

Annual Report 2024



Accelerating Technology Development

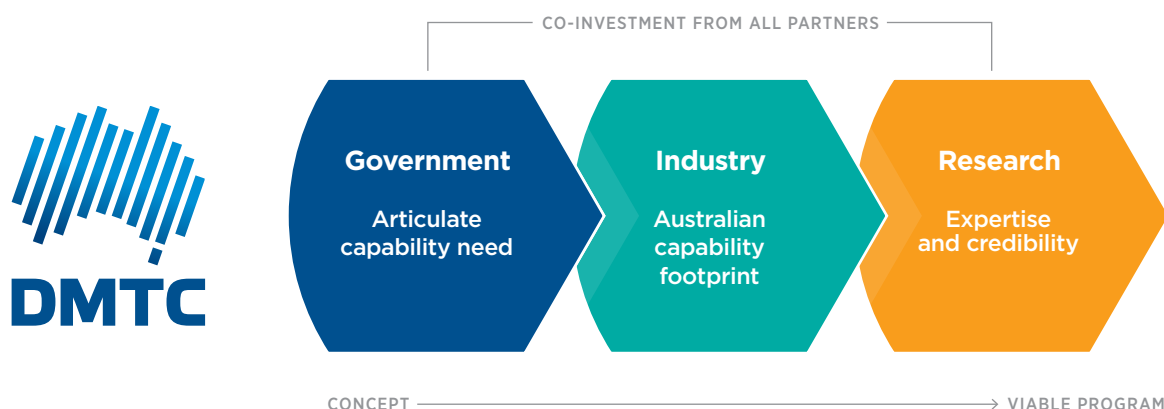
AUSTRALIA'S TRUSTED PARTNER IN INNOVATION AND TECHNOLOGY DEVELOPMENT

Who We Are

DMTC is a not-for-profit company that designs, manages and leads multi-party R&D initiatives that deliver enhanced defence and national security capabilities, and strengthen Australia's industrial capacity.

Our programs are delivered by a multidisciplinary team comprised of experienced and highly credentialed professionals drawn from diverse backgrounds. This allows DMTC to bring an integrated perspective on national innovation, science and technology ecosystems, in addition to specific domain and technical knowledge.

DMTC Co-Investment Model



DMTC at a Glance



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The Hon Pat Conroy MP

MINISTER FOR DEFENCE INDUSTRY AND CAPABILITY DELIVERY
MINISTER FOR INTERNATIONAL DEVELOPMENT AND THE PACIFIC

For a country the size of Australia, technological and scientific expertise are a critical source of asymmetric advantage.

The challenge we face to uplift our capability, innovation and skills, and to get the maximum value from the efforts of the workforce we have, is enormous.

With this challenge comes unprecedented opportunities for Australian businesses, large and small, to be part of our new, integrated, whole-of-government and whole-of-nation approach to protecting Australia.

Organisations like DMTC – with its agility, responsiveness and mission-focus – will continue to play a key role in support of Defence’s capability development efforts, and in building a strong industry and research base here in Australia.

Throughout our supply chains, across the defence industry ecosystem and in the heart of our Defence establishment, there is recognition of the importance of this moment to the future of Australia’s national security.

Australia faces the most complex strategic environment since World War II.

This is why the Albanese Government has released the inaugural National Defence Strategy (NDS), the rebuilt Defence Integrated Investment Program (IIP) and the Defence Industry Development Strategy (DIDS).

Together, they encapsulate the Why?, the What? and the How? behind this package of significant reforms.

Beyond the release of these foundational strategy documents, the Australian Parliament has also passed landmark legislation this year to strengthen our national security and support local industry by unlocking defence trade, innovation and collaboration with our AUKUS partners.

This will protect our cutting-edge military technologies and remove red tape in trilateral defence trade with the United Kingdom (UK) and the United States (US) by supporting the establishment of a licence-free environment for Australian industry, higher education and research sectors.

The benefits of the licence-free environment for the sector are significant. It provides a privileged opportunity to showcase genuinely world-class Australian research and industrial capabilities.

In an AUKUS context, we are moving at pace and working with industry and the UK and US governments to identify products that can be manufactured in Australia to enhance the resilience of trilateral supply chains.

AUKUS underscores the Government’s unwavering commitment to making Australians safer, and also safeguarding their interests.

As we look to advance our defence capabilities, our partnerships in industry and technology will be vitally important.



Developing a strong, enduring and thriving sovereign defence industrial base requires Defence to work more closely with industry than ever before.

Organisations like DMTC have a crucial role in this endeavour – in harnessing national know-how to accelerate technology development and build supply chain resilience.

I acknowledge DMTC's proven track record and credibility in the defence ecosystem and congratulate the team and the broader partner group on the successes showcased in this Report. /

▲ The SSN-AUKUS, a new conventionally-armed nuclear-powered submarine, based on a UK design, will be delivered incorporating cutting-edge Australian, UK and US technologies.



Professor Tanya Monro AC

CHIEF DEFENCE SCIENTIST
DEPARTMENT OF DEFENCE

From bench to battlespace

In aligning our Innovation, Science & Technology Strategy with the direction provided by both the Defence Strategic Review (DSR) and the NDS, there is a clear need for acceleration and asymmetry to be at the core of our partnerships.

This is as true of the deep science and technology cooperation that has existed for decades among our like-minded allied nations as it is of our partnerships with organisations like DMTC here in Australia.

Initiatives such as AUKUS, in relation to both Pillar I and Pillar II priorities, provide a strong case for pulling the thread of technology development and innovation partnerships at all levels to deliver capability advantage.

We are also fundamentally changing the way we think about developing and demonstrating new technologies, instilling a greater focus on the pathway to acquisition through the IIP.

We need to leverage partnerships like the one with DMTC to foster a sense of urgency, build scale in our technology development efforts and build the skills base of our national cadre of innovators and scientists.

Harnessing the expertise of innovators and scientists within Defence, but critically also across the Australian ecosystem and with our trusted international partners, is a vital contribution to keeping our nation secure.

For the past 15 years, DMTC and Defence Science and Technology Group (DSTG) have been refining and enhancing our relationship to leverage Australian expertise for maximum benefit and impact.

It is a relationship that works at both strategic and working levels. I welcome the new overarching contract signed in March 2024 that seeks to establish a framework within which DMTC's value to Defence can be maximised, as well as standardising key engagement terms.

Working with partners through established and tested arrangements, like the one between our two organisations, also helps us to challenge assumptions and consider doing things differently.

The more people we have in our organisation who have lived experience of working in industry or university, the better we will be.

Secure, sensitive research and development (R&D), that can only be done in government, will be improved if there are more people who can speak both languages.

DMTC's contribution to Defence is highly valued, and I congratulate Mark and his team, but also all of the partners involved, on the achievements showcased in this Report. /



Chris Deeble AO, CSC

DEPUTY SECRETARY CAPABILITY ACQUISITION AND SUSTAINMENT
DEPARTMENT OF DEFENCE

Trust and respect are key

The landmark strategies and plans released by the Government in the first half of 2024 provide a rallying call for the defence sector, and a clear view of the enormous complexity and scale of the challenges ahead of us.

Faced with increasing strategic competition in our region and an erosion of the strategic warning time that the nation previously had to prepare our defences against an external threat, time is of the essence. In this regard, *speed to capability* needs to be evidenced at every stage of our work, reliant upon a culture of innovation and increased collaboration.

Genuine collaboration, founded on trust, respect and a common set of values, will be a critical enabler of success. It allows us to work better together and to get the best from each other – from industry, academia, DSTG, other government agencies and organisations like DMTC.

The Capability Acquisition and Sustainment Group (CASG) that I lead will work closely with other agencies across Defence to ensure an aligned approach to capability delivery for our warfighters.

Together, we will continue to work to influence the development of a sovereign defence industrial base that can deliver on our requirements – an industrial base that is aligned to the nation's strategic defence priorities, with supply chain security and access to increased export opportunities to offer their world-class components, systems and platforms to our trusted allies.

I have previously outlined five pillars of my approach not only to the job of leading CASG, but also to working across the Defence organisation to drive acquisition, sustainment and procurement reform. Of importance, Defence is focused on setting up for success to bring earlier engagement with industry and considerations of delivery elements into the acquisition lifecycle, and *partnering for success* with industry and academia to increase collaboration and leverage their innovative ways of working.

DMTC creates collaboration spaces that leverage the contribution from individuals and organisations working at the sharp end of innovation and technology development. Importantly, the DMTC model puts a premium on productionising technology, retiring technical risk and pulling it through to be at a volume and scale relevant to industrial application. This will be important not only for Australia, but to our AUKUS partners in coming years.

DMTC's operating model gives Defence and national security stakeholders a strong voice in shaping innovation and the direction of our R&D efforts, and I acknowledge the enduring partnership with DMTC over many years.

CASG is a key stakeholder in DMTC's success, which is why we joined with DSTG in underpinning the overarching contract signed in March this year. I look forward to continuing to partner for success with DMTC, and I thank the DMTC team for the important work that they do. /

**Tony Quick**CHAIR
DMTC LIMITED

Clarity of purpose

In a year where there was some optimism about new opportunities and a renewed flow of both funding and activity, the reality was a distinct sense of “more of the same”.

The fundamental reset of Defence posture inherent in the DSR was always going to be difficult to implement. The time that elapsed between the DSR's release and the publication of ensuing documents in the form of the NDS, DIDS and IIP was a challenging period of stasis for DMTC and for the defence sector more broadly.

Now, with those documents in the public domain, there is cautious optimism about a new momentum and uptick in activity.

I am extremely confident that the foundational elements of DMTC's purpose and objectives are well aligned with the demand that these strategy documents will make on the defence sector, and on the quality and focus of industrially focused R&D programs.

At our 2023 Annual General Meeting (AGM) we agreed a minor change to DMTC's Constitution to ensure it aligns with the breadth of Defence and national security customers that DMTC serves, or plans to serve.

Harnessing the niche contributions of partners to make meaningful enhancements to industrial capability, and ultimately to national defence objectives, is a task the DMTC team is well-equipped to deliver. Their unwavering focus on achieving world-class outcomes is a key theme of many of the stories that make up this year's Annual Report.

The Board also retains its strong focus on discharging its corporate governance responsibilities in an effective manner. In addition to considerations of cyber security and the proliferation of AI-based technologies, the Board has also devoted time to considering the impact on the Company and its partners of amendments to the *Defence Trade Controls Act 2012* (Cth) and related legislation.

These are important matters insofar as they impact on risk tolerance, culture, continuity of business and ultimately on the preservation of the Company's strong reputation across the defence sector.

This year, DMTC is continuing to provide a Guest of the Chair fellowship opportunity to provide an emerging leader with board-level experience within Australia's innovation ecosystem.

On behalf of the Board, I am delighted that Dr Claretta DSouza has accepted this offer. Claretta's already-impressive professional credentials will be broadened by this observership experience, and I also expect our Board will benefit from the new perspectives that Claretta brings (for more details, see page 50).

It is my great pleasure to present the DMTC Annual Report for 2024. /



Dr Mark Hodge

CHIEF EXECUTIVE OFFICER
DMTC LIMITED

Aligned to purpose

Now in its 17th year of operation, DMTC continues to successfully harmonise the cultures, motivations and performance metrics of our government customers, industrial partners and the research sector. Applying our mantra of “structural flexibility” to ensure we remain aligned with the constantly evolving priorities and structures in the sector also remains a key focus for us.

We have shown that these tasks are not only possible, but that they in fact enable rapid responses to contemporary defence and national security challenges.

It creates an environment for collaboration that is aligned to purpose.

DMTC's purpose can be summarised as using collaboration as a multiplying, compounding force to enhance industrial pathways for the defence and national security sectors.

The fundamental reshaping of defence strategy that has occurred over the course of the last two years, the like of which our country has not seen in generations, demands that delivery and support organisations take steps to re-align to this overarching purpose and plan.

For DMTC, whose activities are tested and regularly refreshed against our understanding of contemporary government priorities and the industrial landscape, this is not new for us. In fact, it's something that we are accustomed to, and well positioned to do.

In ongoing discussions at senior levels in Defence, and across our partner group, I am reassured by the clear signals that the demand for DMTC's capabilities and services remains strong.

I am also reminded and similarly reassured that our structural and functional independence from both government and industry, while remaining close enough to be relevant and positioned to respond quickly to demands, will persist as a highly valued and foundational element of DMTC's utility to Defence and national security customers.

This role is a privilege and comes with great responsibility, and is not one that we take lightly.

It is also a “muscle” that needs to be exercised and flexed regularly lest it starts to atrophy or, worse, is lost altogether. This points to a sense of urgency in ensuring that our forward pipeline of activity is built on work, not just words. Agility, speed to capability and an evolution of minimum viable capability are not transactional matters, but need to be embedded in flexible, but reliable and transparent systems.

While some positive signals are emerging in this regard, the challenge in bedding down enterprise systems and structures in the post-DSR environment is not to be underestimated, nor should the view to the long game be forgotten. To focus on the incremental, as well as the transformational, will be key ingredients for success.

Diverse inputs from diverse partners and – when we get it right – diverse applications of technologies and Intellectual Property (IP) can result.

The examples of historic activity, which directly follow my foreword, along with current activity detailed throughout this Report are a testament to this. I commend the Report to you. /

Advanced Shipyard Welding: A roadmap for incremental industrial capability

Since 2011, DMTC and its partners have been implementing advanced welding technologies into shipyards across Australia and the world. This enduring program demonstrates the power of DMTC's ecosystem approach and IP model.

Collaborative programs de-risk technology development and progressively advance from project to project across domains, programs and industrial partners. It is an example of ecosystems that can be developed and maintained, with appropriate resourcing, in order to achieve continuous industrial uplift aligned with Sovereign Defence Industrial Priorities.

DMTC has worked with Forgas (now Cvmec) on the Air Warfare Destroyer Program, Naval Group Pacific on its surface fleet programs and BAE Systems Maritime Australia (BAESMA) on the Hunter Class Frigate Program. These programs have been supported by expertise resident within our research partner network, namely the University of Wollongong and its vast history in advanced welding and maritime steel-related work, the Australian Nuclear Science and Technology Organisation (ANSTO) through its modelling and simulation expertise, and DSTG to provide specific recommendations to the Royal Australian Navy (RAN).

It is important to note the cross-domain applicability of this program with technologies and know-how also applied at Thales Australia in its land vehicle program, assembling Bushmaster and Hawkei vehicles, and into supply chains through DMTC's Industry Capability Development Program.

A key element of the advanced welding activities has been addressing weld-induced distortion. The trend of using higher strength, thinner section materials to achieve lower material costs and lighter weight structures, with plate thicknesses as low as 4mm of maritime steel used in warships around the world, including Australia, is resulting in fabrication of structures being more susceptible to weld-induced distortion.

Combating weld-induced distortion requires a holistic approach. Advanced welding technologies, such as Tandem Gas Metal Arc Welding (T-GMAW), have been coupled with performance and characteristics of maritime steels such as DH36, modelling of the welding process to optimise welding procedures, panel weld sequencing, and Automated Offline Programming (AOLP) to maximise the benefits of the highly automated shipyard. This has resulted in a world-class ecosystem of industrial and research capability that is being applied to current shipbuilding programs, but with an exciting future aligned with Australia's continuous naval shipbuilding and conventionally-armed, nuclear-powered submarine programs.

DMTC is currently working with BAESMA's Osborne shipyard to maximise the significant opportunities for the uptake of automated robotic welding and digital flow. DMTC is playing a key role in ensuring the shipyard remains at the leading edge of shipyard production efficiency, leveraging and building on work conducted from across the DMTC advanced welding program. /



PROJECT

Air Warfare Destroyer

Panel line improvements included increased productivity, and a reduction in panel line distortion and thermal rework.



PROJECT

Surface Ships

T-joint innovations that applied active cooling and complex geometry modelling to develop local weld models.



PROJECT

Hunter Class Frigate

Shipyards optimisation including global weld sequencing optimisation and robotic automation.



PROJECT

Now supporting:

The SEA 3000
ASA Future Surface
Combatants.



LEVERAGE

Advancing welding technologies that have gone on to be implemented in shipyards globally and leveraged by Thales Australia's land vehicle manufacturing program.



TECHNICAL CAPABILITY

Delivering capabilities including the development and characterisation of maritime steels (DH36 and HSLA65), advanced welding techniques (T-GMAW), weld distortion modelling, prediction and control, shipyard panel weld sequencing and parameter optimisation, and automated robotic welding and digital flow (AOLP).



INDUSTRIAL UPLIFT

Outcomes have been pivotal to DMTC's leadership in industry capability uplift and technology transfer, building local supply chains and creating global opportunities for Australian industry that will continue to support future Continuous Naval Shipbuilding and Sustainment Programs.



HUMAN CAPITAL

Strategic and sustained investment in academic skills development and infrastructure at the University of Wollongong and ANSTO, ably supported by expertise resident within DSTG.

Reduction in longitudinal distortion

↓20%

Reduction in angular distortion – Panel Line Welding Technology

↓63%

Laser focus on better outcomes

Sustained strategic investment over more than 15 years has enabled continuity of industrially-focused research to develop a strategic sovereign capability enabling the advanced maintenance, repair and overhaul of military aircraft platforms.

Advances in the use of existing additive manufacturing technologies, such as laser additive deposition, have been paired with novel process monitoring and control technology developments to successfully repair damaged or degraded ultra-high-strength steel aircraft components.

The long-running endeavour has been made possible by collaborations with Melbourne-based industry partner Rosebank Engineering, research expertise from Royal Melbourne Institute of Technology (RMIT) and Swinburne University of Technology and scientists from DSTG and ANSTO.

The collaborative effort has created a globally unique sovereign sustainment capability for Australia by supporting the development of highly specialised experimental and computational material characterisation tools.

Rosebank Engineering continues to invest in state-of-the-art equipment and facilities to support the project. Its Australian operation enables in-country repair and restoration of aerospace-grade materials across the breadth of Defence aerospace platforms, reducing reliance on complex overseas supply chains, shortening repair lead times, and substantially reducing the cost of ownership of Australian Defence Force (ADF) platforms.

The company is also directly benefiting from DMTC's investment in human capital in support of the project, employing a number of DMTC-supported PhD candidates as early career researchers in ongoing development of additive repair technologies, and from opportunities to apply the technology in the civil and commercial aerospace sectors.

The work is directly aligned with the findings from the DSR released in 2023, and highly correlated with the Sovereign Defence Industrial Priorities announced in the DIDS released earlier this year.

The DSR highlighted the criticality of "a networked expeditionary air operations capability", and the DIDS states that a sovereign industrial aircraft MRO&U (maintenance, repair, overhaul and upgrade) capability is critical to optimising aircraft availability and ensuring it is not compromised, especially during times of conflict.

Replacement of damaged or corroded parts is costly, and often complicated by long lead times for parts that are in high demand globally, or complex supply chains in distant corners of the world.

Sustained investment in this project has demonstrated both the technical pathways and the cost and platform availability benefits that can be achieved by repairing high-value, ultra-high-strength steel aerospace components using sophisticated 3D printing techniques in an environment of reliable and repeatable process controls. Such monitoring and control capability assures repair performance, enabling certification and release back into service.

Enabling the rapid repair and return-to-service of critical high-value components, the project offers a unique capability to reduce down-time and increase platform availability, contributing positively to the ADF's operational readiness and ability to respond effectively to emerging threats.

The benefits of Rosebank's application of Additive Manufacturing technologies to in-service Royal Australian Air Force (RAAF) aircraft are recognised globally, and provides critical technical data to inform the platform availability and sustainment strategies of global fleets.





Drawn together, the focus on effective collaboration, deep technical expertise and investment in education has enabled tangible outcomes to be achieved for the Australian Defence Force and the broader Defence Innovation, Science & Technology (IS&T) enterprise.

Rosebank's technology will be on display as part of the Aerospace and Defence Exposition at the Avalon Australian International Airshow in March 2025. /



“High global demand and long lead times means replacing worn or corroded components is extraordinarily costly. This long-running collaboration, led by DMTC, is not only developing an in-country repair and restoration capability, but is also demonstrating the very clear pay-offs of long-term investment in Australian-made innovations.”

DR SURESH PALANISAMY – SWINBURNE UNIVERSITY OF TECHNOLOGY

 LEVERAGE	15 years of sustained contributions from government, industry and research partners to DMTC-managed collaborations.
 TECHNICAL CAPABILITY	Incremental development and validation of Laser Additive Deposition (LAD) and Cold Spray (also known as supersonic particle deposition) systems, and the integration of a sophisticated In-Process Monitoring and Control (IPMC) system, have contributed to the development of repair schemes for ultra-high-strength steel aircraft components applicable to the F/A-18 Classic and Super Hornets, as well as the F-35A Lightning II Joint Strike Fighter.
 INDUSTRIAL UPLIFT	Contributed substantially to the local defence supply chain by providing SMEs with the scientific data needed to assess and qualify repair processes for ultra-high-strength steels, titanium alloys and nickel alloys.
 HUMAN CAPITAL	Provided industrial experience for more than 25 undergraduate and postgraduate students, with many securing employment in the defence and manufacturing sectors and a number employed by Rosebank Engineering in what Senior Manager of Engineering & Projects, Jarrod Watts, describes as “a brilliant melting pot of DMTC-generated expertise”.



Securing Australia's Health: Continuing to build resilience

The national Medical Countermeasures (MedCM) Program is focused on advancing the development of vaccines, therapeutics and diagnostics in response to chemical, biological and radiological threats, emerging infectious diseases and pandemics.

The MedCM Program was established at DMTC in 2015 with foresight and seed funding from the Commonwealth Scientific and Industrial Research Organisation (CSIRO) and from the DSTG through the then Next Generation Technologies Fund. Follow-on government agency investment and co-contributions from industrial and academic partners have been critical to the Program's ongoing success. The Program has garnered interest from broad cross-sections of the medical technology sector, and attracted a number of industrial collaborators who had not previously worked in the defence sector.

Leveraging these collaborative partnerships, DMTC's efforts have resulted in dividends for Australia, and also provided the drive and momentum for many of Australia's contributions to the international Medical Countermeasures Consortium to which Australia is a signatory.

Harnessing Australian expertise and capability, the Program has developed leading-edge technologies, sovereign R&D infrastructure, and a skilled workforce deployed directly into activities that support national defence, health and security outcomes.

The sustained success achieved by the MedCM Program, and the evident appetite for collaboration in this discipline, provided the catalyst for DMTC to establish HSSA as a standalone division, and with an expanded remit, in 2021. More information on HSSA's mission space and specific project outcomes is available on page 26.

As emphasised in Defence's IS&T Strategy, HSSA's approach to MedCM initiatives continues to harness domestic and international science and technology partnerships to build resilience, longevity and impact.

In this regard, the national MedCM Program exemplifies the concept of national defence, an endeavour that cannot be undertaken by Defence alone, but must be pursued as a collaborative and cooperative effort across the entire national support base, including the exploitation of dual-use technologies. /

Government investment...

\$25 million

... leveraged into

\$45 million

through co-investment
and in-kind contributions

“Diverse and cross-functional teams have been a huge part of the success of this Program. Early industry engagement allows academics and researchers to understand the importance of quality systems and go / no go criteria at key project stage gates. For industry, they are exposed to contemporary research, fresh ideas and out-of-the-box approaches.”

DR EMMA PRATO – DMTC



LEVERAGE

Over a decade of effort, more than \$20 million in government funding has been invested to date, which the Program has leveraged into a total value of \$45 million through co-investment and in-kind contributions across more than 25 discrete DMTC-managed collaborations.



TECHNICAL CAPABILITY

Focused on the growth of national capability and capacity for advanced R&D and manufacture of vaccines, therapeutics and diagnostics against CBR threats, emerging infectious diseases and pandemics, the MedCM Program has progressed 25 technologies along TRL pathways.



INDUSTRIAL UPLIFT

With a focus on enabling resilient, secure supply chains, the MedCM Program has invested in Australian industrial capability – elevating business maturity, increasing manufacturing scale, and enhancing biotech and medtech capabilities across the country.



ECOSYSTEM DEVELOPMENT

Cultivating career development opportunities and industrial experience for brilliant students, doctoral candidates and early career researchers, and supporting the establishment and sustainment of R&D infrastructure across Australia.

Accelerating technology development

Despite the significant policy shifts and challenges observed across the defence landscape of 2024, key elements of the effective delivery of a whole-of-government, whole-of-nation approach to *National Defence* and the advancement of Australia's strategic interests remain. One such key enabling element is the importance of investing in world-class innovation, science and technology to properly equip military and civilian personnel in a technology-dominated world.

DSTG has acknowledged that its partnership with DMTC is a critical enabler of its overarching mission. This is proof that DMTC's model fundamentally works. By prioritising home-grown capability and expertise, DMTC strategically focuses on enabling Australian industry and researchers to deliver asymmetric capability advantage, at scale. These national communities and networks of expertise ensure that capability remains in Australian hands.

DMTC's ownership of IP developed by project teams is consistent with the Company's mandate and not-for-profit structure, and provides opportunities to maximise beneficial outcomes to both government customers and industrial partners. This is achieved through the strategic deployment of IP in support of technology adoption, often along different proprietary pathways in pursuit of bespoke technology applications and extensions. A focus on vendor and platform-independent technologies maximises the benefits gained by all partners pursuing market opportunities related to specific, discrete elements of the same underpinning technology.

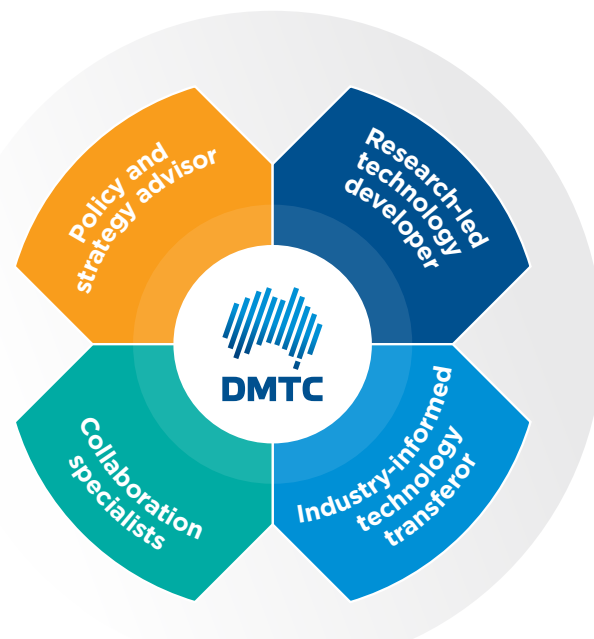
The new contract signed between the Department of Defence and DMTC in March 2024 establishes a framework to maximise DMTC's value to Defence and standardise key rules of engagement. The contract recognises the need for Defence to pursue transformative mission-based activities such as those under the stewardship of the Advanced Strategic Capabilities Accelerator (ASCA), alongside the equally compelling and complementary need to maintain focus on the significant challenges around sovereign production, sustainment and capability assurance – areas where DMTC has a demonstrated track record.

While the continued strength of the Defence-DMTC relationship is welcome, the paradigm shifts across the defence landscape have renewed DMTC's focus on identifying opportunities to diversify government customers and partner organisations, as well as expanding sector and service offerings.

DMTC will continue to advise decision-makers across Commonwealth and state government departments and agencies who value DMTC's independence from government and exclusive industry arrangements. This positions DMTC as an ideal partner for government, bringing together specialist industry participants and leading research partners to harness their collective knowledge and contribute to sovereign capability solutions. These strategic partnerships share a common theme fundamental to DMTC's mission of accelerating technology development in support of Australia's national security and sovereign industrial capability delivery.

A common misconception about DMTC is that service offerings are solely focused on end-to-end, multi-party project management. While DMTC excels in collaborative program management – with a strong focus on industrialisation and scalability of Australian research – the Company's suite of services extends further. These services include: providing advice and informing government policy direction and strategy, industry-informed technology transfer, and capability mapping and sector intelligence.

DMTC's genuinely vendor-agnostic approach lends itself to flexibility and diversification. This is seen most prominently in the Company's focus on promoting the development of critical asymmetric technologies with dual-use applications and chasing cross-platform connections that enhance the overall effectiveness of R&D efforts and future interoperability. /



Delivery amid transition

As a not-for-profit intermediary operating at the nexus of Australia’s government, industry and research sectors, DMTC’s activities are regularly tested against and refreshed by an understanding of contemporary government priorities as they relate to the industrial innovation ecosystem.

The release and early work to implement the NDS, IIP and DIDS will be crucial in defining the strategic rationale for a sovereign defence industrial base and a pathway for maximising support for Australian industry. These documents will serve as important signposts, and useful guardrails, in DMTC’s endeavour to rapidly deliver capabilities and services that enrich Australia’s national security and resilience. /



▲ DMTC continues to test its activities against the priorities outlined in the NDS, IIP and DIDS.

Antenna innovations

Hypersonic vehicles will be uncrewed for the foreseeable future, and therefore required to sustain radio communications of flight telemetry and to allow for operator control as required.

Conformal antennas or receiver apertures must be able to withstand high dynamic pressures and very high temperatures experienced during hypersonic flight, maintaining their structural integrity and radio frequency performance throughout. These structures physically integrate with external surfaces and therefore are also required to be load-bearing.

DMTC is working with DSTG, BAE Systems Australia (BAESA) and Gravitas Technologies on a project to demonstrate the use of Ultra-High Temperature Ceramics for antenna apertures. These materials show promise as part of an integrated solution to solve the extreme heat challenges in hypersonic flight vehicles.

The project brings together Gravitas's unique capabilities in ceramic formulation and at-scale manufacturing, BAESA's expertise in design and integration of hypersonic vehicles, and DSTG's capabilities in electromagnetic and high-temperature mechanical testing.

This work has demonstrated successful manufacture of ceramic formulations with the potential for good mechanical and radio frequency performance at high temperatures. The data generated from this study will be useful to inform future hypersonic vehicle development.

Dr Mitch Dunn, Enabling Technologies Program Leader at DMTC and Research Fellow at The University of Queensland (UQ), says "developing the knowledge required to design, develop, test and manufacture the key sub-assemblies and materials that comprise hypersonic platforms is a crucial stepping stone in realising Australia's aspirations in both defence and civil hypersonic capability".



Australia has a deep pedigree and long history in hypersonic research. In order to stay ahead of the curve, the IS&T ecosystem must come together to innovate across multiple disciplines in campaigns of iterative learning comprising wargaming, constructive simulation, and live and virtual experimentation.

DEFENCE INNOVATION, SCIENCE AND TECHNOLOGY STRATEGY 2024

▲ Blast-off for the HIFiRE4 Hypersonic Test. Defence's Hypersonic International Flight Research and Experimentation Program (an Australia-US collaboration) is an example of Australian research expertise being leveraged to investigate the physical phenomena of flight at more than five times the speed of sound.

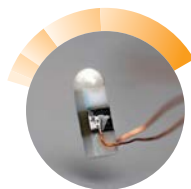
Crystallising capability

The ultimate goal of the Advanced Piezoelectric Materials and Applications (APMA) Program is to utilise sovereign grown single crystal piezoelectric materials in sovereign developed products. Continued investment by ASCA enables accelerated development of next-generation sonar systems utilising the unique properties of single crystal piezoelectrics.

The utilisation of single crystal piezoelectric materials for acoustic sensors for uncrewed undersea vehicles (UUVs) and seabed arrays will position Defence to capitalise on the future of underwater warfare, notably through the advanced development of UUVs, undersea surveillance distributed and networked systems, and emerging undersea warfare missions and payloads.

The APMA Program is working closely with stakeholders from across DSTG, ASCA, Navy and Thales Underwater Systems (Thales UWS) to ensure the activities being conducted within the APMA Program are complementing and providing underlying research capability to best support, de-risk and accelerate transducer design and development, such as those at Thales UWS.

Joint workshops have been held to ensure coordination across these activities, which is critical in informing specifications for future investment in functional high-performance sonar systems for autonomous platforms currently under development in support of Defence projects SEA 5012 and SEA 1200, including Ghost Shark XLAUV, Bluebottle ASV, among others. Furthermore, given the standing of Thales UWS as an international leader in advanced sonar system development, outcomes of this Program are expected to lead to significant export opportunities.



... outcomes of this program are expected to lead to significant export opportunities.

Moving forward, the APMA Program is looking to establish a new program of work to directly support transducer development. The APMA Program will be investing in enabling capabilities in the research sector to address complex issues associated with single crystal transducers such as system design, modelling, manufacture and integration. //

▲ Royal Australian Navy Collins Class Submarines, *HMAS Collins*, *HMAS Farncomb*, *HMAS Dechaineux* and *HMAS Sheean* sail in formation while transiting through Cockburn Sound, Western Australia.

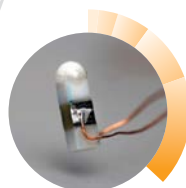
Growth spurt

The APMA Program, led by DMTC and supported by DSTG and ASCA through its Emerging and Disruptive Technologies stream, is a long-term strategic effort involving Defence, DMTC, industry and the research sector to ensure the security of supply of advanced single crystal piezoelectric materials. Global supply of these materials continues to be restricted, particularly for defence applications. This raises a serious sovereignty issue for Defence should supply chains be further constrained.

Single crystal piezoelectric materials enable a step change improvement in size, weight and power requirements of next-generation sonars, sensors and effectors. The continued and accelerated development of these technologies is essential in maintaining an asymmetric advantage in Undersea Warfare, a key component of the NDS focused on a strategy of denial, through deterrence, to defend, protect and contribute to the security of Australia and its interests.

Addressing a key APMA Program objective, industrial partner Thales UWS has successfully industrialised the growth and production of single crystal piezoelectric materials at its Rydalmere, New South Wales (NSW) facility. The Single Crystal Foundry at Thales UWS has been equipped with state-of-the-art instruments that will support piezoelectric growth, crystal characterisation, processing and application design.

This demonstrates the progress made towards ensuring a secure sovereign supply of single crystal piezoelectric materials. This achievement is underpinned by the support of research sector partners, enabling a deeper understanding of structural and electro-mechanical properties, optimising the growth process and enhancing production of high-performing crystals for next-generation sonars and sensors.



Single crystal piezoelectric materials enable a step change improvement in size, weight and power requirements of next-generation sonars, sensors and effectors.

The focus of the crystal growth and characterisation elements of the APMA Program now shifts to the development of Generation 2 and 3 class single crystals with improved stability and higher Curie temperatures required for specific applications such as transducer design. /

▲ RAN sailor on-board *HMAS Supply* monitors the battle space during the Australian submarine command course, conducted off Australia's east coast.

A productive journey

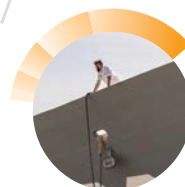


The Australian Maritime Superconducting Technologies (AMSTech) Program, led by DMTC and supported by DSTG, has been developing a strategic national capability in the application of high temperature superconductors (HTS) in harsh maritime environments. Technologies utilising HTS provide the opportunity for asymmetric advantage through design and capability enhancements for the Navy in the areas of electric propulsion and mine-counter measures, yet require complex design considerations in order to be successfully utilised on naval platforms.

The unique physical properties of HTS systems allow for either transmission of significantly more energy within the same weight allowance or, alternatively, the same energy requirements at reduced weight. However, the unique properties of a HTS system can only be achieved when operated under cryogenic conditions. The AMSTech Program has extensively studied cryogenic cooling systems that meet the requirements for naval operation. Without this capability and understanding, technology development and de-risking activities in electric propulsion and mine countermeasures utilising HTS systems would not have been possible.

Feasibility studies, including the prototype design and construction of key elements of HTS propulsion systems, have shown how improvements in acoustics, space, weight, efficiency and grid stability could be achieved. While for mine countermeasure operations, HTS systems offer a solution that is transportable and has low energy consumption, as well as the capability for variable magnetic field signatures – a combination that is not presently possible with conventional technologies.

These achievements would not have been possible without the extensive and dedicated support of key program partners including DSTG, Queensland University of Technology (QUT), the University of Wollongong, Siemens Energy, Thales UWS and BAESMA. /



HTS systems offer a solution that is transportable and has low energy consumption.

▲ HMAS Warramunga sails in company with HMAS Canberra in the Coral Sea.

Tailored to protection

A collaborative DMTC-managed project team consisting of Australia's national science agency CSIRO, Bruck Textiles, DSTG, and RMIT with support from Nanolayr and Proxenus - led by Dr Yen Truong from CSIRO - has successfully progressed the multilayered, air-breathable textile technology solution from lab scale fabric (TRL4) to production scale (TRL6) in just 15 months.

The innovative material is a fabric that effectively filters out harmful particles while remaining lightweight and breathable, keeping the wearer comfortable in extreme temperatures.

Dr Marcus Zipper, CSIRO Manufacturing Research Unit Director, said the nanofibre technology has the potential to significantly improve the level of protection for military personnel and for non-military applications including protecting emergency responders and hazmat crews.

"Working collaboratively with industry and research partners and with DMTC to deliver cutting-edge solutions for ADF and civilian applications ensures CSIRO continues to play a key role in textile innovation while also safeguarding Australia and our region from threats," Marcus said.

DMTC is coordinating the successful nanofibre suit prototype, having secured the Federal Government funding for the initial phases of the project.

Deepak Ganga, Head of Program Management at DMTC, said the new prototype uniform could deliver a significant leap forward in soldier protection, ensuring better comfort and mobility in harsh environments.

"This project demonstrates the power of collaboration. CSIRO's scientific excellence in nanofibre research has been matched with the expertise of our partners in textiles, defence science and manufacturing," Deepak said.

"This has resulted in a groundbreaking solution that offers benefits for Australian troops, for the first responder community and, potentially, for Australia's alliance partners," he said.

"We harnessed the unique properties of nanofibres to create a lightweight fabric that effectively filters out harmful particles while remaining highly breathable."

DR YEN TRUONG - CSIRO

Dr Yen Truong, CSIRO project lead, said the key to the prototype's success lies in its innovative nanofibre technology, pioneered by CSIRO scientists.

"We harnessed the unique properties of nanofibres to create a lightweight fabric that effectively filters out harmful particles while remaining highly breathable," Yen said.

"In rigorous testing, the prototype surpassed all performance targets for air filtration, air permeability, thermal comfort and chemical protection."

With DMTC, Yen and the team are seeking funding to progress to the next stage of development, which is expected to involve field testing with ADF personnel, and further refinement of scaled manufacturing processes with industrial partners. /

▲ CSIRO project lead Dr Yen Truong (R) and Head of Program Management at DMTC, Deepak Ganga (L) with the prototype uniform.

Bring a coating

DMTC is partnering with DSTG to demonstrate Australian capabilities in the at-scale manufacture of additively manufactured metallic sub-assemblies for use in hypersonic aerostuctures.

This project brings together Amiga Engineering, DSTG and Swinburne University of Technology. The project aims to develop thermal barrier coatings and thermal protection systems for hypersonic vehicle applications that protect metallic components from the high temperatures experienced during hypersonic flight.

Amiga's expertise in the additive manufacture of metallic aerospace components is an ideal complement for the modelling, simulation, materials and application expertise provided by DSTG, and Swinburne's capabilities in advanced surface engineering and high temperature coatings.

The Swinburne team has used plasma spray technology to deposit thin films of ceramic coating directly onto Inconel alloy components produced by Amiga using laser powder bed fusion, and tested these coatings at high temperatures.

The results show that the coatings have good adhesion with the metallic component even while withstanding the harsh temperatures of simulated hypersonic flight conditions. The project team is now exploring coatings that allow the use of refractory metals such as tungsten at high temperatures, by providing protection to oxidation.

Additive manufacturing techniques coupled with a deep understanding of the thermal behaviour of ceramic-coated metallic components offer great promise in maximising the performance of aerostuctures at very high temperatures, such as those faced by vehicles travelling at hypersonic speed. /



“Without advanced coatings, the metallic structures would degrade rapidly under the extreme heat flux and high temperature conditions experienced during hypersonic flight.”

DR NIROJ MAHARJAN – SWINBURNE UNIVERSITY OF TECHNOLOGY

▲ By testing ceramic coatings at high temperatures, the project team can simulate their performance under the extreme conditions of hypersonic flight.



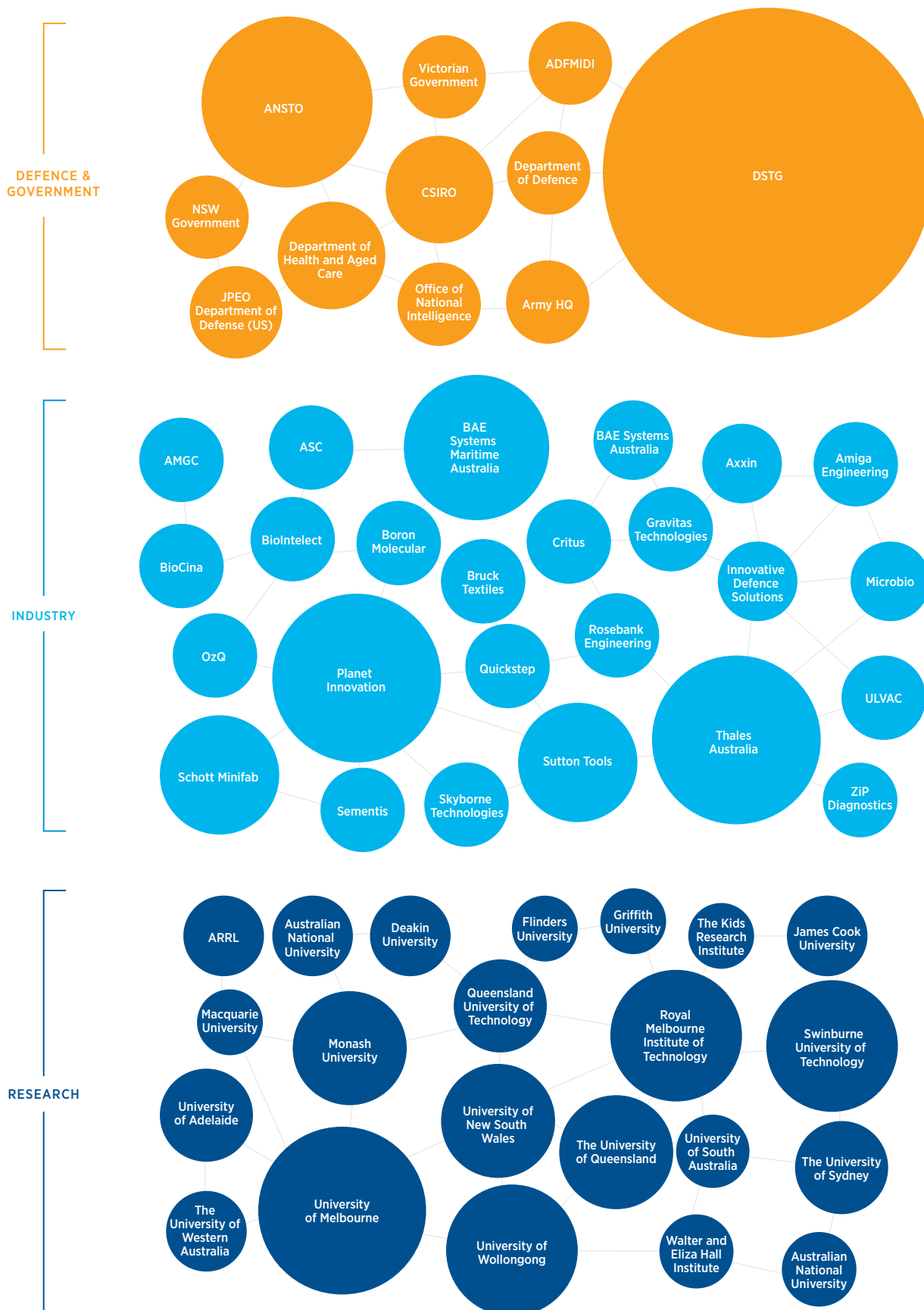
“Keys to acceleration include shared understanding, working together as a team to understand the problem, refine and co-create a solution. This is not just about the technology we’re getting after to solve that problem, but about processes, and process changes, that allow us to achieve the outcome. We tend to think of accelerating innovation as increasing risk, but the way we work as a team can remove or reduce risk – and learn by doing. Working together with partners we trust is all-important in getting to the right outcome.”

PROFESSOR EMILY HILDER – ASCA, DEPARTMENT OF DEFENCE



▲ An Australian Army soldier from 11th Brigade conducts an assault on an ‘enemy’ defensive position at Cowley Beach training area in northern Queensland during Exercise Austral Shield 2024.

This graphic provides a visual representation of the volume of projects that partners are involved in across DMTC activities. At a working level, sponsors and decision-makers across Defence have used the extant DMTC-DSTG Partner Agreement as the overarching contractual mechanism under which to provide funding authority for R&D activities. Sponsors include Army Headquarters, CASG divisions and program areas, the Naval Shipbuilding and Sustainment Group (NSSG) and the Guided Weapons and Explosive Ordnance (GWEO) Enterprise, though are not represented as distinct partners in this graphic.





HSSA

“I have had the pleasure of collaborating with the HSSA team on several projects and can confidently attest to their exceptional expertise in building sector-relevant research capability through collaboration and extensive national and global networks.”

DR ANNE COLLINS - SEMENTIS

Health Security Systems Australia (HSSA), a division of DMTC, leads collaborative R&D programs that develop technologies and strategies for the protection of military and civilian personnel against Chemical, Biological, Radiological (CBR) threats, emerging infectious diseases and pandemics. HSSA also manages R&D and advisory activities in key areas required to enhance national health security.

The HSSA portfolio spans a range of programs – including MedCM, Medical Devices, Strategic Advisory, CBR Sensing Systems and CBR Modelling and Simulation – the latter of which works to enhance the prediction of the impact of accidental or intentional CBR hazard release at the individual and population level, and to develop systems that enable effective forecasting of, and decision-making during, public health events. HSSA’s approach to the management and leadership of collaborative research and industry teams continues to progress a range of technologies towards maturity and provides expert analysis to Australian Government customers.

HSSA utilises the Prevention, Preparedness, Response, and Recovery (PPRR) model – which is used widely among Australian emergency management national security agencies – to frame strategic investment that develops capabilities to counteract CBR threat events. As well as emphasising the whole-of-event, PPRR lifecycle, HSSA’s work has always been, and continues to be, directed by a whole-of-government Stakeholder Group. This allows the Division to maintain a focus on whole-of-government and whole-of-industry perspective when assessing prospective projects, monitoring their progress and measuring their impact.

In February, the DMTC 2024 Annual Conference highlighted the technical advancements made in just a few of the projects in HSSA’s portfolio. Brigadier Isaac Seidl from Joint Health Command in Defence addressed the conference audience on promoting health security resilience. Technical successes were contextualised by keynote addresses from Professor Tracy Smart (Australian National University (ANU)) and Dr Nick FitzGerald (DTSG), who emphasised the significance of integrating health security into the broader national security dialogue and underscored the value of collaboration in advancing technology and innovation.

The Conference was also a wonderful opportunity to recognise the success and achievements of individuals working across HSSA projects, with four individual awards won at the DMTC 2024 Awards for Excellence, including Zoe Kristall from Planet Innovation, Joanne Allard from DSTG, Dr Karren Plain from the Elizabeth Macarthur Agricultural Institute (EMAI), and Dr Anne Collins from Sementis (read more on page 38). /



“Health security is not just about pandemics. We need to broaden our understanding of health security so that we can have more open minds about potential threats, but also the opportunities as we move into more uncertain times.”

BRIGADIER ISAAC SEIDL – JOINT HEALTH COMMAND, ADF

◀ An Australian Army sapper from the School of Military Engineering removes a helmet from a wounded soldier during a Chemical, Biological, Radiological and Nuclear decontamination exercise, in the Holsworthy Training Area, Sydney.

Scaling up preparedness

DMTC has established a national collaboration to progress development of a novel vaccine platform technology targeting pathogens of interest to both military and civilian populations. This is being achieved through collaboration with academic partners Griffith University (QLD), University of Western Australia (WA), Australian Rickettsial Reference Laboratory (NSW), the NSW Department of Primary Industries and BioCina (SA), a global biologics CDMO.

At the core of this project is the proprietary technology held by Griffith University's Centre for Cell Factories and Biopolymers, which underpins the high-efficiency lab-scale vaccine design.

This research project seeks to advance the vaccine platform technology by confirming it is transferrable to, and scalable within, a large-scale biologics manufacturing environment. The platform will be proven through development of vaccines against three key biothreat agents: *Coxiella burnetii* (Q Fever), *Francisella tularensis* (Tularaemia) and *Burkholderia pseudomallei* (Meliodiosis).

Critically, there are no vaccines approved for Tularaemia or Meliodiosis. While a vaccine targeting Q Fever is available, there remains an opportunity to build upon its manufacturing and clinical profile.

DMTC's strategic investment continues to support activities that will demonstrate the manufacturability of the platform technology and the efficacy of vaccine candidates. Over the reporting period, the project met a major milestone of generating a Good Manufacturing Practice (GMP)-certified master cell bank for the Q Fever vaccine. This significant step will ensure that future preclinical safety and efficacy evaluations meet the necessary regulatory standards to enable future clinical translation of the vaccine.



“Biopharma collaborations are essential. By partnering with research institutions and other drug developers, they accelerate development, reduce costs and access specialised expertise.”

JAN BEKKER - BIOCINA

This DMTC-led collaboration is enabling critical steps to be achieved in advancing this project and is laying the foundation for future activities required to meet the long-term goal of developing a sovereign vaccine manufacturing platform. /

▲ Professor Bernd Rehm and his team at Griffith University's Centre for Cell Factories and Biopolymers are pivotal contributors to a national collaboration aimed at advancing a novel vaccine platform technology.

Early detection, early response

DMTC is part of a collaborative team, including the University of Melbourne, Planet Innovation and the Operating in Chemical, Biological, Radiological and Nuclear Environments (OCE) STaR Shot at DSTG, to progress a sensing system capable of rapidly detecting airborne viral threats in near real time.

The team has developed the Compact Aerosolised SARS Exposure Sentinel (CASES) device, which integrates loop-mediated isothermal amplification (LAMP) – a rapid molecular detection technology, microfluidics and micro air filtration technology, to be able to continuously monitor surrounding air and detect the presence of biological threats. This will allow pre-emptive interventions such as deployment of countermeasures and isolation procedures to contain or prevent the spread of a biological threat.

To date, the collaborative team has successfully completed two major stage-gates. These focused on the creation of an initial manual version of the device, capable of detecting the SARS-CoV-2 virus within specificity and sensitivity guidelines, and ensuring the device addresses defined product and user-requirements respectively. This work involved facilitated, cross-Defence consultations involving front-line users and operators to clarify requirements and ensure applicability in a Defence environment.

Previously funded by Defence's Rapid Prototyping Initiative, this promising venture has now received further strategic investment from the OCE STaR Shot at DSTG to undertake three main avenues of activity. These three activities will:

- optimise device components;
- further develop the molecular assay to allow for detection of multiple pathogens, improve cost effectiveness and storage stability; and
- investigate applicability for use on Defence platforms such as land vehicles, including conducting a dual-use market analysis and the production of a minimum viable product.

These activities will contribute to informing and accelerating development of this novel technology for future impact and applicability within both civilian first responder and defence sectors. /

▲ Australian Army Nursing Officer assembles essential medical supplies during Operation RENDER SAFE.

Pandemic prevention

DMTC is collaborating with the University of Melbourne, UQ and industry partner Biointelect to develop therapeutic monoclonal antibodies targeting Henipaviruses (including Nipah, Hendra and Langya viruses), and Orthopox viruses (Monkeypox and reemergent Smallpox), both of which have pandemic and biothreat potential.

The COVID-19 pandemic clearly demonstrated the vulnerabilities of human populations to new viral infections, and the consequent major impacts on global stability. This project is seeking to develop treatment options for viruses of pandemic potential, to support preparedness against future health events.

Henipaviruses represent a serious health threat across the Asia-Pacific region. While Henipaviruses are commonly acquired via zoonotic transmission (from animals to humans), there are documented cases of human-to-human transmission of some Henipaviruses, such as Nipah virus. Small, ongoing Nipah virus epidemics are reported across the region, with fatality rates reported in up to 50% of cases, with very limited treatment options available.

Gaining recent notoriety when the World Health Organization declared the growing outbreak in 2022 a global emergency, Monkeypox is a potentially serious illness that results in prolonged and painful infection, with a fatality rate of between 1–10%. Monkeypox is readily transmissible from humans to pets and other animals, providing opportunity for continued viral evolution and spread.

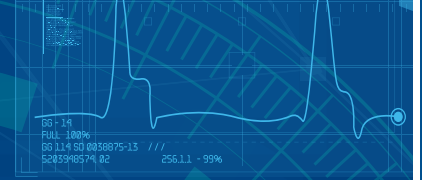
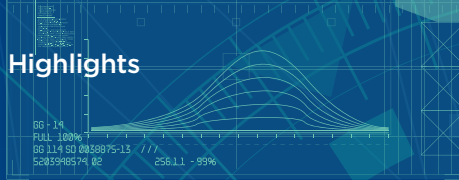
The long-term objective of this project is to develop broadly reactive and potent monoclonal antibodies to Monkeypox/Smallpox and Nipah/Henipaviruses to utilise as therapeutic and prevention tools for the mitigation of future pandemics.



The long-term objective of this project is to develop broadly reactive and potent monoclonal antibodies.

While the project is still in an early stage, DMTC's strategic investment is enabling the identification of antibodies for development into candidate therapeutic assets. A key part of DMTC's role in leading this work is the provision of industry expertise that will shape the research program to best support future regulatory submissions and clinical development. /

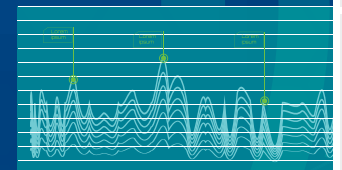
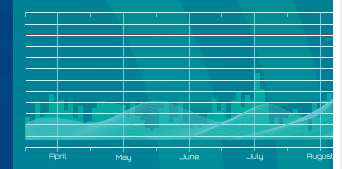
▲ Dr Jennifer Juno (Laboratory Head), Dr Adam Wheatley (Laboratory Head) and Dr Wen Shi Lee (Senior Research Officer) from the University of Melbourne's Peter Doherty Institute for Infection and Immunity.



temp 36.6°

SpO₂ 96%

bpm 65



Expanding horizons

One of HSSA's most exciting developments has been the increasing number of stakeholders that the Division has engaged, as evidenced by new collaborative partnerships.

A key pillar of the HSSA framework, essential to its mission of developing products and decision-support systems for protecting military and civilian personnel against CBR threats, emerging infectious diseases and pandemics, is the Division's Strategic Advisory Program. This Program encompasses policy review and advice, asset assessment, risk identification and health and economic modelling activities – offering decision-makers with direct delivery support relevant to Australia's health security and resilience.

Since its inception, HSSA's Strategic Advisory Program has successfully managed and delivered a variety of projects, differing in size, scale and stakeholder client base. Key areas of activity include:

- auditing Australian capability and capacity for research, development, manufacturing, supply chain resilience and distribution of priority products and solutions that contribute to national health security, and visualising this data;
- providing health economic modelling and scenario analyses;

- analysing sovereign technology, R&D capabilities, broadly from an ecosystem perspective, to identify and diagnose key gaps for strategic investment, but also on a more specific scale assessing specific technologies of interest to stakeholders to make recommendations for stage-gated investment; and
- reviewing departmental capabilities related to health security to identify needs and gaps, and inform remediation activities.

HSSA employs a common foundational process to each project, which is then tailored to individual stakeholder needs and requirements to deliver effective results with bespoke insights. Project delivery is supported by HSSA's reach into a broad and deep network of national and international sector experts. HSSA's work in the strategic advisory space centres on supporting government agencies in health security planning and preparedness, including sovereign capability development. With a history of providing quality to a broad range of stakeholders, HSSA's reputation and credibility in this sector continue to grow. **!**



Smart Enough to fit your needs

“The Smart Enough® Factory has helped to focus our people on the I4.0 challenge, and accelerate the implementation of our digital strategy. Capturing data in dashboard format is a great first step, and helps managers to make informed decisions. We’re building on that towards a more mature and more secure system with the ability to be more predictive.”

DAVID LEVY - TECTONICA

D MTTC's Industry Capability Development (ICD) Program continues to deliver industrial uplift for Australian small and medium-sized enterprises (SMEs) to build sovereign capability and capacity.

DMTC's leadership of these initiatives closely aligns with Defence's focus on increasing opportunities for capable, scalable, connected and secure Australian industry suppliers to contribute to national defence objectives and outcomes.

The current focus of the ICD Program continues to centre on the deployment of the Smart Enough® Factory (SEF) Program.

Faced with the challenge of delivering business-as-usual – and sustaining operations through disruption – most companies, particularly small businesses, are either unable or reticent to commit to significant business improvement initiatives.

As its name suggests, the SEF Program works by providing participants with an introduction to the benefits of Industry 4.0 (I4.0) technology and a demonstration of digital transformation that is “smart enough” to make a tangible impact without being resource-prohibitive.

Through the smart application of simple, cost-effective technology, participating companies can realise points of difference and competitive advantage in bidding for work in defence or adjacent sector supply chains.

The ability to “learn by doing” and see the direct benefits in a real manufacturing environment provides immediate benefit. The intensely hands-on nature of the SEF experience allows participants to realise a rapid return on investment in a specific area of their operations, as well as considering the longer-term prospects to implement a digital strategy in other areas.

The diverse range of technical expertise provided by DMTC and its delivery partners positions each company to embrace the digitalisation of their manufacturing processes, as well as lifting cyber maturity and digital literacy. This helps to build the “muscle” and capacity to help the suppliers to be fit to deliver, and includes the hands-on support provided by undergraduate interns (read more on page 40).

In the reporting period, uplift activities were undertaken in metropolitan Melbourne and regional Victoria (VIC), and in South Australia (SA).

Utilising the Community of Practice concept to full effect, companies that participated in the Program in previous years continue to benefit from information sharing and ongoing technical support.

DMTC's SEF Program includes discrete briefings and training in cyber security in recognition of the fact that appropriate cyber security controls for operating technology and equipment are often overlooked.

The industrial context provided by direct engagement with the Defence Primes is a key part of the Program and reinforces its value and impact.

DMTC also continues to work productively alongside advisers in the Office of Defence Industry Support (ODIS) and the new Industry Engagement division within CASG. DMTC's focus on practical, factory-floor initiatives is an ideal complement to the ODIS support for head office strategy support, introductions to program areas and advice on available Government grants. **I**



The diverse range of technical expertise provided by DMTC and its delivery partners positions each company to embrace the digitalisation of their manufacturing processes, as well as lifting cyber maturity and digital literacy.

◀ Implementing the concepts of Industry 4.0 has been of great benefit to participating businesses, including many small businesses in regional areas.

Sights set on sustainability

For the defence sector broadly and for companies at all levels in supply chains, challenges around sustainability, reporting and compliance with emerging net zero policies and emissions targets are a technology challenge, but also require change in processes, culture and attitude.

Insights into the value of digitisation and better quality data that a program like DMTC's SEF Program provide are highly relevant for SMEs wanting to demonstrate sustainable practices and to be globally competitive.

In this more environmentally conscientious landscape, the SEF toolkit concept offers a generalised framework through which efficient energy consumption and emission monitoring can be adopted by SMEs.

The implementation of the SEF toolkit has delivered benefits and outcomes across a range of business operations. In more recent times, working with companies to prioritise digital uplift activities, DMTC has noted a shift towards initiatives to monitor power consumption from machinery. This reflects an increasing awareness and focus on net zero challenges.

With an increasing requirement on companies to reduce their carbon emissions as a result of government policies and international commitments to net zero targets, it is anticipated that reporting requirements for major, multinational prime contractors related to Scope 3 emissions (emissions generated by a company's supply chain) will grow rapidly.

Notable examples of the SEF toolkit being applied in this context include one of the earliest companies to engage in the roll-out of the DMTC SEF Program. Victorian company AW Bell used the toolkit to monitor its highly energy-intensive furnaces and autoclaves. Visibility of the utilisation of those machines resulted in optimised production processes and an estimated reduction in energy consumption of over 60,000 kWh per year. **/**

1

The Smart Enough® Factory is:

- ... enhancing sovereign manufacturing capabilities.
- ... building supply chain resilience and global competitiveness.
- ... introducing SMEs to key digital concepts.

2

A Smart Enough® Solution is:

- ... a cost-effective, low-code introduction to factory connectivity allowing businesses to see these benefits before committing to further investment.

3

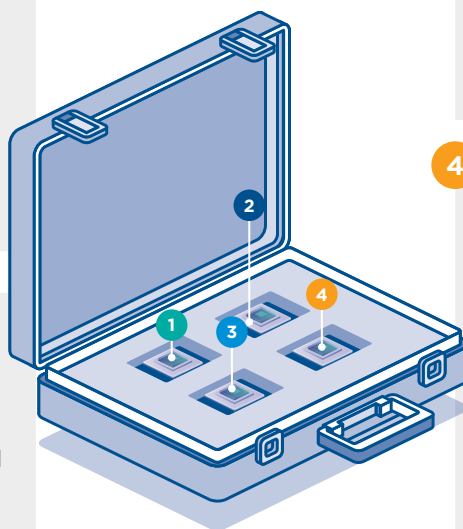
The Smart Enough® Factory is designed for:

- ... small to medium businesses seeking a straightforward, practical and hands-on approach to digitisation.
- ... Defence Primes aiming to bolster the defence preparedness and digital literacy of SMEs within their global value chains.

4

The benefits to participants include:

- ... immediate technical solutions such as automated job tracking, real-time data collection, safety improvements, asset tracking and capacity planning.
- ... visibility of net zero compliance, security and cyber requirements.
- ... workforce and human capital uplift.
- ... knowledge to make pragmatic, data-driven decisions.



Smart Enough[®] Community of Practice

With more than 70 participants, the SEF Community of Practice is an ever-growing network of companies that share a common desire to fully realise the benefits of their digital transformation journey by contributing their perspectives, I4.0 learnings and practical insights from the factory floor.



DELIVERY PARTNERS



the
smart enough
factory



Advancing collaboration



In February, DMTC returned to Canberra for its 2024 Annual Conference.

Bringing together more than 200 delegates from across the defence innovation, science and technology ecosystems, the aim of this year's Annual Conference was to highlight significant advancements in Australia's sovereign industrial capability while celebrating the collaborative efforts of individuals, teams and partners across DMTC's diverse portfolio of programs and projects.

The Conference also served as a forum for broader strategic discussions, including reflections on the implications of the DSR and associated initiatives, how stakeholders can best manage this period of transition and uncertainty, and overcoming the practical hurdles confronting the defence sector in delivering asymmetric capability effects.

Keynote speakers included Professor Tanya Monro AC (Chief Defence Scientist – Department of Defence), Air Vice-Marshal Graham Edwards AM, CSC (Head Aerospace Systems Division – CASG), Ivan Power (CEO – National Reconstruction Fund Corporation), Brigadier Isaac Seidl (Deputy Surgeon General – ADF), Suzi Hewlett (Strategic Advisor – Manufacturing Industry Skills Alliance), Adam Reid (CEO – Department of Industry, Innovation and Science – South Australian Government), Dr Todd Mansell (Head Technical – Australian Submarine Agency), and Major General Jason Blain, DSC, AM, CSC (Head Land Systems Division – CASG). These keynote presentations provided important insights into the Conference themes.

Deep dives into the progress of DMTC programs and projects rounded out the first day of the Conference.



▲ Dr Steve Dowey showcases I4.0 technology through a demonstration of the SEF Program's Factory in a Box Kit.



▲ DMTC honoured the contributions of stalwarts Dr Leigh Farrell and Professor Martin Veidt.

▲ Top: Air Vice-Marshal Graham Edwards AM, CSC was one of the distinguished keynote speakers at DMTC's Annual Conference.



▲ Brigadier Isaac Seidl expanded on his previous year's keynote speech with another compelling health security address.

▲ Top: Alice Nason, Dr Mark Hodge, and Professor Emily Hilder participated in one of the two panels that concluded DMTC's Annual Conference.

In what is always a highlight of the event, the Conference's Gala Dinner and accompanying Awards for Excellence provided attendees with an opportunity to network and celebrate outstanding achievements across the DMTC community. The dinner featured timely insights courtesy of Colonel Jennifer Harris CSC, who joined Master of Ceremonies Alex Sloan AM for a conversation about change leadership, collaboration and fostering high-performing teams.

The second day commenced with a tribute to DMTC stalwarts Dr Leigh Farrell and Professor Martin Veidt, who stepped back from their positions in the Company in late 2023, and whose immense contributions to both technical outcomes and teams within DMTC will be greatly missed. This was followed by a showcase session featuring early career researchers and DMTC-supported students, demonstrating DMTC's commitment to developing the pipeline of diverse Science, Technology, Engineering and Math (STEM) talent to meet the science and technology challenges of the future.

The Conference concluded with two panel sessions focusing on perspectives concerning AUKUS, the roll-out of ASCA, enablers and key ingredients of success in collaboration, and novel approaches to capability development, contracting and procurement to generate partnerships and deliver speed to capability. The first session featured Professor Emily Hilder (Head – ASCA), Alice Nason (Research Associate – United States Studies Centre, University of Sydney) and Dr Mark Hodge (CEO – DMTC). The second featured Mike Teece (Director of Research – Science & Technology Australia), Jane O'Dwyer (CEO – Cooperative Research Australia) and Deepak Ganga (Head of Program Management – DMTC).

DMTC extends its appreciation to all involved in making the 2024 Annual Conference a resounding success. /

Annual Conference: Highlights featuring the
2024 Awards for Excellence

Celebrating high-performance

Research with real-world impact, efforts to build the capacity of Australia's small businesses and breakthroughs in technology development have been recognised with Awards for Excellence at the DMTC Annual Conference for 2024.

Awardees were honoured in seven categories, with each demonstrating commitment to excellence and collaboration across a diverse portfolio of programs and projects.

Often described as the MVP Award, the Collaboration Award was presented to the CEO of Australian biotech company **Sementis Limited, Dr Anne Collins**. Anne's contribution has been pivotal to the outcomes achieved by a collaborative team of experts from Sementis, University of South Australia, ANU, Monash University and HSSA to enhance the Sementis Copenhagen Vector vaccine platform.

Progression of the manufacturability pathway for the technology is a key focus for the project team. The overarching goal is to deliver a platform for the production of safe and versatile vaccines, at speed and at scale.

In parallel, Anne led a HSSA-facilitated work package with expert drug development advisers from Certara that mapped a pathway for Sementis to achieve critical milestones and pave the way for further domestic and international engagement.

▲ The Awards for Excellence celebrate the outstanding contributions of individuals and project teams across DMTC activities.



Zoe Kristall from Planet Innovation took out the Project Leadership Award for successfully harnessing the efforts of a team developing bio-threat detection technologies and integrating them into a wearable sensor.

Zoe's project management expertise has ensured the project has remained on track while responding to changing priorities and stakeholder demands.

Welding specialists **Ashley Bell and Daniel Fosdike from BAESMA** were honoured with the Research Partnership Award for providing critical industrial leadership and context to inform the application of research outcomes.

Welding technology and equipment installed at the Osborne Naval Shipyard represent a step change in shipbuilding technology. The project partners from BAESMA, ANSTO, the University of Wollongong and DMTC are working together to apply R&D outcomes and maximise the capabilities of the shipyard.



Dr Alessandro Carcione from The University of Queensland was presented with the Industry Partnership Award for his invaluable and long-standing contributions to both technology development and technology transfer projects managed by DMTC.

Alessandro has also made a huge impact as a key member of the team that delivers DMTC's SEF Program – a practical, hands-on technology solution that has been universally well received across the defence industry sector, particularly by small to medium enterprises. Since early 2020, Alessandro has been an integral part of the SEF team, showcasing persistence, problem-solving skills and the ability to extend both his knowledge and the knowledge of his colleagues. His dedication has made a real difference to each of the 60-plus small businesses that have participated in the SEF Program across Australia.



Dr Karren Plain was presented with the SoldierOn Award, for a “quiet achiever” who embodies DMTC's values and has a strong work ethic. Karren is a post-doctoral researcher working at the EMAI, and has been a key member of the project team working to produce a new, more effective vaccine against Q Fever for use in humans.

Karren has made enormous contributions to the team's progress in a role that is both physically demanding and technically challenging. Her work has resulted in a robust and reproducible process for the growth of bacterial matter, an integral step for the creation of novel vaccine material.

Joanne Allard from the Department of Defence took out the Early Career Researcher Award for her contribution to a collaborative DMTC project involving DSTG, The University of Queensland and WEHI to develop a cost-effective, broad spectrum MedCM that has potential to deliver significant global breakthroughs in the combating of deadly nerve agents.

Joanne has undertaken the bulk of the scientific work to progress this project to date, as part of both her employment with Defence and in pursuit of a PhD in protein production and engineering.

A collaborative DMTC project team consisting of Bruck Textiles, DSTG, CSIRO, RMIT, Nanolayr and Proxenus (led by Dr Yen Truong from CSIRO) received the Capability Improvement Award for their work in addressing a known capability gap in the protection of personnel against chemical, biological or radiological threats (relating to a lack of aerosol protection in air-breathable protective suits). The team successfully progressed the multi-layered, air-breathable textile technology solution from lab scale fabric to production scale in a period of 15 months.

This year's DMTC Awards for Excellence were handmade by Aboriginal Steel Art founder Wayne “Liwingu” McGinness. Wayne's work blends contemporary Aboriginal art and the use of steel in both two and three dimensions. **!**



From internship to impact

Digital literacy is a critical enabler for SMEs in their effort to better integrate into global value chains. Unsurprisingly, a key component in developing and supporting technology-enabled SMEs is a workforce equipped with the skills needed to tackle digital challenges of the future. Through its Education and Industry Capability Development Programs, DMTC supports Australia's national vision for a highly skilled, digitally literate workforce. With assistance from the Defence Science Institute and Australian Industry Group, DMTC achieves this by providing undergraduate engineering, computer science and software development students with practical work experience, assisting SMEs in their journey towards digitising their manufacturing operations as part of our SEF Program. Interns play a key role in the delivery of DMTC's SEF, with internships offering mutual benefits for students and industry partners. Students gain valuable experience working on the factory floor, while industry partners gain much-needed support as they progress along their digital transformation journey.

Ashleigh (Ash) Mildern, an Engineering and Computer Science student at RMIT, joined DMTC's SEF Program as an intern in late 2023. For Ash, what initially drove her interest in the program was the opportunity to flex some of the technical skills acquired during her studies, in addition to gaining exposure to the real-world applications of engineering principles.

"At university each problem has a very clear and defined solution. What I was most looking forward to as part of my SEF internship was getting my hands dirty and delivering real solutions for participating companies."

Throughout her internship, Ash thrived on the absence of predetermined solutions when working with industry. In contrast to what she was commonly tasked with at university, Ash enjoyed the challenge of working

with industry to find solutions to open-ended and novel challenges. "[Industry] know what they want, they know what it might look like, they know what it should do. What they don't know is how to make that happen." It was this iterative process of tinkering, failing, tinkering some more and then succeeding that made her internship especially satisfying.

Ash collaborated closely with two companies, Aldus Engineering and Successful Endeavours. Despite manufacturing distinct products, both companies shared similar requirements for their digital transformation projects. In Ash's words, each project aimed to "collect data to enhance the efficiency of manufacturing practices".

For Ray Keefe, Managing Director of Successful Endeavours, the benefit of the SEF Program is clear: You don't know what you don't know. "It seems simple in principle, but in practice it means you miss opportunities for major improvements to your manufacturing operations," Ray says. "You don't understand what is possible and what value it can bring to the table – which is why DMTC's SEF Program has proven highly valuable to taking our electronics manufacturing operations to the next level."

And the benefits don't end there. Ray said another major advantage of the SEF Program is the direct support businesses receive from capable interns who help to identify the best approaches for implementing the tech, as well as assisting with the physical implementation. "We were particularly pleased to have worked with our intern, Ash...she was genuinely interested in what we made and helped us implement what is now a central piece in our quality assurance and traceability system."


▲ After completing her internship, Ash secured a part-time position at MEMKO, which will transition to a full-time role upon her graduation.



When discussing the skills that contributed to her success in the Program, Ash admitted that while technical skills are important, decision-making, business acumen and communications skills are equally vital. In the industrial context, Ash noted that decisions aren't entirely based on identifying the most advanced technology. Factors like safety, profitability, energy consumption and feasibility are all important considerations, and the ability to analyse and communicate pragmatic technology solutions is a skill engineers should develop. "I can safely say that this internship is not just a nice item on my CV. I genuinely feel more experienced and capable thanks to my involvement in the Program."

Ash also found her work with DMTC gave her renewed perspective on the breadth of Australia's defence industry. "My family has a very strong defence industry presence, so I have always been aware of the industry, but it still surprises me how far reaching it is and how developing Australian industrial capability and resilience can have critical national security benefits."

Since completing her internship, Ash has secured a part-time software engineering role that will transition into a full-time graduate role with MEMKO from mid-2025.

Ash's internship experience highlights the significance of hands-on experiential learning in developing Australia's future workforce, and DMTC looks forward to following Ash's continued progress as she embarks on a promising and impactful career. 



“Workforce challenges is a recurring theme across the defence landscape. A key enabler of technology modernisation for defence supply chain companies is access to a skilled workforce capable of leveraging nascent technological advancements and I4.0. DMTC is proud to play a small but important role in developing a workforce aligned with Australia's strategic priorities.”

CHARLOTTE MORRIS - DMTC

▲ Attending defence expositions like Land Forces 2024 as part of an industry delegation offers interns, as well as SMEs, a valuable opportunity to build networks and gain industry insights.



Collaborative to the core

In July 2023, DMTC welcomed its first intern under a partnership with CareerTrackers, a national initiative designed to support pre-professional First Nations university students by linking them with meaningful, paid internships.

Isaac Kathner, a final-year undergraduate student at the University of Adelaide, was DMTC's inaugural CareerTrackers intern, gaining work experience within DMTC's HSSA Division.

Isaac's internship was a significant learning journey, which emphasised the value of building relationships between industry, research institutions and government, as well as opening his eyes to the potential career opportunities across national security and health security spaces. At the outset of his internship experience, Isaac's perception of the sector was one of fiercely competitive businesses vying for work. This contrasted with the reality of Isaac's work with DMTC, which he says "headlined the importance of collaborative efforts across the sector". Isaac found the more cooperative environment refreshing, with the internship encouraging him to "expand my potential horizons for after university and to explore the breadth of opportunities to contribute to the health security space that are available across the sector more broadly".

HSSA acts as a connector, facilitating the delivery of enhanced health security capabilities through uniquely collaborative activities. Isaac observed first-hand how HSSA's mission to foster enduring linkages in the technology and innovation ecosystem aligns with the Australian Government's overarching national defence goal of rapidly developing sovereign capability. "The biggest takeaway from my internship was the importance of collaboration in industry and research spaces," he said. This perspective, Isaac adds, "demonstrates that success in national security and health security, as well as in the broader scientific community, often hinges on collective efforts rather than individual achievements".

"Isaac provided huge value to the HSSA team over his time at DMTC. He was a vital contributor to many initiatives, and we benefited greatly from his commitment and ability, as well as his cooperative and collaborative nature. Isaac was able to provide fresh perspectives to existing practices, and provide insight into new approaches. We wish Isaac all the best in his future pursuits."

DR EMILY KIBBLE - DMTC

When asked what future interns at DMTC should keep in mind when commencing their work experience, Isaac advised them to keep an open mind and be adaptable. "There is always something interesting to do and plenty of reminders about how you're contributing to Australia through the work being done at DMTC."

Celebrating 15 years of excellence this year, CareerTrackers plays a vital role in advancing First Nations higher education, employment and economic participation. DMTC looks forward to future opportunities to support initiatives like this one with CareerTrackers. /

▲ Isaac Kathner alongside wife, Lanai, at the 2023 CareerTrackers Gala Awards.

Future STEM leaders

DMTC's long-standing commitment to education and outreach has provided support for more than 100 PhDs, master's and undergraduate students. These scholarships align with Defence capability requirements and often facilitate development opportunities for students alongside Australian industry, ensuring that the next generation of defence research and technology leaders gain industry experience as well as contributing significantly to Defence capability both during their studies and throughout their careers more broadly.

A standout session at DMTC's 2024 Annual Conference was a Student Showcase, featuring six emerging talents from DMTC's Education Program. The following provides a brief summary of some of their captivating research.

Nathan Brichta (PhD candidate at The University of Sydney): Nathan, pictured right, is researching advanced transducer materials used in next-generation sonar capabilities. His PhD explores the impact of fatigue on the microstructure of these materials and he is examining ways to enhance their performance, reliability and cost-effectiveness.

Harry Veivers (Thales Australia and PhD candidate at UQ) and Sean Samson (PhD candidate at RMIT): Harry and Sean's work has been a pivotal part of an ongoing partnership involving Thales Australia, RMIT, UQ and DMTC. Their PhD studies address the enhancement of future small arms technologies through lightweighting and thermal management optimisation. Through lightweighting, the project aims to add more functional elements – such as digital capabilities – to the technologies, or develop a lighter, more mobile alternative. In parallel, optimising the technologies thermal management will improve their overall performance.

James Kirkness (PhD candidate at The University of Sydney): Driven by the need to ensure that aircraft operate safely within their design constraints, James's research aims to leverage the same dynamic environments that contribute to structural fatigue, particularly those within aircraft cavities, to harness aeroacoustic energy using piezoelectric materials to power sensors for structural health monitoring.



Morgan Brown (undergraduate student at Swinburne University of Technology): Morgan was an intern in the Victorian roll-out of DMTC's SEF Program. His presentation walked attendees through his experience working alongside small businesses to enhance their digital practices and I4.0 literacy. Morgan's internship journey was featured in last year's Annual Report.

Joanne Allard (DSTG and PhD candidate at UQ): Joanne, pictured above, is undertaking research that focuses on the development of broad spectrum medical countermeasure development for nerve agent poisoning. You can read more about Joanne's research and her recent achievements on page 39. /

Finance

During the reporting period, DMTC continued to maintain strong collaborations with Defence, the national security community, health security agencies, research and industry partners. These collaborations facilitated a diverse range of research, development and innovation activities.

DMTC successfully delivered a broad portfolio of R&D programs and secured new funding for various initiatives, including sovereign and alliance industrial capability assessments.

Through DMTC’s co-investment model, this investment leveraged additional cash and in-kind investment from Australian industry, research agencies, state government and other Defence program sources. Alongside technology development activities, DMTC continued to emphasise supply chain development, extending activities into regional VIC, NSW and SA.

The Company also advanced the integration of HSSA, the first division of DMTC Limited, to build on technology developments in the predecessor MedCM Program. This year, the Division collaborated with the Department of Health and Aged Care and expanded into other priority areas of health security.

For the financial year, resources applied amounted to \$26.1 million. The Company recorded a net deficit of \$628,949 for the year ended 30 June 2024, compared to the net surplus of \$101,916 for the previous year. This deficit was due to reduced revenue leading to lower program levies and the necessity to draw down on reserves to maintain critical capability and essential R&D activities.

Cash funding and associated in-kind received for the financial year was \$25.4 million, including \$7.2 million of in-kind contributions from industry and research partners. Reduced cash funding received was supplemented proportionally by increased utilisation of the Program Opportunity Reserve to support research activity.

Cash reserves, including cash on deposit, totalled \$31.3 million as of 30 June 2024, which included \$25.7 million of unearned revenue from Commonwealth and Defence program funding. These funds are committed to fulfilling existing and new research activities in future periods.

Copies of the Company's statutory Financial Report for the year ended 30 June 2024 are available on request. /

Overview & Context

Program Activities

Health Security

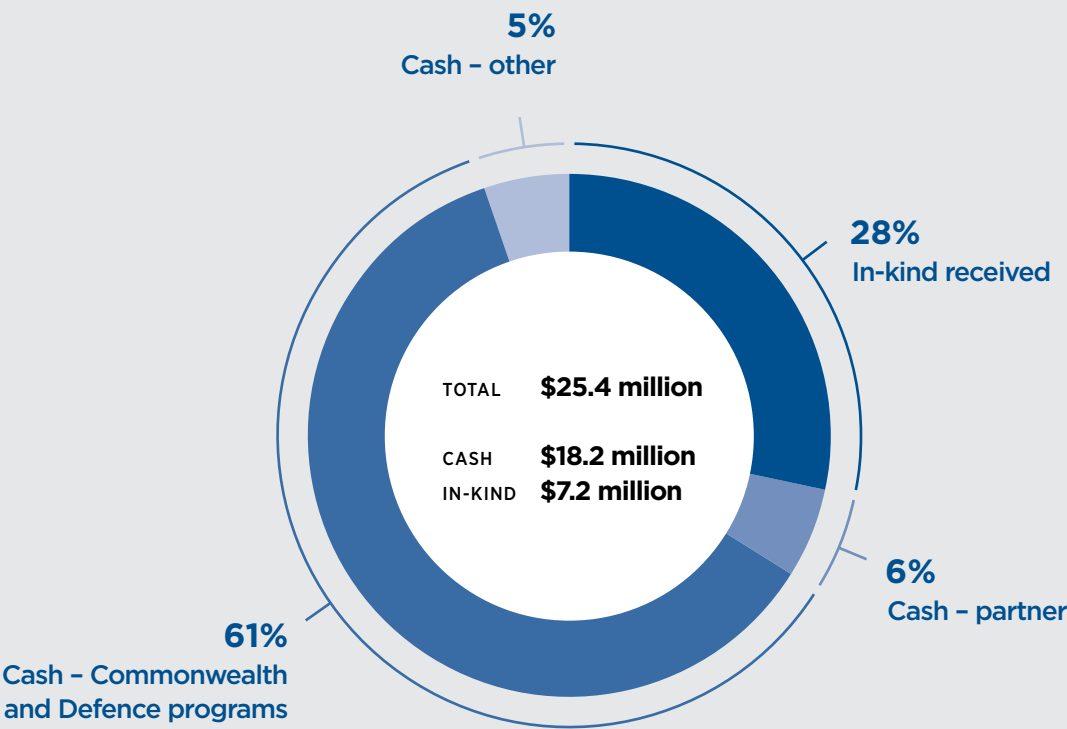
Industry Capability

Annual Conference

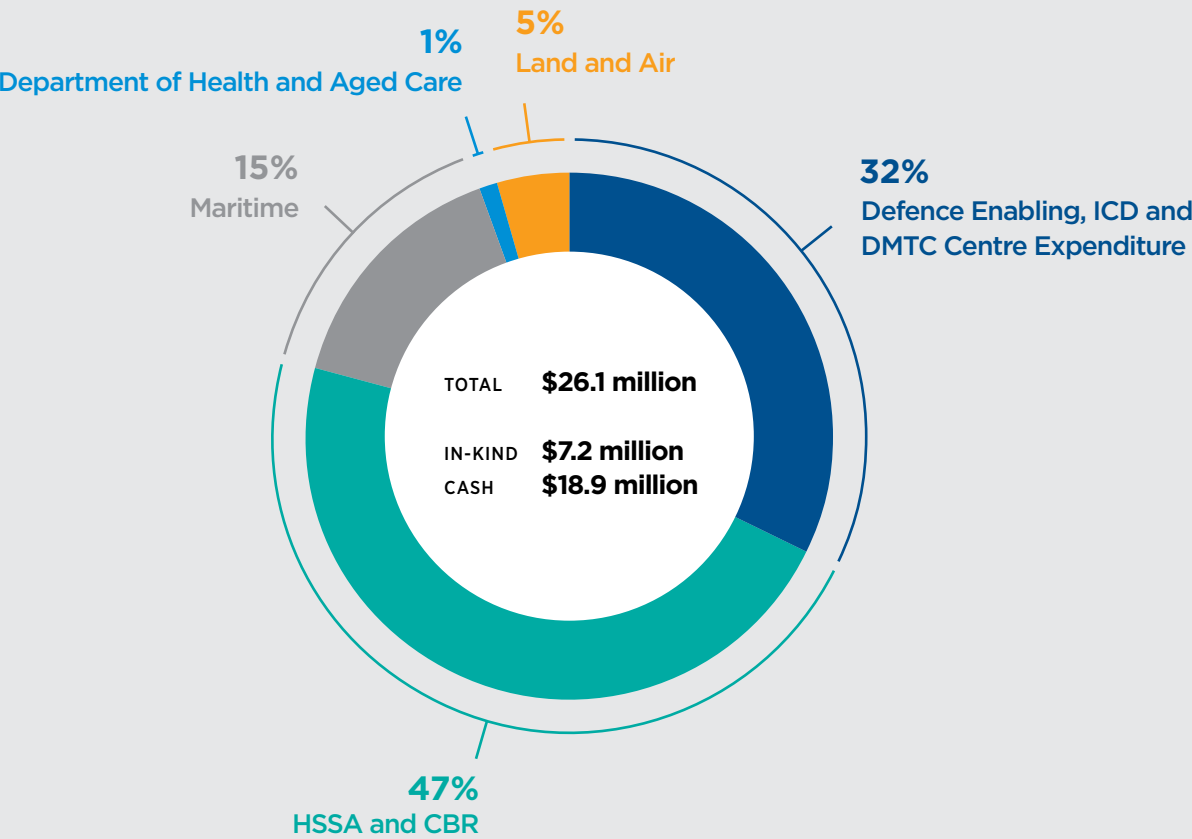
Workforce Development

Governance & Organisation

Resources received



Resources applied



Governance

The DMTC Board is responsible for overseeing the management and strategic direction of the Company. Each Director is elected for a two-year term by the Company's members at the Annual General Meeting (AGM). As required in DMTC's Constitution, the Directors have a comprehensive and complementary range of skills and experience.

AGM and CEO presentation

The DMTC AGM was held on 23 November 2023. In accordance with the Company Constitution, Directors Tony Quick, Dr Caroline McMillen AO, Dr John Best and Air Marshal (Retd) Dr John Harvey AM retired by rotation at the AGM, were re-nominated and re-elected for a new two-year term. During the AGM, two minor amendments to the Company Constitution were passed by resolution. As a companion to the AGM, DMTC's CEO presented an update on the Company's achievements for the financial year ending 30 June 2023 and anticipated future activities to representatives from DMTC partner organisations.

Audit, Risk and Remuneration Committee

The Audit, Risk and Remuneration Committee is a formal sub-committee of the DMTC Board. The Committee assists the Board in its decisions on financial reporting, internal control structures, internal and external audit functions, compliance, governance and risk management systems and remuneration policies. The Committee is comprised solely of Non-Executive Directors of DMTC, the majority of whom are independent.

► At the ADM 30Under30 awards, Assistant Minister for Defence Matt Thistlethwaite signalled the Government's commitment to developing people of the ADF, defence industry and the public service. "We need leaders who can harness the capacity of diverse teams to deliver innovative solutions to hard problems," the Minister said.

Awards

DR EMILY KIBBLE

Earlier this year, Dr Emily Kibble, HSSA Project Manager and Analyst, was announced as one of the inaugural winners of the Australian Defence Magazine (ADM) 30Under30 awards, which aim to celebrate emerging leaders in the defence sector for their impact, achievements and innovation.

Emily has exemplified these attributes through her important contributions to numerous strategic projects within the HSSA Division, her mentorship of students within DMTC's Education Program, and her leadership roles – including her role as co-chair of DMTC's Diversity & Inclusion (D&I) Working Group, and Assessor of the Australian Academy of Technological Sciences and Engineering (ATSE) Elevate: Boosting diversity in STEM initiative.

Emily, pictured below, is highly deserving of this recognition, and DMTC congratulates her on this wonderful achievement.



DR ALESSANDRO CARCIONE

This year, DMTC also celebrated Dr Alessandro Carcione, who was honoured with UQ's Early to Mid-Career Research Industry Engagement Award. Alessandro's significant and enduring contribution to DMTC's ICD activities, particularly as a key member of the SEF delivery team, along with his involvement in other enabling technology development projects, has been critical to the success of these initiatives. Read more about Alessandro's contribution to DMTC on page 39. [/](#)



Tony Quick
CHAIR
MA



Patricia Kelly
DIRECTOR
BA, GAICD



Marc Peskett
DIRECTOR
BBUS, CA (AUSTRALIA),
FTI (AUSTRALIA), MAICD



Michael Grogan
DIRECTOR



Dr Caroline McMillen AO
DIRECTOR
PHD, BA (HONS), FAHMS



Dr John Best
DIRECTOR
PHD, BSC (HONS), MBA, GAICD



**Air Marshal (Retd)
Dr John Harvey AM**
DIRECTOR
PHD, MIS, MLITT, BSC, BA, GAICD

**Dr Mark Hodge**

CHIEF EXECUTIVE OFFICER

**Steve Evans**

CHIEF FINANCIAL OFFICER

**Jim Arthur**CHIEF SECURITY OFFICER,
CHIEF COMMERCIAL OFFICER**Dr Matt Dargusch**CHIEF TECHNOLOGY OFFICER,
PROGRAM LEADER
AIR**Dr Felicia Pradera**HEAD
HSSA**Deepak Ganga**HEAD
PROGRAM MANAGEMENT**Charlotte Morris**PROGRAM LEADER
INDUSTRY CAPABILITY
DEVELOPMENT**James Sandlin**HEAD
NEW CAPABILITY**Shraddha Gatiya**

FINANCE MANAGER

**Bronwynne McPherson**OFFICE AND BUSINESS SUPPORT
MANAGER**Miles Kenyon**HEAD
MARITIME STRATEGY**Megan Champion**

MANAGEMENT ACCOUNTANT



Dr Stephen van Duin
PROGRAM LEADER
MARITIME



Dr Emma Prato
PROGRAM LEADER
MEDICAL COUNTERMEASURES



Steve Champion
PROJECT MANAGER
HSSA AND ICD



Harry Baxter
HEAD
GOVERNMENT RELATIONS



Dr Scarlet Kong
PROJECT MANAGER
APMA PROGRAM



Dr Mitch Dunn
PROGRAM LEADER – ENABLING
TECHNOLOGIES



Dr Emily Kibble
PROGRAM LEADER
HSSA STRATEGIC ADVISORY



Patrick Crosling
GOVERNMENT RELATIONS MANAGER,
COMMERCIAL & LEGAL MANAGER



Sharne Millen
ADMINISTRATIVE ASSISTANT



Fred Eske AM
GENERAL MANAGER
INNOVATION AND MARITIME
CAPABILITY DEVELOPMENT



Dr Maryanne Spiers
PROJECT MANAGER
HSSA



Adam Smith
MANAGER
ISR SYSTEMS



Mark Druss
ASSISTANT PROJECT MANAGER
AND ANALYST – HSSA

Diversity & Inclusion

As has been said elsewhere, diversity is the mix while inclusion is “making the mix work”.

DMTC is maintaining a commitment to D&I as a key enabler of enhanced business outcomes.

The link between D&I and business outcomes is exemplified in the competencies and behaviours that underpin the ISO accreditations held by DMTC that are directly relevant, and aligned, to D&I practices.

DMTC’s D&I Strategy was launched in April 2022. While an internal D&I Working Group provides direction and oversight, there is a strong sense of ownership of inclusion initiatives across the DMTC team.

The Strategy, along with the Company’s Reconciliation Action Plan (RAP), is being tracked and regularly reported at management and Board levels, as well as through annual Impact Surveys conducted by Reconciliation Australia.

Among many others, key initiatives being tracked include opportunities for social impact through procurement and partnerships with Aboriginal and Torres Strait Islander-owned businesses, and the gender profile of both attendees and presenters at major events such as DMTC’s Annual Conference. By implementing practical measures outlined in the Strategy and in the Company’s RAP into everyday business, DMTC aims to normalise and sustain a focus on inclusion and belonging.

During the year, a series of internal “opt-in” workshops were held with DMTC team members to identify practical ways to make DMTC an even more inclusive workplace. Geared towards positive actions rather than admiring the problem, the workshops resulted in a series of additional improvement actions that will be tracked over the short, medium and long term.

Examples included a refreshed approach to Company-wide meetings to amplify the acknowledgement of “small wins” and share stories to build cultural awareness. Additionally, DMTC plans to identify “psychological safety champions” to promote and encourage psychologically safe behaviours in the workplace, supported by updated processes, guidelines and training. /

Guest of the Chair



As noted in the Chair’s Report on page 8, DMTC continues to offer an annual Guest of the Chair fellowship for emerging leaders from across defence and adjacent sectors, fielding candidates from the Leadership cohort of ATSE’s Boosting diversity in STEM initiative.

The fellowship aims to provide the Guest of the Chair with mentoring and Board observership experience within Australia’s innovation ecosystem.

The 2024 fellowship recipient is Dr Claretta DSouza, an experienced neuroimmunologist and Commercial Business Development Manager working at the forefront of drug and vaccine development at the Melbourne-based Burnet Institute. Claretta completed her PhD at La Trobe University and is currently pursuing a Master of Business Administration at the Melbourne Business School, supported by an ATSE Elevate Leadership Scholarship.

In addition to attending DMTC Board meetings, Claretta attended the DMTC Annual Conference and engaged with DMTC’s D&I Working Group. Claretta has also completed the Foundations of Directorship course offered by the Australian Institute of Company Directors.

ATSE CEO Kylie Walker emphasised the benefit of direct engagement with the structures and mechanics of executive leadership for women seeking positions of influence in the Australian STEM sector. “Enabling every scholar to shape their future in STEM is only possible by reaching beyond academia and understanding the collaborative opportunities available with industry partners like DMTC,” she said. /

▲ 2024 Guest of the Chair fellowship recipient, Dr Claretta DSouza, and inaugural Guest of the Chair, Yang-Ming Goh, attended DMTC’s Annual Conference.

Legal

Over the last year, DMTC has continued to set a benchmark for excellence in responsible corporate governance, demonstrating steadfast commitment to upholding its legal responsibilities and fostering a culture of integrity and accountability.

DMTC’s approach to effective governance is founded in its constituting and governing documents, supported by relevant policies and procedures. These documents provide a cascading mechanism to ensure that funds and assets are utilised appropriately and for their proper purpose, and that the Company achieves its stated objectives. The organisational executive plays a key role in this framework, providing comprehensive oversight of all program activities, expenditures and conduct, with regular reporting to the Board of Directors.

Ongoing review of policy documents and business activities confirms alignment with the Company’s strategic purpose as outlined in DMTC’s Constitution.

During the reporting period, DMTC implemented several policy adjustments, where appropriate, establishing comprehensive internal risk frameworks and incorporating advice from external consultants. A notable example is DMTC’s robust response to the Commonwealth Government’s introduction of new positive duty obligations aimed at preventing workplace sexual harassment, sex discrimination and victimisation. Another is DMTC’s proactive response to recent amendments to the *Fair Work Act 2009* (Cth), introducing a new limited right to disconnect for employees into the Company’s Code of Conduct and employment contracts.

By prioritising responses to significant legislative developments such as these, DMTC not only ensures compliance, but also fosters a culture of good governance, employee wellbeing and workplace safety. /

Quality

Quality systems accreditation is a key enabler of DMTC’s operations. This year, DMTC was again re-certified against ISO 9001:2015 and ISO 44001:2017 standards. These ISO benchmarks are globally recognised endorsements of our collaborative systems and processes.

DMTC also conducts annual self-assessments against both the ISO standards and the Australian Charities and Not-for-profits Commission’s Governance Principles. These serve as organisational “health checks” that help foster a culture of accountability and continuous improvement.

Customers and partners can have greater confidence that DMTC’s focus remains squarely on the delivery of practical tangible outcomes for Australia’s defence capability and support for the local defence industry and research sectors.

Security

During the reporting period, DMTC continued to monitor and review security requirements and maintained its Defence Industry Security Program (DISP) membership. DMTC provides both periodic security training and episodic updates for team members to inform them of emerging risks and good practices, and the DMTC team members who hold formal security clearances continue to comply with mandatory training, reporting and other requirements. /

Overview & Context

Program Activities

Health Security

Industry Capability

Annual Conference

Workforce Development

Governance & Organisation



Glossary

ADF	Australian Defence Force
ADM	Australian Defence Magazine
AGM	Annual General Meeting
AMSTECH	Australian Maritime Superconducting Technologies Program
ANSTO	Australian Nuclear Science and Technology Organisation
ANU	Australian National University
AOLP	Automated Offline Programming
APMA	Advanced Piezoelectric Materials and Applications Program
ASCA	Advanced Strategic Capabilities Accelerator
ATSE	Australian Academy of Technology and Engineering
AUKUS	Australia, United Kingdom, United States trilateral security partnership
BAESMA	BAE Systems Maritime Australia
CASES	Compact Aerosolised SARS Exposure Sentinel
CASG	Capability Acquisition and Sustainment Group
CBR	Chemical, Biological, Radiological
CDMO	Contract Development and Manufacturing Organisation
CEO	Chief Executive Officer
CSIRO	Commonwealth Scientific and Industrial Research Organisation
D&I	Diversity and Inclusion
DIDS	Defence Industry Development Strategy
DSR	Defence Strategic Review
DSTG	Defence Science and Technology Group
EMAI	Elizabeth Macarthur Agricultural Institute
GMP	Good Manufacturing Practice
GWEO	Guided Weapons and Explosive Ordnance
HSSA	Health Security Systems Australia
HTS	High temperature superconductors
I4.0	Industry 4.0
IIP	Integrated Investment Program
IP	Intellectual Property

IPMC	In-Process Monitoring and Control
IS&T	Innovation, Science & Technology
kWh	Kilowatt-hour
LAD	Laser Additive Deposition
LAMP	Loop-mediated isothermal amplification
MedCM	Medical Countermeasures
MRO&U	Maintenance, repair, overhaul and upgrade
NDS	National Defence Strategy
NSSG	Naval Shipbuilding and Sustainment Group
NSW	New South Wales
OCE	Operating in Chemical, Biological, Radiological and Nuclear Environments
ODIS	Office of Defence Industry Support
PhD	Doctor of Philosophy
PPRR	Prevention, Preparedness, Response, and Recovery
QLD	Queensland
QUT	Queensland University of Technology
R&D	Research and development
RAAF	Royal Australian Air Force
RAN	Royal Australian Navy
RAP	Reconciliation Action Plan
RMIT	Royal Melbourne Institute of Technology
SA	South Australia
SEF	Smart Enough® Factory
SME	Small and medium-sized enterprise
SPD	Supersonic particle deposition
STEM	Science, Technology, Engineering and Math
Thales UWS	Thales Underwater Systems
TRL	Technology Readiness Level
T-GMAW	Tandem Gas Metal Arc Welding
UUV	Uncrewed Undersea Vehicle
VIC	Victoria
WA	Western Australia
3D	Three-dimensional

Credits

Photos

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