

Protecting Australia

The Defence Science and Technology Organisation (DSTO) is a crucial component of the Australian Department of Defence, working to safeguard the nation by delivering expert scientific advice, as well as innovative technology solutions.

Images courtesy of Australian Department of Defence

The Defence Science and Technology Organisation (DSTO) is an indispensable asset of the Australian Department of Defence, supporting and transforming the country's security capabilities while also contributing to national wealth. With an annual budget of approximately \$408 million, it has a team of more than 2,100 staff working predominantly in scientific, engineering, and technical fields to come up with valuable ideas and solutions.

The man leading DSTO is Chief Defence Scientist Dr Alex Zelinsky. Alex has an extensive and diverse repertoire of experience in the advanced technology and innovation fields. He has worked in Australia and overseas with a variety of companies, including a multinational, an SME, two universities, and two national science organisations. Rather than seeking to change jobs regularly, he says he has always sought out

challenging projects which had the best people working on them.

Alex joined DSTO in March 2012, and his approach has been to encourage staff to solve problems comprehensively and in a timely manner, keeping in mind three steps: think big, start small, and move quickly. To gain an insight into what DSTO is all about and to find out how it is helping to keep Australia safe, *The CEO Magazine* had a chat with Alex.

***The CEO Magazine:* How important do you believe the role of DSTO is in applying science and technology to safeguard Australia?**

Alex: A modern defence force is increasingly reliant on advances in technology. The Australian Defence Force is no different. Maintaining our capability advantage requires investment in science and technology. Our nation needs a high-technology edge to offset the size of our

defence force, which is smaller compared to that of our allies' defence forces.

DSTO also has an important role in advising the Australian Government on acquisition to ensure that new capabilities that are acquired offer best performance and value for money. For example, DSTO's advice is critical in addressing the technical and integration challenges for new capabilities such as the Joint Strike Fighter and the Air Warfare Destroyer. DSTO assessments ensure that the technical risks of acquiring new capability are fully understood and are appropriately managed.

DSTO expert advice also helps to reduce the cost of operating and maintaining defence equipment, and to extend their safe service life thereby delaying replacement costs. DSTO's technical expertise has saved defence many millions of dollars by extending the life of fighter aircraft long after their >



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use-by date. DSTO creates new defence capabilities that make a difference.

How has your far-reaching portfolio of experience prepared you for your role today?

I have been immensely fortunate to have a career that has put me in the centre of high technology and innovation. The lessons learned which are being applied at DSTO are: a clear vision of what we want to be as an organisation; a well-articulated strategic plan to realise the vision; relentless execution of the strategy; being people-focused by developing talent—individuals and teams; and seeking game-changing solutions by embracing innovation and risk.

In an innovative organisation with a highly skilled workforce, leaders need to adopt a consultative and collaborative style, and be aware that the best ideas can come from anywhere in the organisation.

Throughout your time with the organisation, what have been your proudest or most memorable moments? Are there any key projects or breakthroughs you have particularly enjoyed working on?

Defence science has been undertaken in Australia since 1907, with the modern DSTO coming into existence in 1974. There is a rich history of achievements in defence science and technology, including inventing the black box flight recorder, building the Jindalee Over the Horizon Radar, safely keeping the F111 jet fighters in service for an extra 14 years, and helping make the Collins class submarines the world's most capable conventional submarine.

Since joining DSTO, I have been particularly proud of the

"We are developing some of the brightest young engineers and scientists here at UQ. Working with DSTO gives our students the opportunity to apply their knowledge to cutting-edge problems and to gain experience using state-of-the-art technology." - Professor Simon Biggs, Executive Dean, UQ Faculty of Engineering, Architecture and Information Technology, The University of Queensland

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- Dr Alex Zelinsky



organisation's direct support to our troops in operations in the Middle East. DSTO has helped to develop effective counter measures for IED with electronic systems and improving the blast protection of vehicles.

DSTO has worked closely with the Australian Defence Force to develop Physical Employment Standards that will allow women to serve in combat roles. The standards are centred on developing an objective set of physical tests that are representative of the tasks for the particular combat role. Australia is world-leading in bringing equity to defence-job families based on using the physical ability of a person to undertake a task rather than their gender.

I am also excited by the breakthrough research we are conducting in hypersonics to facilitate high-speed flight at more than eight times the speed of

sound. Hypersonic flight could revolutionise both civil and military aerospace activities and enable aircraft to fly between Sydney and London in a few hours. DSTO and the US Air Force Research Laboratory, in collaboration with The University of Queensland and Boeing, have been conducting a joint research program of 10 experimental flights aimed at exploring the fundamental technologies necessary to achieve sustained hypersonic flight.

What have been the greatest challenges you have faced, and how have you worked to overcome them?

There have been a number of challenges—financial, strategic, and people. The defence budget has been under pressure and constrained for the past three years. The defence science budget and workforce have been reduced by approximately 20 per cent. The >

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has resulted in the most significant change at DSTO in the past 25 years. This has required significant staff engagement and change management by the DSTO leadership team, using town hall meetings, workshops, video streaming, meeting with smaller groups, and regular staff surveys.

One of the most challenging situations that I have faced was when a DSTO staff member was killed in a traffic accident while working in the US. This incident occurred in my first week of service as chief defence scientist. Apart from dealing with the direct issues associated with this horrific accident, I was confronted with the matter of the deceased having a substantial loan of moneys from the Department of Defence associated with the relocation of the family to the USA. Due to government regulations, the debt could not be waived.

As a result, I have led DSTO to establish a benevolent charity fund, where all DSTO staff can voluntarily make a tax-deductible fortnightly contribution. The benevolent fund is administered by volunteer staff members and provides assistance to the families of DSTO staff members who have endured hardship or misfortune.

What is your vision for the future of the organisation, and what would you like to see it achieve?

Successful chief executives should leave an enterprise in better shape than it was when they joined the enterprise. We have developed a strategic plan that will make DSTO a better organisation. We understood that in the future Australia requires a technology-enabled defence force that is at the leading edge. This has meant DSTO needs to provide valuable strategic advice to government on defence matters and to have access to the best technology in the world.

While DSTO has world-class capabilities, it does not possess all the capabilities that it will require

in the future. This means that DSTO will need to collaborate with academia and industry to get access to emerging technologies. Adopting this approach will require DSTO to become an integrator of innovation, where innovative technical solutions can come from anywhere. To be successful in the future, DSTO needs to become a more valued, more collaborative, and more innovative organisation.

How does DSTO collaborate with industry, universities, the scientific community, suppliers, and other partners to achieve successful outcomes, and how important are these relationships?

It is important that organisations like DSTO are connected to academia and industry. Working with Australian universities brings the ability to work with world leaders in emerging technologies and potential future employees. Working with industry provides DSTO with the ability to translate its research results into defence capabilities.

In the past two years, DSTO has completely revamped its relationships with Australian industry and universities to build strategic partnerships that have breadth and scale. We are pleased with our new engagement model, and we are proud to be productively working with our partners. Industry, universities, and other research organisations offer a wide range of innovative technologies and know-how with potential applications to defence.

DSTO is taking a long-term view on collaboration and partnerships to enable the constructive exchange of ideas, skills, and expertise that benefit the Australian Defence Force and enable industry and academia to share the outcomes. Our goal that drives collaboration is to get the best possible capability for the Australian Defence Force in the quickest possible time and at an affordable price. >

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challenge was to make the reductions in a targeted way—minimising the reduction of technical outputs and the capability effects on the workforce. It was important to make sure the reductions did not poorly position the organisation for the future.

We therefore developed a strategic plan that aligned DSTO with the Defence White Paper and the expectations of stakeholders—clients, government, industry, and staff. The plan was developed through extensive consultation and has strong stakeholder support, including bipartisan support.

The key has been to successfully execute the strategy. We are two years into a five-year plan which

“DSTO counts on us to operate a dedicated and diverse technical facility, in partnership with their Scientific Engineering Services unit, that designs, manufactures, and implements engineering solutions, produces applied imagery, and supports trials and commissioning of equipment for defence science and technology programs.” - Greg Barsby, Managing Director, QinetiQ Australia



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How does the organisation invest in training and developing staff?

As a knowledge-based organisation, people are DSTO's most important asset. It is imperative that DSTO maintains a workforce that is structured and equipped to deliver leading-edge science and technology outcomes for defence and national security. We achieve this by attracting and developing the best and brightest, and providing these people with career opportunities that allow them to excel.

We aspire to be a high-performing organisation with a strong focus on talent. Capability growth in key technology areas such as cyber security, autonomous systems, and space is the focus of our talent and career development strategy. Our people come to DSTO with high levels of achievement within particular areas of science, technology, engineering, mathematics, or enabling activities.

The Australian Defence Force employs technology that leads the world in some particular areas. This requires specialised people in DSTO who have worked on the technology for many years and have experience of the application of the technology to defence systems. Typically, it can take between five and 10 years for our scientific staff to gain the specialised expertise required to properly support defence; therefore, we invest heavily in the development of our staff.

To take our organisation forward, we need to develop our future leaders. We need leaders who are recognised experts in their field and who collaborate with others, make decisions based on our values, and inspire their teams to innovate and achieve. Recently, we have invested in development opportunities to help our senior staff lead their teams during the restructuring of DSTO. This program has been highly successful, with our latest staff surveys showing that our leaders are held in high regard.

DSTO has a new mentoring program to connect our people with experienced leaders in their technology domains. Our ultimate goal is for all DSTO people to engage in mentoring as part of how they do business, rather than needing a specific mentoring program. This will be a key signal that we have a collaborative, innovative, and inclusive culture entrenched across the organisation.

Is there anyone who particularly inspires you, and the work you do, in the science and technology field?

I am inspired by the staff who work for DSTO. We attract the best and brightest scientific and technical people who want to make a difference for Australia. I am continually amazed by the dedication and inventiveness of my colleagues. I regularly hand out 40- and 50-year service awards, and I'm delighted when I hear our people have won another prestigious international award. •



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