the capability and support to the acceptance of the capability delivered by the project.

How valuable is this role?

DSTO support helps reduce acquisition risks in a meaningful way, thus enabling Defence to be a smart buyer while maintaining a capability edge. The Chief Defence Scientist is required to advise government on the technical risks for every major acquisition decision. The role is most valued for high-risk projects where DSTO advice has the greatest impact.

Why DSTO?

DSTO has the ability to combine deep technical understanding with Defence domain knowledge, expert and impartial advice, and broad knowledge of the industry capability base in order to provide the best outcome for the capability manager.

What does DSTO need to do to be successful?

- Achieve full participation in the Defence project decision making process with a focus on efficient delivery of outcomes.
- Adequately resource and support the project teams.

Exemplar: Integrating new radar technologies

DSTO worked with industry to successfully integrate new radar technologies for the ANZAC Ship Anti-Ship Missile Defence upgrade project.

Future proofing

Investigating client-driven future concepts and capability

Description of role

DSTO ensures that Defence maintains a future capability edge by undertaking client-driven research programs. The aim of the research programs is to help develop new or enhanced capabilities that are game-changing for Australia over medium-term and longer-term timeframes.

How valuable is this role?

DSTO develops specific solutions to fill technology gaps in future Defence capability. DSTO enhances future concepts and capability through identification, evaluation and risk mitigation of factors affecting performance, survivability, safety, cost and whole-of-life ownership.

Why DSTO?

DSTO has a unique blend of people, national and international partnerships, facilities, broad scientific expertise, domain knowledge, knowledge of systems integration, and a holistic approach. These elements enable DSTO to deliver the best program outcomes to Defence.

What does DSTO need to do to be successful?

- Leverage into external (particularly international) technology programs through our knowledge and reputation.
- Achieve early integration of DSTO effort into Defence acquisition planning.
- Retain and recruit people with the skills and knowledge to assess, evaluate and create technology.
- Inform the future Defence Capability Plan.

Exemplar: The Future Submarine Program

DSTO is studying and developing key technologies including those that will determine the central criteria of range, endurance, stealth, weapons, sensors and human factors for the Future Submarine Program. Aspects being examined by DSTO include monitoring technology trends, developing facilities for technology analysis and maturation, system performance analysis and testing, system integration and mitigation of the associated risks.

Advice to government

Shaping Defence and national security strategic policy through expert and impartial advice

Description of role

DSTO currently informs Defence and national security policy and strategy through providing evidence-based, expert and impartial advice that utilises the organisation's analysis skills, deep scientific capabilities and domain knowledge.

How valuable is this role?

The Australian Government and Defence must make evidence-based policy decisions. Australia has a need for a trusted organisation with the requisite knowledge to provide this advice. DSTO places a high priority on fulfilling this valued adviser role.

Why DSTO?

DSTO has a deep understanding of current and emerging technologies relevant to defence and national security, significant analytical capability, unique access to domain knowledge and a highly developed ability to synthesise information.

What does DSTO need to do to be successful?

- Work closely with stakeholders to provide relevant, timely and accurate advice.
- Maintain world-class capabilities and domain knowledge.

Exemplars

- DSTO provided advice to the 2013 Defence White Paper.
- DSTO provided operational analysis, software support and technical advice to the 2011-12 Force Structure Review, helping prioritise future Defence capabilities.
- DSTO has provided the scientific basis for the policy to remove gender restrictions from certain roles within the Australian Defence Force.

National security

Leading the coordination and delivery of science and technology to enhance whole-of-government national security

Description of role

DSTO implements national security science and technology policy and provides cross-agency coordination in response to strategic guidance from government. This involves applying DSTO capabilities and those from other national research providers, enhancing operational capability response and intelligence exploitation, supporting policy and priorities through strategic risk and decision analysis, and leveraging the investment of international partners through collaborative research arrangements.

How valuable is this role?

Science and technology capabilities are pivotal for anticipating, countering and responding to a wide spectrum of national security threats. Effective coordination of science and technology support maximises the value of research investment.

Why DSTO?

DSTO has the capabilities, domain knowledge, linkages with user agencies and research networks to coordinate and deliver support to both defence and non-defence national security. DSTO has the mandate from the Australian Government to perform the coordination role.

What does DSTO need to do to be successful?

- Communicate effectively to ensure shared objectives and values across the stakeholder community.
- Ensure the delivery of priority outcomes.
- Look to leverage dual-use technologies for both defence and non-defence national security outcomes.

Exemplar: Countering terrorism

DSTO supports the Australian Federal Police and other response agencies in countering terrorism within Australia and offshore by developing science and technology to enhance intelligence exploitation, surveillance, and explosives detection and characterisation, and in responding to chemical and biological threats.

Strategic research

Conducting research into high-impact areas for future Defence capability

Description of role

DSTO undertakes strategic research in key science and technology areas (see Part III) that it judges are likely to provide a game-changing capability for future Defence and to prepare DSTO to meet future science and technology challenges.

How valuable is this role?

It is critical to invest in strategic research in select technology areas to deal with the challenges of the future that can potentially provide disruptive capabilities for Australia.

Why DSTO?

DSTO has the combination of extensive multidisciplinary technology, systems and domain expertise to credibly invest in future proofing Defence and national security.

What does DSTO need to do to be successful?

- Robust and timely decision making model to select strategic areas and ability to terminate stalled programs.
- Appropriate risk-taking and tolerating failure in research and development.
- Successful and timely delivery of programs.
- Ability to influence national and international programs and decision makers.

Exemplar: Hypersonics program

DSTO has an active research program to develop hypersonics technology, particularly scramjet propulsion to enable sustained high-speed flight in the atmosphere. In 2012, the hypersonics program demonstrated and validated the key technologies required to enable the sustained operation of aerospace systems within the atmosphere at speeds exceeding five times the speed of sound.

Emerging futures

Scanning the environment to gain an understanding of emerging science and technology threats and opportunities

Description of role

DSTO conducts horizon scanning to gain knowledge and understanding of emerging science and technology areas across a broad spectrum over a ten to twenty year horizon. DSTO also undertakes analysis activities to determine how advancement of these technologies could result in emerging threats or the realisation of critical defence and national security capabilities. The outcomes of emerging science programs will inform longer-term investment in the DSTO strategic research program.

How valuable is this role?

It is critical to invest in studying emerging science and technology areas in order to position Defence and national security agencies to exploit future opportunities and prevent strategic surprises.

Why DSTO?

DSTO, through our combination of extensive multidisciplinary technology, systems and domain expertise, is positioned to credibly integrate knowledge gained from horizon scanning. Our enduring links with the broader science and technology community enable us to access information and we have the domain knowledge to give the Defence context.

What does DSTO need to do to be successful?

- Have a stake in global science and technology networks in order to access the latest research results.
- Harness the science and technology know-how of all staff.

Exemplar: Fibre laser technology

In 2006, DSTO researchers envisaged the potential gains in fibre laser technology over solid state lasers. This change in direction has led to world-leading capabilities demonstrated by DSTO in the area of high-power lasers. DSTO provides technical analysis of possible capability trajectories based on knowledge of current technologies and technology trends. This is used to identify the required performance parameters and design of future systems.

Partnerships

Enhancing science and technology impact by collaborating with research and industry partners, nationally and globally

Description of role

DSTO accesses and leverages world-leading science, technology, knowledge and innovation, through collaboration with industry, academia and international agencies. DSTO works closely with these partners in order to provide quality advice and innovative solutions for Defence and national security.

How valuable is this role?

Defence achieves a strategic technology advantage through the ability to access the best scientific expertise, technical capabilities and infrastructure, which complement DSTO capabilities. Science and industry partnerships also provide pathways for DSTO innovations to be transferred to others for the development of future capability.

Why DSTO?

DSTO has the unique Defence domain knowledge and links with the national and international science and technology innovation community to facilitate the translation, application and integration of innovation from external partners to the Australian Defence environment.

What does DSTO need to do to be successful?

- Have early awareness for potential leverage from external developments and opportunities.
- Active engagement by DSTO staff with the external environment.
- Strategy for external engagements.
- Best practice business development, commercialisation and IP capabilities.
- Innovative framework for engagement that actively uses advice from the DSTO Probity Board.

Exemplar: DSTO participation in the Defence Materials Technology Centre

DSTO, as a core participant in the Defence Materials Technology Centre, has helped to develop and deliver new materials technologies and manufacturing processes to enhance Australia's defence capability. This Defence-funded centre uses the Collaborative Research Centre model to bring together industry, universities and research agencies.

Outreach

Promoting defence science and education in the broader Australian community

Description of role

DSTO has a corporate responsibility to engage with the broader community in order to promote the benefits of defence science and technology. DSTO shows leadership in helping Australia develop and shape a national science, technology, engineering and mathematics (STEM) capability for the long-term human resources needs of Defence and national security agencies by working cooperatively across the primary, secondary and tertiary education sectors.

How valuable is this role?

As an Australian science and technology agency, DSTO has an important role to reach out to the Australian community, particularly through the education system, to help promote the benefits of defence science and technology to help shape a national STEM capability. This will help create the future talent pipeline for DSTO.

Why DSTO?

As a publicly funded research agency, DSTO is well placed to play a limited but important role in promoting defence science in the broader Australian community. The broad capabilities of DSTO allow us to play a strong role in STEM education, particularly through external partnering with the CSIRO, select universities and professional organisations such as the learned academies and Engineers Australia.

What does DSTO need to do to be successful?

- Strategic promotion of DSTO.
- Partnering with Australian universities and research agencies.
- Resourcing a schools education program.
- Supporting the activity across DSTO.

Exemplar: ABC program Catalyst and the Indigenous Youth Science Forum

DSTO has featured multiple times on the ABC program Catalyst, including cavitation research on reducing the damage done by moving water on dam walls, ship hulls and the noise impact of submarines. DSTO also sponsored the Indigenous Youth Science Forum in Western Australia, exposing students to a range of science and technology work environments including DSTO at HMAS Stirling.

DSTO enablers

Effective organisational enablers are vital to the success of DSTO in providing a capability edge to Defence. DSTO has three types of enablers.

Technical services

Within DSTO, Scientific Engineering Services (SES) and Science Information Services provide specialised engineering and research networks to research divisions.

Science and technology training and sustainment

DSTO supports our staff members by providing training and investing in sustainment of science and technology capabilities. Effective maintenance of research infrastructure is essential to underpinning the ability of DSTO to deliver the outcomes of our programs.

Research services

DSTO provides enabling services for science and technology activities. These include:

- science information and knowledge management (including research libraries)
- intellectual property management, business relationships and commercialisation
- governance and accountability
- laboratory emergency management, safety and security
- administrative and scientific support
- research infrastructure
- science communications.

DSTO business models

There are multiple business models currently in use within DSTO. The following boxes illustrate options for our business models.

Requirements and delivery model

Requirements definition options

- Operations science and technology support request
- Client requirements
- DSTO science and technology plan
- DSTO internal (for corporately defined research)
- Partnership agreements
- Ad hoc requests

Delivery options

- Divisional research and development programs
- Corporate programs
- Embedded DSTO staff
- National Security Science and Technology Centre

Funding model

Funding source options

- Portfolio
- Client
- Blend (co-contribution)

Financial mechanism options

- Direct transfer
- Invoice
- In kind

Scope of funding options

- Suppliers
- Capital expenditure
- Overheads
- Salary
- Fee (full commercial cost recovery)

DSTO roles and associated business models continued

DSTO role	Requirements definition	Requirements delivery	Funding source	Funding mechanism	Funding scope
Operations	Operations science and technology support request	Embedded DSTO staff	Australian Government	Transfer	Suppliers, capital expenditure
Operations	Client requirements	Divisional research and development (R&D) programs	Portfolio with client funding for surge requirements	Transfer or invoice	Suppliers, capital expenditure, overhead
Sustainment	Client requirements	Divisional R&D programs	Blend	Transfer or invoice	Suppliers, capital expenditure, overhead
Acquisition	Science and technology plan	Divisional R&D programs	Usually blend	Transfer	Suppliers, capital expenditure
Future proofing	Client requirements	Divisional R&D programs	Blend	Transfer	Suppliers, capital expenditure
Advice to government	Client requirements	Divisional R&D programs	Portfolio with client funding for surge requirements	Transfer	Suppliers, capital expenditure
National security	Client requirements	National Security Science and Technology Centre	Coordination - portfolio Delivery – portfolio, supplemented by partners	Coordination – transfer Delivery – transfer for portfolio and invoice for partners	Suppliers, capital expenditure, overhead
Strategic research	DSTO internal	Divisional R&D programs	Portfolio	N/A (portfolio funds)	N/A (portfolio funds)
Emerging futures	DSTO internal	Divisional R&D programs	Portfolio	N/A (portfolio funds)	N/A (portfolio funds)
Partnerships	Partnership agreements	Divisional R&D programs	Depends on purpose of partnership	Invoice or in-kind	Suppliers, capital expenditure, overhead, salary, fee
Outreach	DSTO internal	Corporate programs and ad-hoc support	Portfolio	N/A (portfolio funds)	N/A (portfolio funds)

Note: These business models are aligned to the new role depiction for DSTO, and DSTO will be moving towards these business models over the next five years. There may be exceptions for specific circumstances.

Summary of Strategic Plan 2013-2018

*From 2013 to 2018, we will undertake ten strategic initiatives to make DSTO a more **valued, collaborative** and **innovative** organisation.*

Our strategic context

The global and regional context for Australian defence will undergo significant change in coming years. Key challenges facing DSTO include the increased blurring of state and non-state threats, military modernisation in the Asia-Pacific region, global access to commercial off-the-shelf technology and the rapid progression of cyber capabilities and other disruptive technologies. These external challenges coincide with a tightening resource environment for Defence and DSTO. Through an open and consultative approach with staff and stakeholders, DSTO has formulated ten strategic issues that the strategic plan will address.

Top strategic issues

1. major **defence and national security needs** including cost drivers
2. key **Asia-Pacific** and **global trends**
3. the **challenges** that DSTO is uniquely able to address
4. being strategic in our **client relationships**
5. the need for greater **collaboration and partnership** with other science organisations and industry
6. prioritisation of **investment** within a **resource-constrained** environment
7. the need for **innovation, science excellence and leading-edge technology** to improve competitive position
8. the necessity for **business-ready services** and **infrastructure** to support productivity and quality delivery
9. the needs of a demanding **knowledge-intensive workforce**
10. the expectations of a high-performance organisation that requires quality **leadership and accountability**.

Our strategic initiatives

From 2013 to 2018, DSTO will undertake the following ten strategic initiatives to make DSTO a more valued, collaborative and innovative organisation. The implementation of these initiatives is phased over the five year period of the plan, with the most vital and enabling initiatives implemented in the first two years. Implementation will occur through an annual business planning and budget cycle. The strategic actions and business plans will be reviewed annually.

DSTO strategic initiatives			Intensity of activity over 2013-18				
			Year 1	Year 2	Year 3	Year 4	Year 5
DELIVER to Defence ➡ More valued	**D1.**	Science and technology excellence					
	D2.	Strategic engagement with client focus					
SHAPE defence and national security ➡ More collaborative	**S1.**	Big picture analysis on shape of Defence					
	S2.	Grand Challenges for Safeguarding Australia					
Create and anticipate **TOMORROW** ➡ More innovative	**T1.**	Fostering innovation					
	T2.	Invigorating Australia's research efforts in national security					
A valued **ORGANISATION** with a more collaborative and innovative culture	**O1.**	Leadership, accountability and performance management					
	O2.	Talent, diversity and career development pipeline					
	O3.	Transformation of ICT to drive innovation and collaboration					
	O4.	Best practices for business processes and administration					

KEY
- Significant effort
- Medium effort
- Minor effort/ business as usual

Our science and technology capabilities

DSTO will progressively implement changes to its science and technology capability over the five years of the strategic plan. These changes have been informed by analysis of future trends and Defence priorities. Partnerships will be essential to strengthening DSTO's ability to develop science and technology capability and to integrate knowledge and innovation for defence and national security capability. Any reductions in DSTO investment will be offset by a combination of internal efficiencies, greater external partnering and a more focused client prioritisation process.

Grow

DSTO will grow investment in cyber, surveillance and space systems and autonomous systems.

Sustain

DSTO will maintain investment in electronic warfare, information systems and chemical, biological, radiological and nuclear.

Reduce

DSTO will reprioritise investment in propulsion and energy, platforms, weapons, human science and operations analysis.

www.dsto.defence.gov.au

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DSTO Science and Technology for Safeguarding Australia