



Australian Government

Department of Defence
Science and Technology

Defence Science and Technology Strategic Plan 2013–2018



2016 update

Message from the Minister



▲ Senator Marise Payne
Minister for Defence

Australia's future defence capability is inextricably linked to a successful science and technology research program. In a global environment where the pace of technological change is rapid, innovative ideas and solutions are vital to achieving the best capability outcomes for our Defence force. Without this, we risk being left behind on the battlefields of the future.

The Defence Science and Technology Group is central to Defence's ability to remain at the technological cutting edge.

Exploring and exploiting the unknown through scientific and engineering research, and generating solutions to complex problems is vital to achieving and maintaining the best capability outcomes.

DST Group will lead this research in collaboration with academia, publicly funded research agencies, industry and our international partners.

These partnerships are critical to translating ideas and transitioning technology into new or enhanced defence capabilities and are key to our ability to remain at the forefront of defence and security innovation.

Fostering such innovation will be essential if our Defence organisation is going to convert technological developments into capability dividends, which is why the Government has provided new resources through the Next Generation Technologies Fund to invest in strategic future capabilities.

The Defence Science and Technology Strategic Plan 2013–18 has already positioned DST Group to perform this role more effectively and efficiently for Defence and the 2016 update will continue to positively shape our Defence capability.

I welcome this update to the Defence Science and Technology Strategic Plan 2013–18 and congratulate Defence on its science and technology achievements over the past three years.

A handwritten signature in black ink, reading "Marise Payne". The signature is fluid and cursive, with a long horizontal stroke at the end.

Senator the Hon Marise Payne
Minister for Defence

Message from the Chief Defence Scientist



▲ Dr Alex Zelinsky
Chief Defence Scientist

Defence science and technology plays a critical national role in Australia's defence and national security by 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 and I believe that science and technology can help address the challenges that this brings. We have the chance to build on the brilliance of our people and embrace the opportunities before us to become more collaborative and innovative.

The Defence Science and Technology Strategic Plan 2013–18 is an important step in taking us into the future. The core of our strategy is about refocusing 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, a Grand Challenges program, which will support research into significant defence and national security challenges.

I am confident our strategy and its underlying actions will set us on a path to becoming an even better organisation than we are 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, including government agencies, academia and industry. We have also listened to our people through surveys, workshops and online conversations.

I extend my sincere thanks to everybody who has contributed to the development of the Defence Science and Technology Strategic Plan 2013–18.

A handwritten signature in dark ink, appearing to read 'A. Zelinsky', with a stylized flourish at the end.

Dr Alex Zelinsky
Chief Defence Scientist
12 March 2013

2016 update from the Chief Defence Scientist



▲ Dr Alex Zelinsky
Chief Defence Scientist

There have been significant developments in our strategic context since the strategy was launched in 2013. On 1 April 2015, the First Principles Review of Defence (FPR) was released by the Minister for Defence. A significant outcome of the FPR is that our role has expanded to manage Science & Technology for the whole of the Department. It also means we are pulled more closely to the Strategic Centre of Defence. As a consequence, we have been renamed DST Group. Our Strategic Plan has been updated to reflect our new name. We should all be satisfied in knowing that our 2013–18 Strategic Plan helped put us ahead of the curve in meeting the Review's intent, with all our Strategic Initiatives aligned with the seven 'first principles' that guided the Review.

Included in this update is our value proposition which shows examples of the value of our science and technology work. Also included is a summary of the ACIL Allen Consulting report which showed that in recent times our Group has delivered at least \$20–\$25 billion of economic value. The value proposition and the ACIL Allen report delivered on a key FPR recommendation.

A significant event in 2015 was the Australian National Audit Office (ANAO) audit to assess the effectiveness of our administration, which underpins the science and technology work that we undertake for Defence. The audit reviewed our strategic planning, client program planning, client program management, review and reporting, and all the data, processes and systems that support these. Overall, the ANAO was satisfied that our program is well-managed with no major issues identified. The implementation of the audit's recommendation will be a priority in 2016 and is included in the Strategic Plan update.

In 2015 we saw the appointment and re-election in July 2016 of Prime Minister Malcolm Turnbull MP and Minister for Defence, Senator the Hon Marise Payne. The Prime Minister renewed the focus on science and innovation, releasing the Government's National Innovation and Science Agenda in December 2015. This presents us with a tremendous opportunity to reinforce the important role we play in Australia's innovation system.

On 25 February 2016, the Defence White Paper 2016 (DWP), and the Defence Industry Policy Statement (DIPS) were released. The DWP recognises the contribution to defence capability provided by science and technology research and the DIPS sets out the Defence approach to innovation. DST Group is leading a new program to conduct and integrate next generation technologies research for Defence. As a member of One Defence we will also support the new Defence Innovation Hub. The DST Leadership Team will continue to review and guide the direction and investment in our S&T capabilities to ensure we can support the DWP, DIPS and FPR and remain positioned to meet the future needs of Defence.

Despite the hectic nature and pace of change, the implementation of our Strategic Plan remains on track with results that we can be proud of. This is a credit to the professionalism and hard work of our Strategic Initiative leads and their teams. We have seen many accomplishments over the last three years which are summarised on pages 6–8. Key highlights include internal and selective external benchmarking of our 39 Major Science & Technology Capabilities, which is enabling us to see where we are doing exceptionally well and where we can improve. Our client satisfaction survey has shown improvement, indicating that our work is continuing to meet Defence needs.

We are also progressing towards a more strategically oriented Defence science and technology program through the development of high level guidance for each Defence domain – Joint, Maritime, Land, Aerospace and Intelligence.

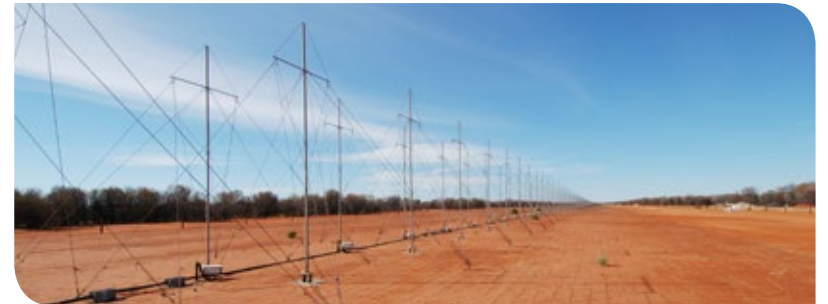
The first Emerging and Disruptive Technology Assessment Symposium in Trusted Autonomy, co-hosted with UNSW, was a successful landmark event, receiving positive feedback from industry and university participants. Other ‘firsts’ for us were our innovative SolveIt challenge – a crowdsourcing collaboration initiative aimed at facilitating multidisciplinary work for solving complex problems; and the inaugural Innovation Day in June 2016 which was an outstanding success and our people generated many great new ideas to take our Group forward.

Our Strategic Initiatives aimed at improving leadership, career development and performance management have continued to make progress. Changes to our ICT systems and services are improving how we work. Common delivery of services such as university agreements and Research, Scientific, Engineering and Other Technical Standing Offers are excellent examples of how we can save ourselves time and effort, making our Group more efficient.

Three years into our five-year journey, we should all be pleased with our accomplishments. Your continued participation and support is important to DST Group being a valued, collaborative and innovative organisation.



Dr Alex Zelinsky
Chief Defence Scientist
5 September 2016



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		SHAPE defence and national security		Create and anticipate TOMORROW		A valued ORGANISATION with a more collaborative and innovative culture	
<div><div></div><div>D1. Science and technology excellence</div></div> <div><ul style="list-style-type: none">Implemented a consistent, defined way to describe our science and technology capabilities using Major Science and Technology Capabilities.</div>	<div><div></div><div>S1. Big picture analysis on the shape of Defence</div></div> <div><ul style="list-style-type: none">Science and technology foresighting report examining emerging trends developed. (Forward 2035: Foresighting Study)</div>	<div><div></div><div>T1. Fostering innovation</div></div> <div><ul style="list-style-type: none">Established Defence Innovation Realisation Fund.Defence Innovation Forum held in July.</div>	<div><div></div><div>O1. Leadership, accountability and performance management</div></div> <div><ul style="list-style-type: none">Extraordinary Leader program rolled out to DSTO leadership.Leading Teams Through Change program rolled out.DSTO Mentoring Framework launched.</div>	<div><div></div><div>O2. Talent, diversity and career development pipeline</div></div> <div><ul style="list-style-type: none">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.</div>			
<div><div></div><div>D2. Strategic engagement with client focus</div></div> <div><ul style="list-style-type: none">A 2013–14 prioritised client program, transparently agreed with senior clients.Changes to client engagement roles and responsibilities.Business process modelling analysis underway.</div>	<div><div></div><div>S2. Grand Challenges for safeguarding Australia</div></div> <div><ul style="list-style-type: none">Strategic alliances in place with most of our primary industry partners.Grand Challenges Framework under development.</div>	<div><div></div><div>T2. Invigorating Australia's research efforts in national security</div></div> <div><ul style="list-style-type: none">Developed draft policy framework, including governance model and national security science and technology priorities, through workshops held with external organisations.</div>	<div><div></div><div>O3. Transformation of ICT to drive innovation and collaboration</div></div> <div><div>Significant improvements to DSTO's research ICT systems, governance and processes including:</div><ul style="list-style-type: none">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.</div>	<div><div></div><div>O4. Best practices for business processes and administration</div></div> <div><ul style="list-style-type: none">Successful streamlining of several key processes to reduce unnecessary administrative burden, while still operating within Defence and APS regulations.Review of Scientific Engineering Services undertaken.</div>			

Defence Science and Technology Group has successfully completed the second year of implementation of our Strategic Plan 2013–2018. In a year of huge change, particularly the First Principles Review of Defence, our 2013–18 Strategy has helped to put us ahead of the curve in meeting the Review's intent.

Some of our key achievements include: internal benchmarking of our 39 Major S&T Capabilities (MSTC) and external benchmarking of nine MSTCs; holding the inaugural Emerging and Disruptive Technology Assessment Symposium in Trusted Autonomy; running the first crowdsourcing SolveIT innovation challenge; and, saving time and effort via common university agreements and Standing Offers for procuring research, engineering and technical services. Our strategic initiatives aimed at improving leadership, career development and performance management in DST Group continued to make progress, and changes to our ICT systems and services are improving how we work.

All of the strategic initiatives made solid progress in the second year. Some initiatives have been rated as amber due to progress being less than planned. In the year ahead, the senior leaders of DST Group will increase their support to these initiatives. Two years into our five-year journey, we are proud of our accomplishments and we are on track to achieve our goal of being a valued adviser, collaborative partner, and innovation integrator.

Key strategic initiative achievements in 2014–15

Key: ● On track ● Mostly on track ● Off track

DELIVER to Defence		SHAPE defence and national security		Create and anticipate TOMORROW		A valued ORGANISATION with a more collaborative and innovative culture	
● D1. Science and technology excellence		● S1. Big picture analysis on the shape of Defence		● T1. Fostering innovation		● O1. Leadership, accountability and performance management	
<ul style="list-style-type: none"> ▶ Internal benchmarking of all 39 Major Science and Technology Capabilities (MSTCs). ▶ External benchmarking of nine MSTCs by eminent reviewers. ▶ Establishment of a Strategic Research Investment Program in trusted autonomy systems. 		<ul style="list-style-type: none"> ▶ Contribution to Defence White Paper. ▶ Inaugural Emerging and Disruptive Technologies Assessment Symposium in Trusted Autonomy. ▶ Cyber strategy discussion paper. 		<ul style="list-style-type: none"> ▶ Introduction of crowdsourcing via 'SolveIT' days. ▶ Shaping the Defence Innovation Strategy. ▶ Delivery of the Defence Science Partnerships program. ▶ Technology Pitches at Land Warfare Conference and Avalon Airshow. 		<ul style="list-style-type: none"> ▶ Tailored coaching and leadership skilling for S&T Level 7/8s and EL2s. ▶ Continued embedding of mentoring program. ▶ Managing for high performance initiatives developed. 	
● D2. Strategic engagement with client focus		● S2. Grand Challenges for safeguarding Australia		● T2. Invigorating Australia's research efforts in national security		● O3. Transformation of ICT to drive innovation and collaboration	
<ul style="list-style-type: none"> ▶ Strong strategic engagement through enhanced Domain Program Manager roles. ▶ Improved client engagement and feedback. ▶ Dispersed Funding Model implemented. 		<ul style="list-style-type: none"> ▶ Grand Challenges governance framework completed. ▶ Countering Improvised Explosive Devices endorsed as initial Grand Challenge. ▶ Grand Challenge concept proposed to Defence White Paper. 		<ul style="list-style-type: none"> ▶ National security S&T policy development. ▶ Approved national security S&T business model. 		<ul style="list-style-type: none"> ▶ User-facing: Electronic Document and Records Management System, improved data transfer between classified networks, improved video conferencing including connectivity to Defence. ▶ Infrastructure: Rollout of Windows7, improved backup and recovery systems, improved computer security. ▶ Transformational: Commenced Infrastructure Rationalisation, Future State Architecture defined. 	
						● O4. Best practices for business processes and administration	
						<ul style="list-style-type: none"> ▶ Quick wins: Travel, WHS, software procurement, publications, 'How to' videos. ▶ Common delivery of DST Group services: university engagement, new research, engineering and technical services standing offer. ▶ Full review of business processes completed, established central register of DST Group corporate policies. 	

Major government policies were announced recognising that innovation and science are critical to delivering future Defence and national outcomes – the National Innovation and Science Agenda, the Defence White Paper 2016 and the Defence Industry Policy Statement 2016. The new approach to innovation in Defence will enable ideas to be generated and transitioned to deliver future defence capability needs. It will rely on growing strong partnerships between government, industry, academia and our international allies. As part of this, the Government is investing around \$730 million over the decade in early-stage concept development and long-term strategic research through the Next Generation Technologies Fund. DST Group will lead the development and implementation of the Fund.

Key strategic initiative achievements in 2015–16

8

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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 Australia include: the relationship between the United States and China, which is likely to be characterised by a mixture of cooperation and competition; challenges to the stability of the rules-based global order; the growing threat from terrorism and foreign fighters to Australia's security; state fragility, including in our immediate region; increasing pace of military modernisation in our region; and increasing threats to cyberspace and space.

The Defence Science and Technology Strategic Plan 2013–18 sets the high-level direction for DST Group for the next five years. The plan allows DST Group to meet the challenges through focusing 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 DST Group 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.

DST Group 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 DST Group. 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.



Strategic initiatives

Part II of the plan describes four themes that 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 DST Group 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. *Next generation technologies for safeguarding Australia. ***New****

The **tomorrow** theme focuses on building a DST Group 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 DST Group. 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 how investment in our science and technology capabilities, the domain-focused program and strategic research including the Next Generation Technologies Fund will be managed using the new Defence Science and Technology investment methodology. Investments will reflect priorities from the First Principles Review of Defence, the Defence White Paper 2016 and the National Innovation and Science Agenda.

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).

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 DST Group performance and progress against key actions. The strategic actions and business plans will be reviewed annually.

Our vision, purpose, people and values

Our vision

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

Our purpose

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

Our people

DST Group has diverse, professional and specialised staff members who work in offices, complex laboratories, test facilities, weapons ranges and operational theatres. DST Group 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

We strongly stand by Defence values which guide our behaviour and decision-making and help us to demonstrate the attitudes and actions for organisational success.

Professionalism – *is striving for excellence.*

Loyalty – *is being committed to each other and to Defence.*

Integrity – *is doing what is right.*

Courage – *is the strength of character to honour our convictions (moral courage) and bravery in the face of personal harm (physical courage).*

Innovation – *is actively looking for better ways of doing our business.*

Teamwork – *is working together with respect, trust and a sense of collective purpose.*

Science and technology excellence

Defence values science and technology excellence. Our commitment to science and technology excellence is demonstrated through the highest international standards for scientific and technological innovation, rigour, original contribution, and influence, whilst solving the most challenging and valued problems.

Our value proposition

DST Group provides value to Australia's defence and national security through its capacity to reduce and mitigate strategic and operational risks and to create and maintain a capability edge.

Strategic

DST Group reduces risk in Defence's core business – defence operations, intelligence, capability development and integration. It does this by providing specialist advice and innovative technology solutions that are grounded in research and are independent of commercial or non-Government research interests.

DST Group strengthens strategic capability by building unique, collaborative international partnerships that enable access to classified government and compartmented technologies not otherwise available.

By building partnerships with academia, industry and other government departments, DST Group explores the impact of emerging technologies that can potentially create and prevent strategic surprise. DST Group is uniquely placed to take a longer-term perspective to mature and de-risk ground-breaking technologies prior to industry transition.

Operational

DST Group strengthens operational capability through the provision of scientific advice and technology solutions that enhance and adapt defence capability to our unique circumstances. This includes providing benefits in terms of military efficiency, effectiveness, readiness, sustainability and reducing losses.

DST Group enhances operational capability through the research, development, testing, evaluation, and modification of new and existing warfighting systems for the Australian Defence Force.

DST Group reduces the cost of ownership and increases the availability of Defence capability through technical advice based on modelling, risk analysis, experimental testing and life-extension work.

Source of value

DST Group's capacity to deliver value is built on its:

- unique world-class sovereign capabilities, with research staff and infrastructure covering the spectrum of defence science;
- deep knowledge of and responsiveness to the Australian defence environment and military capabilities;
- proven record of linking research and innovation with applications, and researchers and innovators with end users;
- active collaboration with defence and national security communities of interest, nationally and internationally;
- ability to integrate diverse and privileged information from multiple sources into coherent expert advice relevant to Defence, national security and Government decision-making, policy formulation and strategic planning;
- ability to maintain commercially unviable technology capabilities that are critical to Defence; and
- ability to work with academia and industry to foster a national science and technology base and transfer knowledge to support Defence capability development, acquisition and sustainment. This activity also generates economic value for the nation.

ACIL Allen Consulting undertook case studies of 10 DST Group projects from 2003 to 2015 to assess the economic benefits to Australia in terms of cost savings, capability enhancements and export sales¹. See Annex for information on these case studies.

¹ <http://www.dst.defence.gov.au/economic-impact-2015>

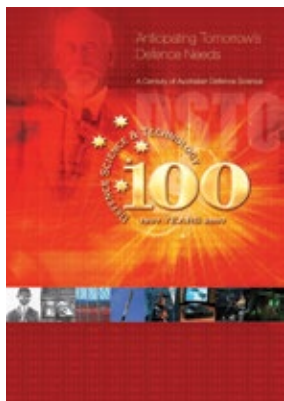


Introduction and context



Part I

Introduction



Defence science work has been conducted in Australia since 1907 and today DST Group 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.

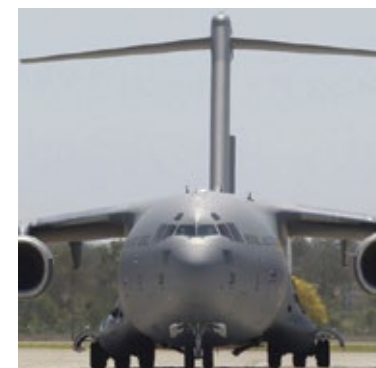
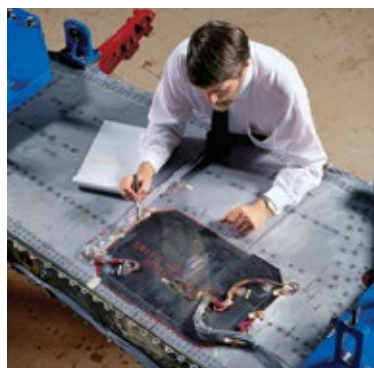
For organisations, as much as for individuals, track record is a strong indicator of future performance. DST Group has shown resilience and innovation over the past hundred years as we have continued to build on our legacy of achievements. Over this time, we have continued to step up the drive to find 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 DST Group 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, 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 scramjet 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

Defence Science and Technology – more than a century of achievement



Our strategic context

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

The Defence White Paper 2016 identified key drivers that will shape Australia's security outlook including: the relationship between the United States and China, which is likely to be characterised by a mixture of cooperation and competition; challenges to the stability of the rules-based global order; the growing threat from terrorism and foreign fighters to Australia's security; state fragility, including in our immediate region; increasing pace of military modernisation in our region; and increasing threats to cyberspace and space.

The National Innovation and Science Agenda released in December 2015 sets out the importance of innovation to the broader national economy. The Defence White Paper 2016 recognises that science, technology and importantly innovation, are inextricably linked to future Defence capability. The accompanying Defence Industry Policy Statement 2016 outlines four new innovation focused initiatives that aim to better position Defence to respond to strategic challenges. DST Group is charged with leading the initiative to conduct and integrate research in next generation technologies. The Next Generation Technologies Fund will invest around \$730 million over the decade to 2025–26 to position Defence to respond to strategic challenges by delivering game-changing technologies using partnerships with academia, publicly-funded research agencies, industry (including small to medium sized enterprises),

and with international allies to create a national research and innovation capability focused on Defence outcomes.

Implementation of the recommendations from the First Principles Review *Creating One Defence* will drive a more strategically directed and coherent organisation. It will impact how DST Group operates, including an increased emphasis on better harnessing innovation and emerging technology through the Next Generation Technologies Fund to developing future military capabilities. The broader Departmental changes will be reflected in enterprise documents such as the Defence Corporate Plan and Defence Business Plan. Defence is continuing its business and cultural reform programs (through the Pathway to Change program) and the associated drive for enhanced governance, accountability and diversity. DST Group will continue

to align with Defence's priorities as outlined in these planning documents.

Overall, the Defence Science and Technology Strategic Plan 2013–18 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 industry, academia and our international allies. This will ensure that Defence continues to have timely access to the right scientific advice and associated technologies and innovation 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

DST Group staff
surveys

Staff workshops

Top strategic issues that DST Group must address:

1. major **defence and national security needs** including cost drivers
2. key **Asia-Pacific** and **global trends**
3. the **challenges** that DST Group 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**

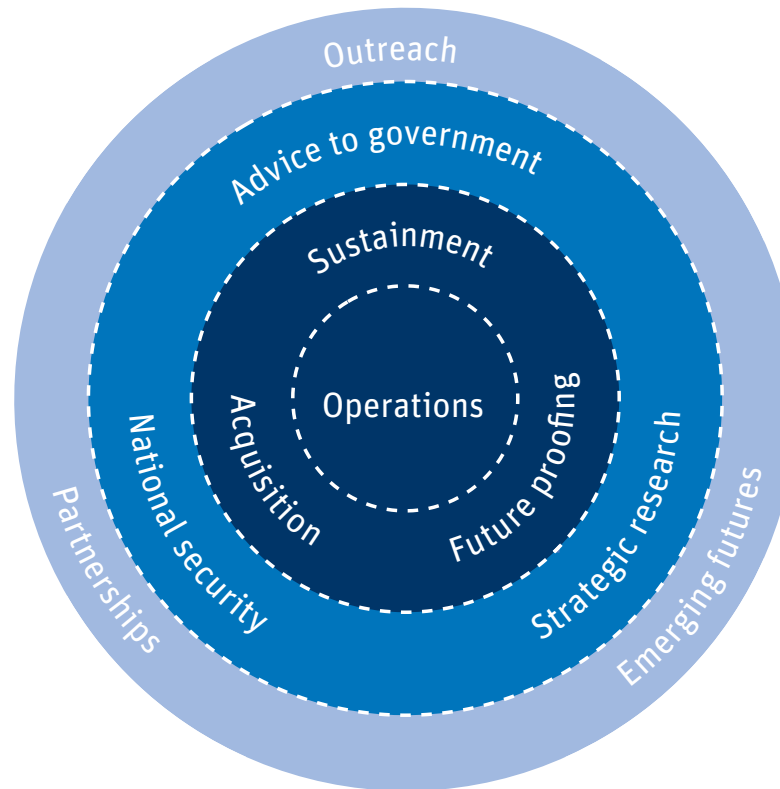
Our purpose and roles

Defence Science and Technology Group 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 highest 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-focused future concepts, contexts and capability.	Grow the program of client-focused 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.

Vital to our success in providing a capability edge to Defence are technical services; science and technology training and sustainment; and research services.

Defence science and technology roles



TECHNICAL SERVICES	SCIENCE AND TECHNOLOGY TRAINING AND SUSTAINMENT	RESEARCH SERVICES
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A new approach to innovation in Defence

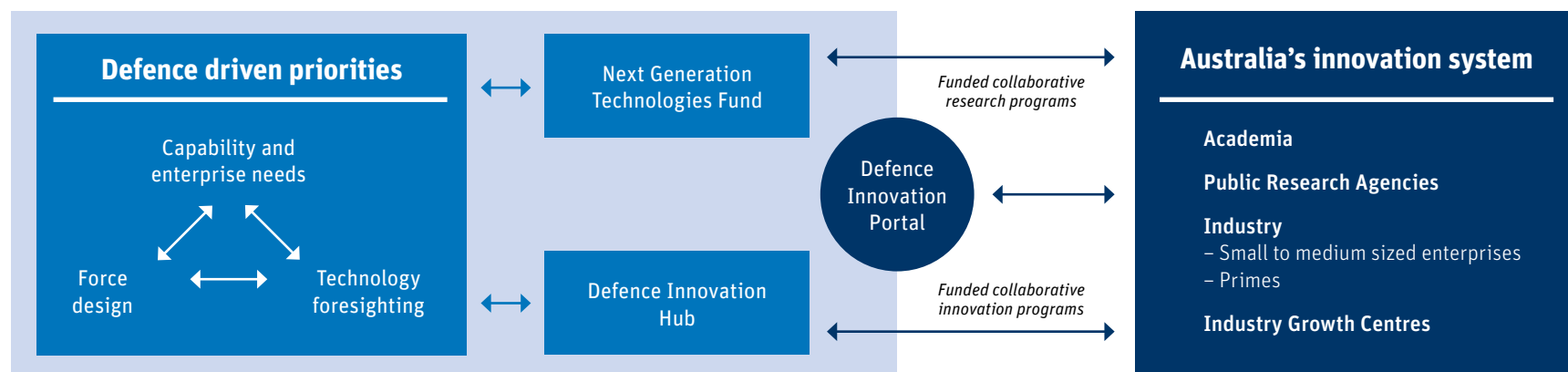
Australia is facing greater security uncertainty. The future operating environment for the Australian Defence Force will be technology driven and complex. Ongoing change will challenge our ability to maintain a capability edge. The Defence Industry Policy Statement 2016 sets out a new approach to innovation in Defence that complements the Government's National Science and Innovation Agenda. This new approach recognises that science and technology will be key to delivering the innovations that advance and maintain the Defence capability edge.

The new approach to innovation will deliver more agile opportunities for Defence, industry and academia to work together and will change culture and processes to remove barriers to innovation.

The new approach centres on the Government's \$1.3 billion investment in the Next Generation Technologies Fund and the Defence Innovation Hub. These initiatives, driven by Defence priorities, will move the exploration and development of new technologies through to capability.

The operating model for the Next Generation Technologies Fund will strengthen and expand our external partnerships, and integrate with the Defence Innovation Hub. Both will use the Defence Innovation Portal to facilitate communication and engagement with Australia's innovation system. In our role as the innovation integrator, we – together with our partners – will help transition innovative ideas into operational capability to maintain Defence's winning edge and contribute to growing Australia's industrial base.

Australian Defence Organisation



Our approach to innovation

Driving a greater emphasis on innovation to deliver a capability edge to Defence requires new approaches to the way we work with Defence and to the way we partner with academia and industry. The approach is based on developing our internal capacity to deliver innovation more **efficiently** and **effectively**, strengthening our role as the **innovation integrator** for Defence, building on our capacity to partner with the national science and technology community (academia, industry and other research agencies) and to shape these partnerships to create and deliver technologies that advance the capability edge of Defence.

Our innovation activities are focused on the following key areas:

Enabling our people and Building partnerships that deliver

To work in a modern scientific organisation requires us to change the way we work and enhance our ability to deliver outcomes. We will develop the leadership traits of our people to ensure that we become an agile and adaptive organisation. We will remove barriers to build partnerships that span the Defence science and technology enterprise and are focused on delivery. We will implement a program to increase the diversity of ideas considered as solutions to Defence's future challenges.

Delivering Defence and national outcomes

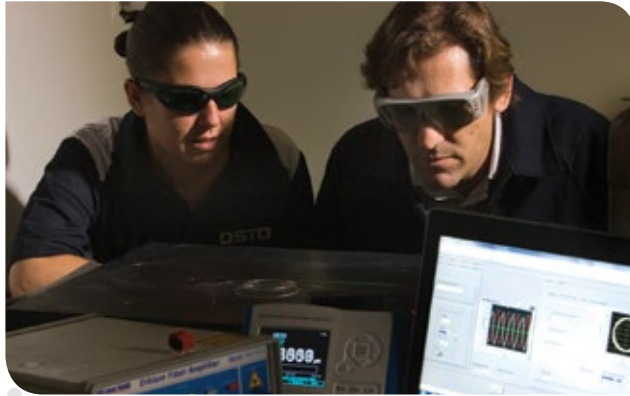
We will use our understanding of the future threat, capability gaps, force design and our horizon scanning of technology to drive the priorities for Defence innovation. We will harness the Next Generation Technologies Fund to address these priorities for the delivery of significant outcomes to Defence. We will leverage our position as a member of Australia's innovation system to engage a more

diverse set of capabilities to solve Defence's challenges. We will strengthen our networks and contribute to the national innovation agenda to better leverage the knowledge, skills and infrastructure available.

The 2016 update to the Strategic Plan has embedded innovation activities into the strategic initiatives that underpin our Strategy. We will monitor progress through quarterly and annual reviews.

Embedding innovation across our strategic initiatives

	D1	D2	S1	S2	T1	T2	O1	O2	O3	O4
Enabling our people	✓	✓			✓		✓	✓	✓	✓
Building partnerships that deliver		✓		✓	✓	✓	✓		✓	
Delivering Defence outcomes	✓	✓	✓	✓		✓				
Delivering national outcomes			✓	✓		✓		✓		



Defence science and technology strategy



Part II

Our strategy

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.

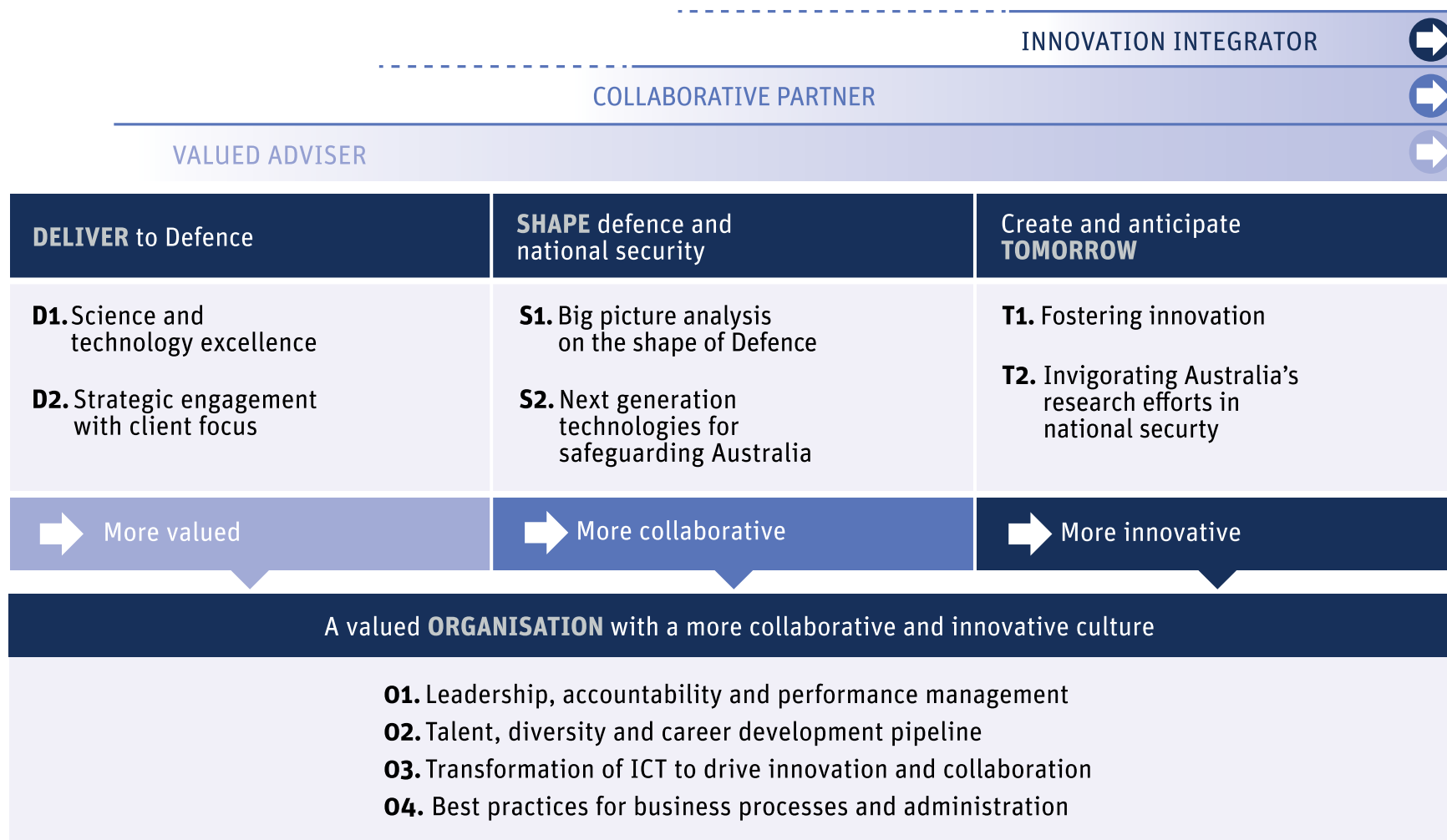
We will continue to support and develop our talented people. We will also seek to be a more efficient and effective organisation. The strategy aims to support the future capability edge for Defence and national security while maintaining our support of the current Defence force as our highest priority.

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

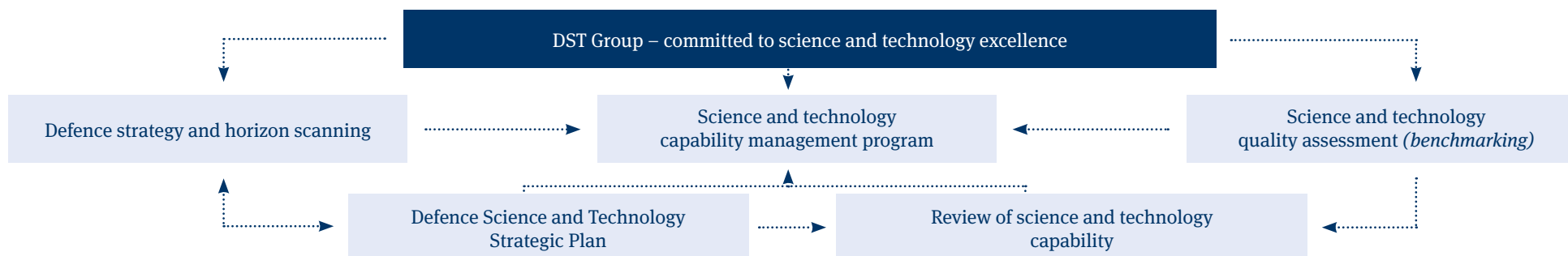
- **Delivering to Defence:** We will grow science and technology excellence by focusing on relevant and distinctive science and technology capabilities as described in Part III of this plan. We will have a more collaborative and focused approach to our client engagement. These initiatives will improve 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 challenges of the future to create new Defence capability using game-changing technologies. 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 DST Group 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 for Defence to maintain its capability edge.

Our strategic initiatives



Initiative D1 – Science and technology excellence



The initiative	Key actions
<p>We will have a clear understanding of science and technology excellence in our organisation. We will improve this by investing 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, Defence guidance (see D2), big picture analysis (see S1), and the investment in game-changing technologies (see S2) will guide our science and technology capability investment priorities.</p>	<p><i>Invest in science and technology excellence</i></p> <ul style="list-style-type: none"> • Develop a science and technology capability management plan for managing investment in specific capabilities, balancing investment in a skilled and agile 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 Defence science and technology budget allocated to capital equipment and suppliers in order to sustain future research capability. • Rebalance our portfolio investment in strategic research as we develop our plans for the Next Generation Technologies Fund, by end of 2016–17. • Improve understanding of academic and industry partner capabilities, and those of our international partners, to supplement Defence science and technology base by end of 2014–15. • Update our Strategic Research Investment program and Science and Technology Capability Planning to reflect outcomes of the First Principles Review and Defence White Paper 2016 in 2016–17. <p><i>Science and technology benchmarking program</i></p> <ul style="list-style-type: none"> • Implement an annual rolling benchmarking program to review and validate the excellence and quality of Defence science and technology capabilities, including developing metrics, to start in 2014–15.
Success measures	
<ul style="list-style-type: none"> • 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 Defence science and technology capabilities via annual benchmarking, external peer review, client feedback and assessments. • Access to state-of-the-art equipment and facilities in DST Group. 	

Initiative D2 – Strategic engagement with client focus

Strategic
portfolio
management

Balanced portfolio of science and technology programs

Domain
program
management

Maritime

Land

Air

Joint

Intelligence

National security

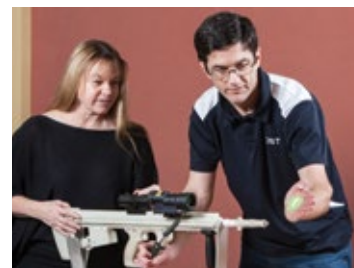
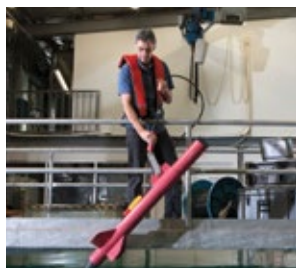
The initiative	Key actions
<p>We will, through better client engagement, improve our contribution to Defence outcomes by taking into account client priorities at a strategic level. The science and technology program will be partner-focused, and managed by domain at the Defence enterprise and client levels. We will implement an effective process to elicit and use client feedback to guide the continuous improvement of our support.</p>	<p>Strategic prioritisation of Defence science and technology requirements</p> <ul style="list-style-type: none"> • 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 Defence priorities beginning 2013–14. • Rationalise client requirements and group into higher level themes, consistent with strategic guidance, beginning in 2013–14. • Apply Defence science and technology priorities to inform Next Generation Technologies Fund investments, beginning in 2016–17. <p>Improving the management of the Defence Science and Technology client program</p> <ul style="list-style-type: none"> • 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 Groups and Services in accordance with Defence strategic guidance beginning in 2014–15. • Review and improve the program planning and reporting frameworks, and the underpinning policy; and implement an improved client feedback loop on the quality and timeliness of DST Group support by end of 2016–2017. • Apply best practice science and technology program management, including for the Next Generation Technologies Fund, beginning in 2016–17
Success measures	
<ul style="list-style-type: none"> • Science and technology program aligned with Defence strategic guidance. • An efficient science program management system that captures the strategic relevance and impact of the Defence science and technology program, including support to innovation in Defence, and its national and international activities and partnerships. • Measurable quality and timeliness of the program outputs and increased satisfaction by Defence Groups and Services. 	

Initiative S1 – Big picture analysis on the shape of Defence



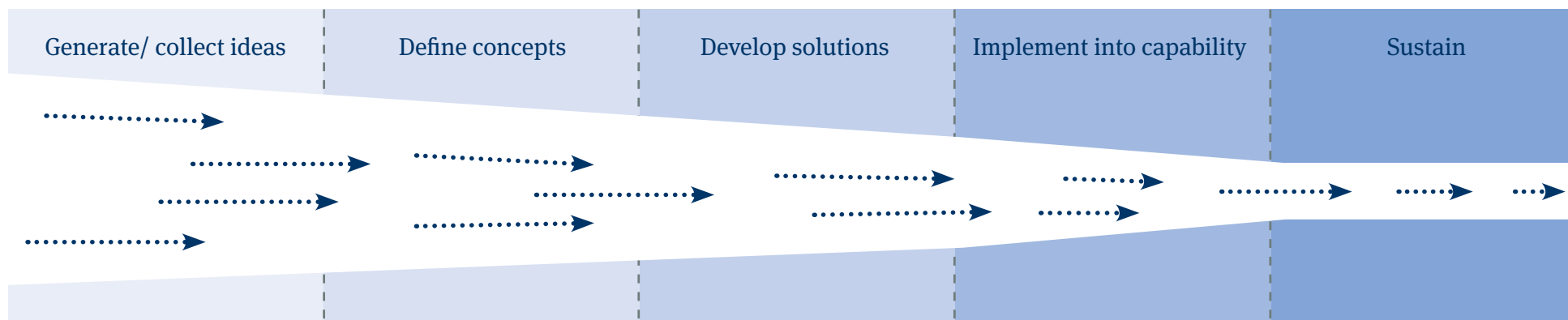
The initiative	Key actions
<p>We will enhance our provision of analysis and advice to shape future Defence capability, strategy and structure. This will be supported by broader strategic analysis of future opportunities, threats and risks to ensure that Australia can maintain its competitive position in defence and national security.</p>	<p><i>Shape future whole-of-Defence strategy and capability</i></p> <ul style="list-style-type: none"> • Engage across Defence on strategic issues to shape future Defence strategy and policy, and major programs of national significance. • Engage across Defence to contribute and shape the capability life-cycle, force design and contestability functions as per the Strong Strategic Centre model from the First Principles Review by end 2016–17. • Develop an organisational capability for longer-term horizon scanning for emerging technologies to support future Defence capability, including acquisitions, and for guiding investment decisions in Defence science and technology capability and innovation programs by end 2016–17. • Deliver a program of regular briefings to senior Defence leaders on the strategic implications of emerging and disruptive technologies by end 2016–17.
Success measures	
<ul style="list-style-type: none"> • Credible and robust program for forecasting and analysing future challenges and opportunities for Defence. • Impact on Defence 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 – Next generation technologies for safeguarding Australia



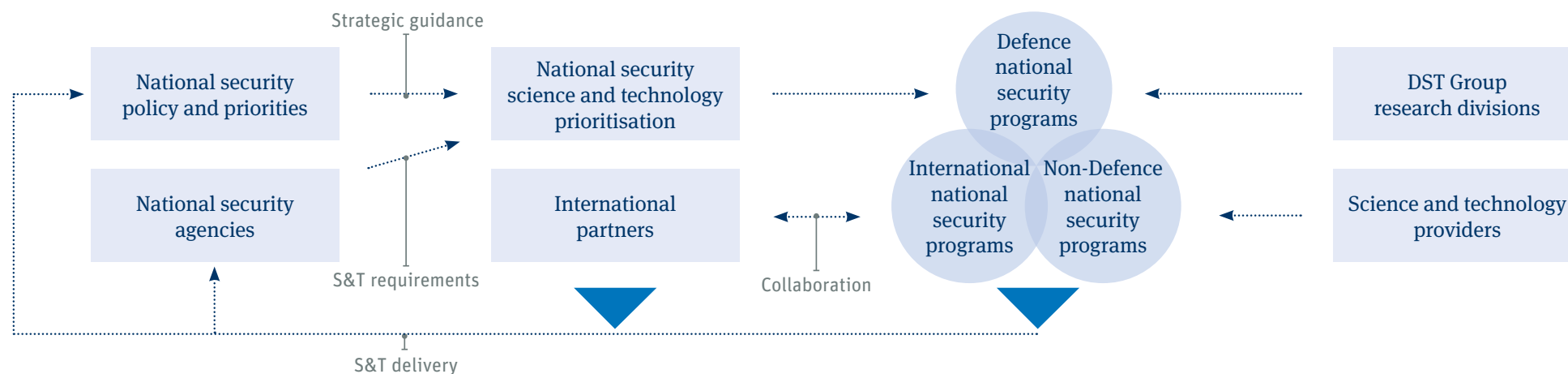
The initiative	Key actions
<p>We will establish a portfolio of programs that are high-impact, complex and challenging, and involve working collaboratively with external partners. The portfolio will balance investment across a broad spread of risk and reward, and a spread of large and smaller, more agile programs. We will seek to create a vibrant, integrated and productive national research and innovation capability focused on driving Defence outcomes.</p>	<p><i>Establish a governance framework and operating model to guide investment of the Next Generation Technologies Fund from 2017–18 which:</i></p> <ul style="list-style-type: none"> • is integrated with the Defence Innovation Hub; • identifies a unique set of science and technology challenges based on future threats, Defence capability gaps, force design and game-changing technologies; • establishes mechanisms to solicit ideas and implement supporting partnering arrangements to realise those ideas; • creates an effective environment to develop innovative concepts into commercially viable solutions for Defence; and • measures outcomes and evaluates the success of the Next Generation Technologies Fund. <p><i>Establish a suite of execution mechanisms for the Next Generation Technologies Fund including:</i></p> <ul style="list-style-type: none"> • a Grand Challenges program to begin in 2017–18; • Defence Cooperative Research Centres to begin in 2017–18; and • Defence innovation accelerator program by end of 2016–17. <p><i>Design an investment strategy to integrate the DST Strategic Research Investment program and the Next Generation Technologies Fund</i></p> <ul style="list-style-type: none"> • Implement initial strategy in 2017. <p><i>Review the portfolio of investment across the Next Generation Technologies Fund twice a year with the Defence Investment Committee</i></p>
Success measures	
<ul style="list-style-type: none"> • Australia's innovation system is more engaged with 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. • Effective governance structures and arrangements. • Positive external reviews and benchmarking of implemented programs. 	

Initiative T1 – Fostering innovation



The initiative	Key actions
<p>We will enhance our organisational ability to deliver innovative solutions for Defence and national security. We will improve our culture and take the actions to become a modern forward-leaning organisation. We will do this by changing the way we work, developing innovative leadership traits in our people, and adopting more open approaches to engaging externally. We will measure our innovation success by benchmarking ourselves against world-leading organisations.</p>	<p>Working in an innovative organisation</p> <ul style="list-style-type: none"> • Implement a change in our workplace that encourages diversity in thinking and innovation in the solutions developed for Defence by end of 2017–18. • Continue to build a culture of innovation through a strong focus on leadership, including activities such as “Innovation Days”. • Implement a continuous improvement program by benchmarking against relevant international best practice by end of 2016–17. <p>Building partnerships that deliver</p> <ul style="list-style-type: none"> • Implement open approaches to build partnerships for delivery across the Defence science and technology enterprise by end 2017–18. • Implement an incubation/acceleration program to foster and mature new ideas by end 2016–17. <p>Leveraging the Australian innovation system</p> <ul style="list-style-type: none"> • Leverage our position in Australia’s Innovation System and as Defence’s science and technology leader to attract a more diverse set of capabilities that engage in solving Defence’s technology challenges. We will do this by strengthening our external networks and by better exploitation and integration of existing knowledge, skills and infrastructure by end of 2017–18.
Success measures	
<ul style="list-style-type: none"> • Innovative solutions for Defence are created efficiently and effectively. • Recognition of DST Group 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 DST Group that contributes to the broader Australian innovation system. 	

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

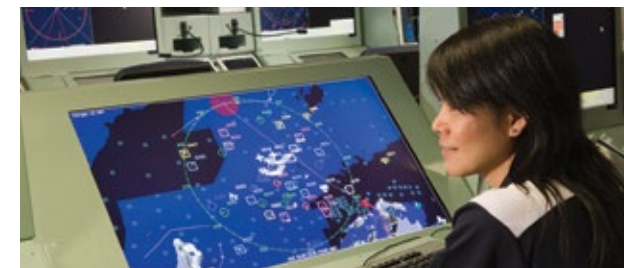


The initiative	Key actions
<p>We are the lead agency for national security science and technology. We will enhance the coordination and delivery of science and technology to non-Defence national security agencies, which is a new whole-of-government role for DST Group. We will work with stakeholders to develop a compelling business case to address national security science and technology challenges.</p>	<ul style="list-style-type: none"> • Establish an initial national security science and technology delivery framework by end of 2014–15, and transition the framework to business as usual by end of 2015–16. • Develop a national security science and technology policy statement and priorities, and seek endorsement by Government by end of 2015–16. • Enhance our engagement and influence through national and international collaboration and fostering ‘communities of trust’ by end 2015–16. • Develop a transparent national security science and technology funding model by end 2015–16 and establish an ongoing funding stream by end of 2017–18. • Leverage opportunities from the Next Generation Technologies Fund to address priority national security challenges.
Success measures	
<ul style="list-style-type: none"> • Respect and recognition for DST Group 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 DST Group and Australia as a valued collaboration partner in national security science and technology. 	

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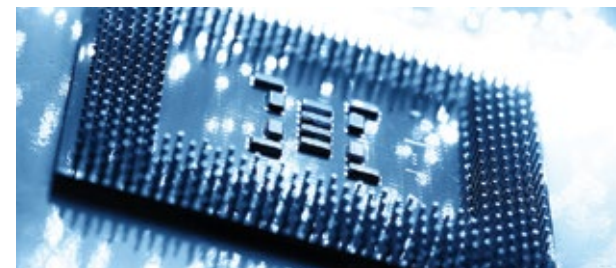
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Initiative 02 – Talent, diversity and career development pipeline



The initiative	Key actions
<p>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.</p>	<p>Career paths for our people</p> <ul style="list-style-type: none"> • Develop a flexible career pathways framework, including improving talent management, by end of 2014–15. • Complete rollout of DST Group Career Planner by end of 2015–16. • Introduce innovation training, higher education opportunities and mentoring into the existing Leadership and Development Framework by 2017–18 • Develop a recognition framework for our people that embraces innovation by 2017–18. <p>An agile and diverse workforce</p> <ul style="list-style-type: none"> • 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 DST Group, the Australian Public Service and the Australian innovation system, by end of 2014–15. • Develop an Indigenous engagement strategy for DST Group by end of 2014–15 and implement by end of 2018. <p>Priming the career development pipeline</p> <ul style="list-style-type: none"> • Involve our people in the promotion of 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 mathematics disciplines through greater staff outreach and collaboration with others in the Australian innovation system to grow the talent pipeline and improve gender balance and diversity, by end of 2014–15.
Success measures	
<ul style="list-style-type: none"> • Increased numbers of staff with industry and academia work experience. • Improved gender and cultural diversity. • Increased level of qualifications and skills across DST Group. • Improved mobility for our people across the Group, the Department, the Australian Public Service and the Australian innovation system. 	

Initiative 03 – Transformation of research ICT to drive innovation and collaboration



The initiative	Key actions
<p>We will transform our research ICT systems and implement modern and innovative technologies that enable improved productivity and promote collaboration and knowledge sharing. Non-research functions will be transitioned for delivery under Defence ICT shared services arrangements. Separate research networks will be developed and maintained.</p> <p>We will improve our knowledge management culture and develop tools that allow our people to share their knowledge as an enabler for innovation.</p>	<p>ICT transformation</p> <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> – improved governance, architecture and management of DST Group information environment by 2013–14; – improved videoconferencing across all sites in DST Group 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 2016–17; – improved corporate and science and technology collaboration tools, including social networking and connectivity with external partners, by end of 2016–17; – in cooperation with the Chief Information Officer Group, development of a transition plan for non-research functions by the end of 2015–16; and – initial provision of enterprise solutions for computer and storage services by end of 2016–17. • Develop secure supercomputing capabilities with initial capability delivered by beginning of 2017–18. <p>Invest in knowledge management and sharing</p> <ul style="list-style-type: none"> • Develop a knowledge management strategy to enable innovation through shared information resources, to be endorsed by end of 2014–15, to include: <ul style="list-style-type: none"> – provision of an enterprise managed data repository for scientific data by end of 2016–17; and – improved knowledge sharing tools to be implemented by end of 2015–16.
Success measures	
<ul style="list-style-type: none"> • Improved business efficiency and knowledge management. • Research ICT and the knowledge management systems valued and appreciated by staff, as reflected through the results of the DST Group Insights Survey. • Through benchmarking, DST Group recognised for having world-class research ICT systems that enable business efficiencies, science and technology advances and innovation acceptance. • An up-to-date research ICT infrastructure. 	

Initiative 04 – Best practices for business processes and administration



The initiative	Key actions
<p>We will streamline our policies, processes and procedures to reduce administrative overhead.</p> <p>We will seek to implement best practices in all parts of our business, including clarity of guidance provided.</p> <p>We will continue to operate within Defence and Australian Public Service policies and regulations.</p>	<p><i>Recasting DST Group policies, processes and reports</i></p> <ul style="list-style-type: none"> • Clarify, streamline and/or eliminate unnecessary corporate policies, processes and reports. • Conduct a full review (including Divisional policies, processes and reports) by end of 2014–15, then put in place a biennial review process. • As an output from the review, implement a central register of DST Group 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. • Contribute our experience to the Defence Reducing Red Tape review, and collaborate with the review and other Defence-wide strategic initiatives in order to develop and implement policies and processes. • Identify barriers to innovation and use ICT tools to reduce/eliminate unnecessary processes. <p><i>Streamlined corporate services and business models</i></p> <ul style="list-style-type: none"> • Implement a simplified set of business models (see Annex) for the Defence Science and Technology program by end of 2014–15. • Implement a common delivery mechanism for all DST Group corporate services, such as Scientific Engineering Services by end of 2014–15.
Success measures	
<ul style="list-style-type: none"> • Streamlined organisational structure and research program business models. • Single model for all DST Group corporate services. • DST Group 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. • Our people are clear about what policies and processes to follow and are aware of mandatory policy and reporting requirements. 	



Directions in Defence science and technology capability



Part III

Setting our priorities and directions

Our assessment

The First Principles Review of Defence identified science and technology as a Defence capability and the Defence White Paper 2016 described science, technology and innovation as fundamental to maintaining the ADF's capability edge. Therefore the drivers for setting Defence science and technology priorities and directions are:

- **Strategic research** that creates capability advantage;
- Research that addresses the **domain** priorities of Defence; and
- **Supporting** and evolving science and technology capability.

Strategic research can provide game-changing capability for Defence, preventing and creating strategic surprise, or where technology is likely to drive transformational change. The priority research themes for the Next Generation Technologies Fund listed in the Defence White Paper are: integrated intelligence, surveillance and reconnaissance; space capabilities; enhanced human performance; medical countermeasure products; multidisciplinary material sciences; quantum technologies; trusted autonomous systems; cyber and electronic warfare; and advanced sensors, hypersonics, and directed energy capabilities.

Domains are: Maritime, Land, Air, Joint, Intelligence and National Security. Through consultation with stakeholders, science and technology strategies will be prepared that outline the Defence capability needs and the required science and technology support. The Maritime Science and Technology Strategy is already in place and is being used actively.

The creation and application of scientific and technological knowledge is the role of our Major Science and Technology Capabilities (MSTC). Each MSTC comprises people, infrastructure, know-how and external partnerships. Building world class science and technology capabilities, based on professional expertise and suitable research facilities takes considerable time and resources. **Supporting** existing capabilities and creating new capabilities requires strategic planning informed by Defence capability needs and technology foresighting.

Balancing our science and technology portfolio

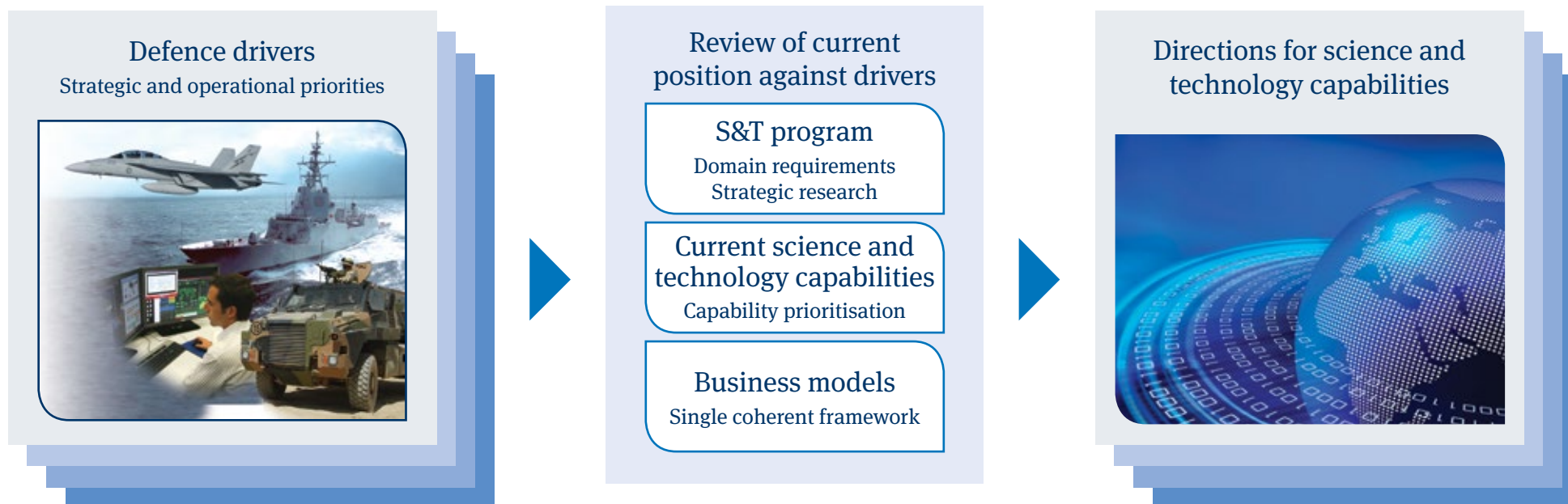
Defence needs to balance investments across strategic research, domain priorities, and supporting science and technology capability.

The importance of partnerships

Assessments were also made regarding whether a capability is best delivered internally or through partnering. In-house DST Group capabilities will be those where DST Group can contribute value through its expertise and facilities, unique domain knowledge, 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. As DST Group's MSTC structure identifies the primary capability areas for Defence, capability based external partnering is best administered through the relevant MSTCs. The majority of DST Group's science and technology capabilities are amenable to supplementation by external partners, to an extent dictated by issues of security classification, probity and budget.

Additional resources have been provided through the Next Generation Technologies Fund to build partnerships with universities, public research agencies, small and medium sized enterprises and large prime contractors.



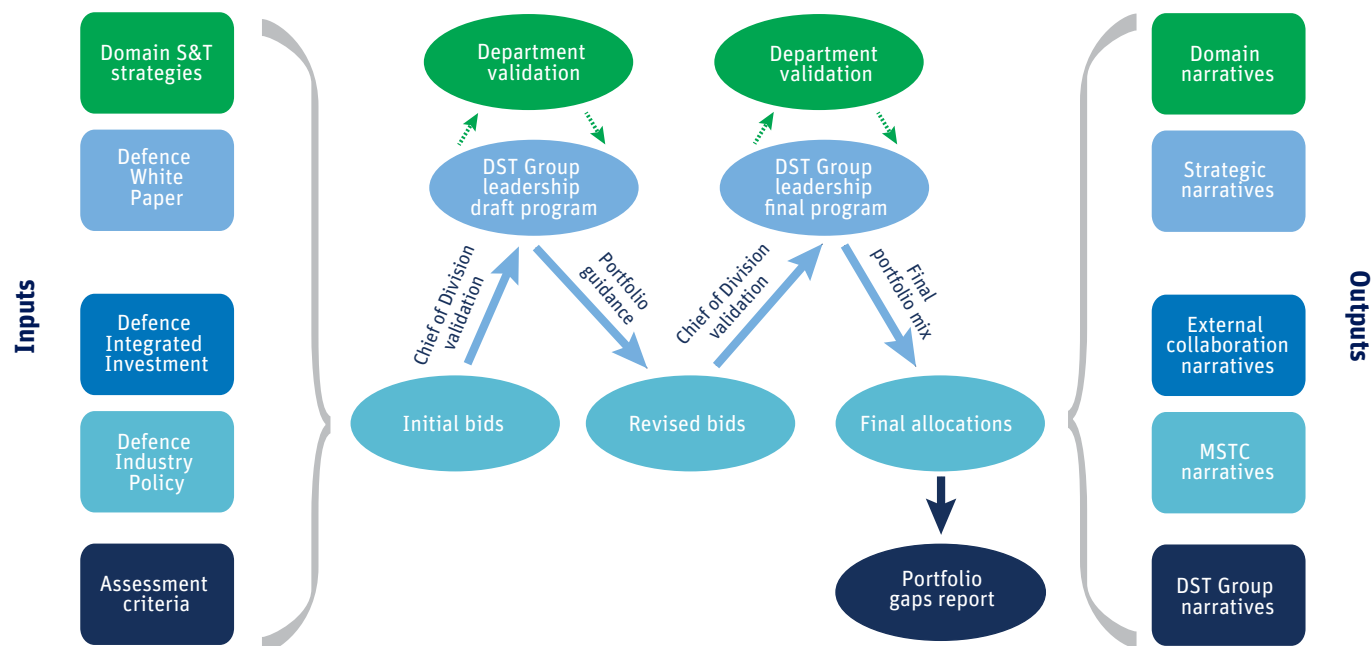
Characteristics of DST Group capabilities			
	Capabilities that <i>are</i> :		Capabilities that <i>are not</i> :
✓	Distinctive	✗	Generic
✓	Sustainable	✗	Easily imitated
✓	Able to create impact	✗	Commodities
✓	Demonstrable	✗	Limited in usefulness
✓	Able to be leveraged	✗	Vague

Shaping investment in Defence science and technology

The First Principles Review of Defence has introduced a new strategic approach to setting future capability requirements, development, acquisition and sustainment. A methodology has been developed to shape investment in Defence science and technology research, and to seek direction from, and provide advice to, the Defence Investment Committee and Defence Enterprise Business Committee.

The methodology will align science and technology research with Defence priorities through transparent and accountable decision-making.

The new methodology is being applied to staff recruitment, the Strategic Research Investment program, and Major Science and Technology Capabilities. The methodology will also be used to prioritise investments for the Next Generation Technologies Fund.



Selecting Defence's strategic research priorities

The Defence White Paper 2016 and the accompanying Defence Industry Policy Statement sets a policy direction to harness Australian industry and national research and innovation capability to deliver greater contributions to Defence capability.

New initiatives include the establishment of a Defence Innovation Hub to streamline Defence's industry innovation programs – including transitioning innovations that emerge from Defence's own science and technology programs, and a Next Generation Technologies Fund to support a program of Defence strategic research on game-changing technologies in partnership with academia, industry and publicly-funded research agencies. DST Group will manage this strategic research program. The new approach to innovation in Defence is described in detail on page 22.

Priorities for strategic research will be set by DST Group to align with the Next Generation Technologies Fund and will be agreed by the Defence Investment Committee. In the future, the Defence science and technology investment methodology will enable Defence, in partnership with academia, industry and allied partners, to review and

select research priorities that will deliver future Defence capability. The existing Defence Strategic Research Investment (SRI) program covers: intelligence, surveillance and reconnaissance; space systems; bioterrorism preparedness; signatures, materials and energy; trusted autonomous systems; cyber operations and future electronic warfare; hypersonics; and future undersea warfare. These will be transitioned to align with the Next Generation Technologies Fund priority areas.

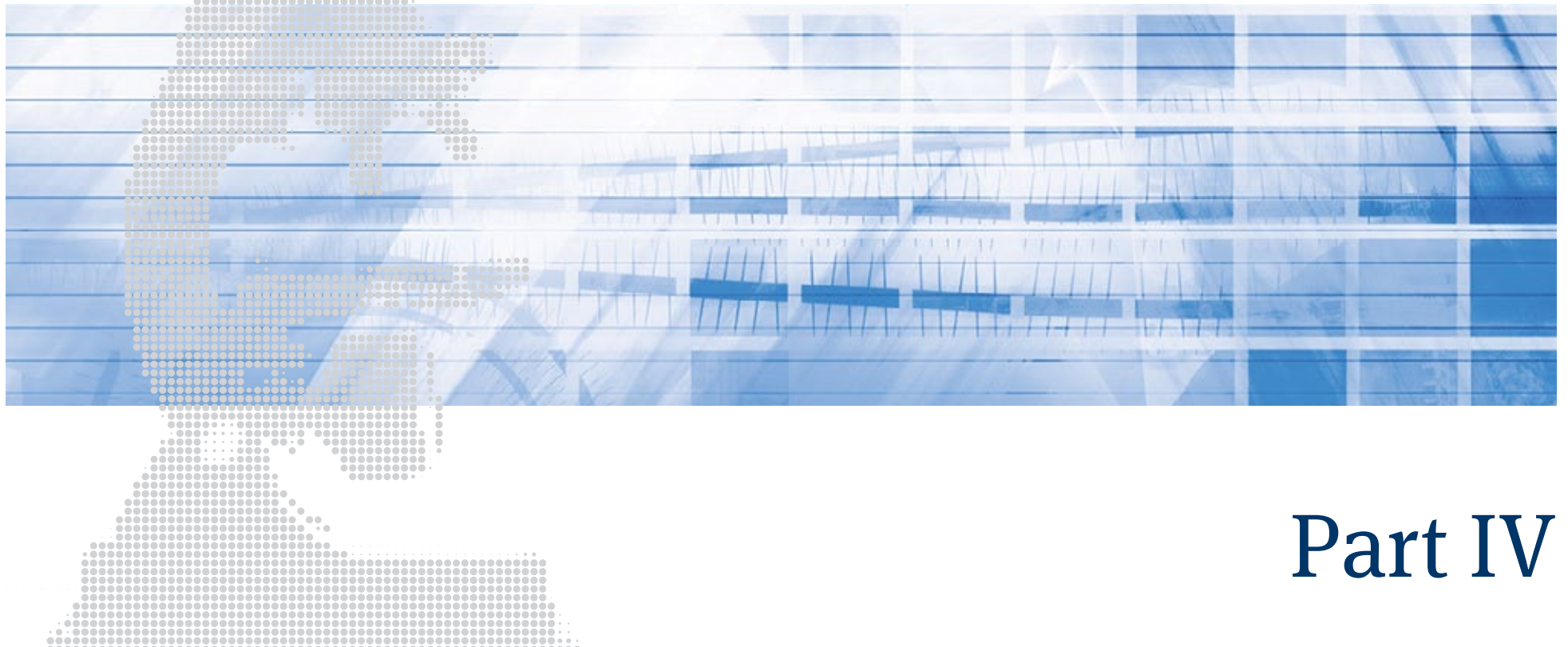
A relevant SRI program will continue to explore promising future areas for investment by the Next Generation Technologies Fund.

Defence Industry Policy Statement priority areas for Next Generation Technologies Fund

Integrated intelligence, surveillance and reconnaissance
Space capabilities
Enhanced human performance
Medical countermeasure products
Multidisciplinary material sciences
Quantum technologies
Trusted autonomous systems
Cyber and electronic warfare
Advanced sensors, hypersonics, and directed energy capabilities



Implementation



Part IV

Implementation of our strategy

DST Group 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.

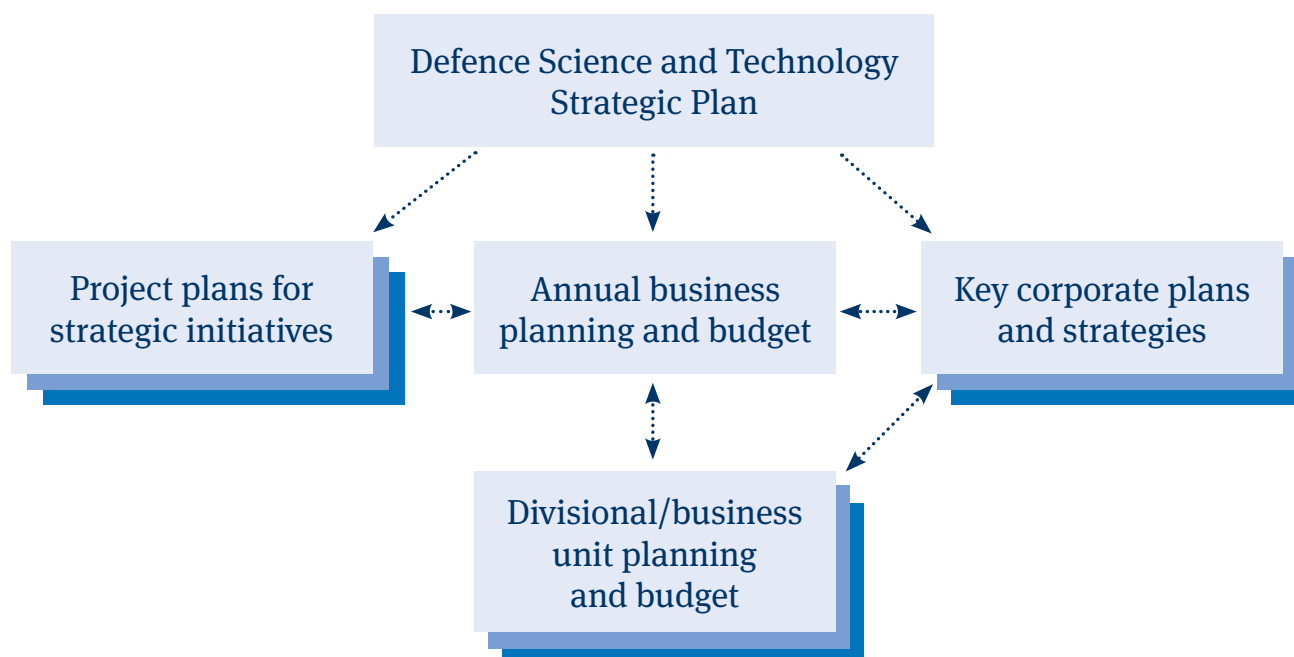
Our strategic plan is ambitious and cannot be implemented in a single step. Accordingly, the implementation is phased over five years, with

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 DST Group senior management to assess DST Group performance and progress against key actions. We will review our strategic actions and business plans annually.



Intensity of our activity

Defence science and technology 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 the shape of Defence					
	S2.	Next generation technologies 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	01.	Leadership, accountability and performance management					
	02.	Talent, diversity and career development pipeline					
	03.	Transformation of research ICT to drive innovation and collaboration					
	04.	Best practices for business processes and administration					

KEY	Significant effort	
	Medium effort	
	Minor effort/business as usual	

Pathway to success – strategy, structure and people

DST Group has shaped its organisational structure to align with and support the delivery of the Defence Science and Technology Strategic Plan. This was undertaken in several steps, starting with a new domain-facing structure for research divisions and establishment of Science Strategy and Program Division, Partnerships and Engagement Division, and Research Services Division.

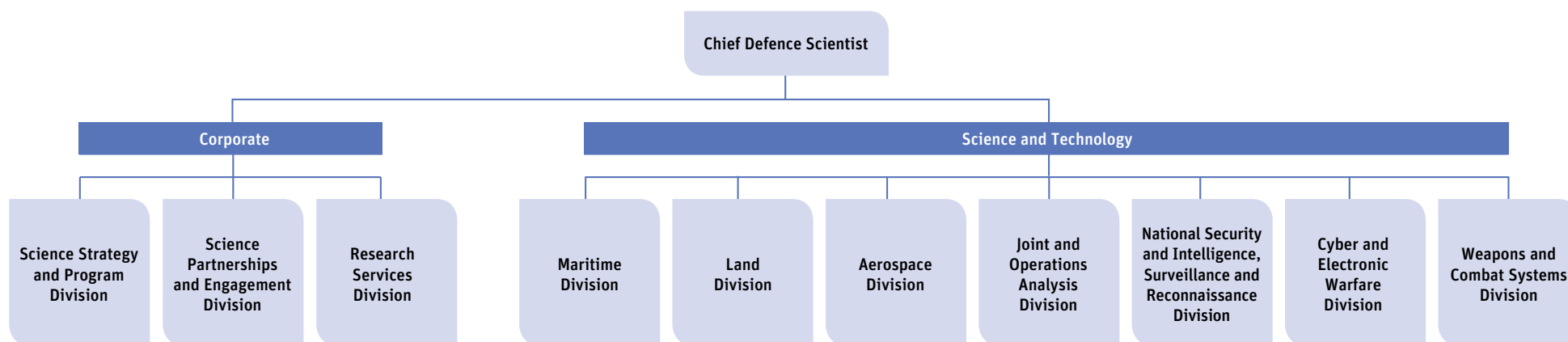
Subsequently, we implemented a single consistent way of organising and managing our skills and expertise using our Major Science and Technology Capabilities (MSTC) as the fundamental unit of organisation.

This will allow us to determine the right size and shape of MSTCs for delivering science and technology excellence and a high impact S&T program now and into the future. We then ensured the right people were assigned the right leadership positions within this structure.

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 other Divisions 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 DST Group is more Defence-focused, best organised to achieve science and technology excellence, more efficient and effective, and able 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.

Responsible for corporate duties in order to shape strategic direction and enhance engagement with Defence and external partners.	Science Strategy and Program Division Develops science policy, formulates Defence S&T and strategic research programs, and oversees resource investment into S&T capabilities.		Science Partnerships and Engagement Division Coordinates and develops interactions with industry, academia, overseas agencies and other Australian government agencies. Promotes defence science in the education and wider Australian communities.		Research Services Division 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 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.	Maritime Platform Performance 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 and Systems Conducts research in vehicle systems management, armour and protection, logistics and integrated support systems.		Chemical and 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 DST Group 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 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 radio frequency 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 Defence Science and Technology Strategic Plan 2013–18 recognises budgetary discipline in a tight fiscal environment, while striving to maintain and continue to build our excellence in science and technology.

Our financial goal is to adjust our budget to reflect best practice proportions 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.

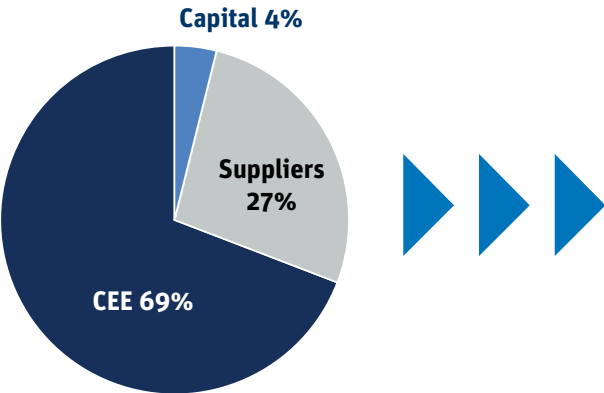
Based on global benchmarks for science investment categories, over the five-year period of the strategic plan, DST Group will strive to progressively move annual expenditure on suppliers to 33 per cent and capital to approximately eight per cent. This investment is over and above project-specific funding.

These changes will reflect the rebalancing and reprioritising of DST Group capabilities to those areas

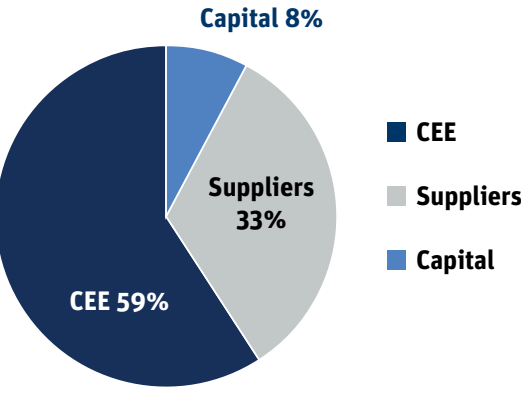
where deep expertise is most needed to achieve a capability edge for Australia’s defence and national security. Savings and efficiencies will be made from streamlining the organisational structure and business practices, prioritising capability, along with a greater contribution to service delivery reforms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

The plan will be reviewed annually against funding guidance to ensure DST Group 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

Indicative expenses (\$million)

2015–16	2016–17	2017–18
464	469	489

Detail on Defence science and technology roles and business models



Annex



Our value proposition: Summary of case studies

ACIL Allen Consulting undertook case studies¹ of 10 DST Group projects from 2003 to 2015 to assess the economic benefits to Australia in terms of cost savings, capability enhancements and export sales. As shown in the table, they conservatively estimated the tangible economic benefits of our research and support associated with these ten case studies as being about \$5.1 billion (2015 \$).

Project number	Project name	Tangible benefit (\$m)
1	Collins Class Submarine Remediation	598
2	P-3 Orion Service Life Assessment Program	432
3	Joint Direct Attack Munition – Extended Range	853
4	Jindalee Operational Radar Network	1503
5	F/A-18 Structural Refurbishment	443
6	E-7A Wedgetail Radar	350
7	NULKA Anti-Ship Missile Decoy	452
8	Advanced Short Range Air to Air Missile	110
9	Wideband Global SATCOM System JP2008 Phase	350
10	Force Protection Electronic Countermeasures	51
Total		5,142

Source: ACIL Allen

The report states it is reasonable to conclude that the extension of the case study approach across all DST Group projects would yield four to five times this value, i.e. \$20 to \$25 billion.

¹ <http://www.dst.defence.gov.au/economic-impact-2015>

Operations

Supporting operational capability with science and technology expertise

Description of role

DST Group responds to operational requests for scientific advice and provides Fly Away Teams to address specific issues in theatre, both offensive and defensive. DST Group 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 DST Group. 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 DST Group?

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 DST Group can be leveraged to provide unique life-saving technologies and solutions.

What does DST Group need to do to be successful?

- Continuously seek innovative ways to improve DST Group 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, DST Group 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

DST Group 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 DST Group?

DST Group 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 DST Group need to do to be successful?

- Develop and manage science and technology capabilities effectively to exploit DST Group 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

DST Group enjoys a world-class reputation for extending the service life of Australia's military aircraft through our expertise in structural integrity and fatigue testing. DST Group 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

DST Group 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 for the acceptance of the capability delivered by the project.

How valuable is this role?

DST Group 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 DST Group advice has the greatest impact.

Why DST Group?

DST Group 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 DST Group 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

DST Group 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

DST Group 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?

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

Why DST Group?

DST Group 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 DST Group to deliver the best program outcomes to Defence.

What does DST Group need to do to be successful?

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

Exemplar: The Future Submarine Program

DST Group 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 DST Group 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

DST Group 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. DST Group places a high priority on fulfilling this valued adviser role.

Why DST Group?

DST Group 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 DST Group 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

- DST Group provided advice to the 2013 and 2016 Defence White Paper.
- DST Group provided operational analysis, software support and technical advice to the 2011–12 Force Structure Review, helping prioritise future Defence capabilities.
- DST Group 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

DST Group implements national security science and technology policy and provides cross-agency coordination in response to strategic guidance from government. This involves applying DST Group 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. The national security business model organises activities into six distinct thrusts, emphasises the role of the MSTCs in the coordination of the national security science and technology program, and clarifies the level of financial contribution expected from non-Defence national security agencies.

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 DST Group?

DST Group 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. DST Group has the mandate from the Australian Government to perform the coordination role.

What does DST Group need to do to be successful?

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

Exemplar: Countering terrorism

DST Group 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

DST Group 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 DST Group 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 DST Group?

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

What does DST Group 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

DST Group 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

DST Group conducts horizon scanning to gain knowledge and understanding of emerging science and technology areas across a broad spectrum over a 10–20 year horizon. DST Group 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 DST Group 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 DST Group?

DST Group, 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 DST Group 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, DST Group 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 DST Group in the area of high-power lasers. DST Group 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

DST Group accesses and leverages world-leading science, technology, knowledge and innovation, through collaboration with industry, academia and international agencies. DST Group 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 DST Group capabilities. Science and industry partnerships also provide pathways for DST Group innovations to be transferred to others for the development of future capability.

Why DST Group?

DST Group 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 DST Group need to do to be successful?

- Have early awareness for potential leverage from external developments and opportunities.
 - Active engagement by DST Group staff with the external environment.
 - Strategy for external engagements.
 - Best practice business development, commercialisation and IP capabilities.
-

Exemplar: DST Group participation in the Defence Materials Technology Centre

DST Group, 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

DST Group has a corporate responsibility to engage with the broader community in order to promote the benefits of defence science and technology. DST Group 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, DST Group 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 DST Group.

Why DST Group?

As a publicly-funded research agency, DST Group is well placed to play a limited but important role in promoting defence science in the broader Australian community. The broad capabilities of DST Group 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 DST Group need to do to be successful?

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

Exemplar: ABC program Catalyst and the Indigenous Youth Science Forum

DST Group 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. DST Group also sponsored the Indigenous Youth Science Forum in Western Australia, exposing students to a range of science and technology work environments including DST Group at HMAS Stirling.

Vital to our success

Technical services

Within DST Group, Scientific Engineering Services and Information Management and Technology provide specialised engineering and research networks to research divisions.

Science and technology training and sustainment

DST Group supports its 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 DST Group to deliver the outcomes of its programs.

Research services

DST Group 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; and
- science communications.

Our business models

There are multiple business models currently in use within DST Group.

The following boxes illustrate options for our business models.

Requirements and delivery model

Requirements definition options

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

Delivery options

- Divisional research and development programs
- Corporate programs
- Embedded DST Group 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
- Civilian employee expenses
- Fee (full commercial cost recovery)

Our roles and associated business models

DST Group role	Requirements definition	Requirements delivery	Funding source	Funding mechanism	Funding scope
Operations	Operations science and technology support request	Embedded DST Group 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	Agency requirements	National Security Science and Technology Centre	Coordination – portfolio Delivery – agency, partners, portfolio	Coordination – transfer Delivery – invoice for agencies, partners; transfer for portfolio	Suppliers, capital expenditure, overhead
Strategic research	DST Group internal	Divisional R&D programs	Portfolio	N/A (portfolio funds)	N/A (portfolio funds)
Emerging futures	DST Group 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, civilian employee expenses, fee
Outreach	DST Group 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 DST Group, and DST Group will be moving towards these business models over the next five years. There may be exceptions for specific circumstances.

From 2013 to 2018, we will undertake ten strategic initiatives to make DST Group 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 Australia include: the relationship between the United States and China, which is likely to be characterised by a mixture of cooperation and competition; challenges to the stability of the rules-based global order; the growing threat from terrorism and foreign fighters to Australia's security; state fragility, including in our immediate region; increasing pace of military modernisation in our region; and increasing threats to cyberspace and space. These external challenges coincide with a tight resource environment for Defence and DST Group. Through an open and consultative approach with staff and stakeholders, DST Group 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 DST Group 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**.



Summary of Strategic Plan 2013–2018

Our strategic initiatives

From 2013 to 2018, DST Group will undertake the following ten strategic initiatives to make DST Group 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.

Defence science and technology 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 the shape of Defence					
	S2.	Next generation technologies 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 research ICT to drive innovation and collaboration					
	O4.	Best practices for business processes and administration					

Key: ● Significant effort ● Medium effort ● Minor effort / Business as usual

Setting our priorities and directions

Defence will balance investments across strategic research, domain priorities and supporting science and technology capability. Partnerships will be essential to strengthening DST Group's ability to develop science and technology capability and to integrate knowledge and innovation for defence and national security capability. Any reductions in Defence science and technology investment will be offset by a combination of internal efficiencies, greater external partnering and a more focused client prioritisation process.

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