



Research and innovation drives Australian manufacturing capabilities



Dr John Best,
Chief Technical
Officer, Thales
Australia

By Dr John Best, Chief Technical Officer, Thales Australia

In a world that is progressively interconnected, the systems used by defence and commercial enterprises to deliver outcomes are increasingly complex. With a global workforce of more than 81,000 employees across five continents, Thales has a proud history of delivering these systems internationally across the markets of aerospace, defence and security, digital identity and cybersecurity and space.

Domestically, Thales is a trusted partner of the Australian Defence Force (ADF) and has a workforce of over 4,300 people across 35 sites around the country. As a sovereign manufacturing entity, Thales in Australia has a strong track record of designing, manufacturing and exporting solutions for various sectors including defence, security, transport and aerospace.

Thales has a presence in regional areas, with several of its sites located outside major cities, all of which employ a significant number of Australians. For example, the Lithgow Small Arms Factory in regional New South Wales

plays a crucial role in Australia's national defence, manufacturing the small arms used by Australian soldiers in all conflicts since WWI.

Additionally, the Bushmaster Protected Mobility Vehicle, designed and manufactured in Bendigo, regional Victoria, has saved the lives of Australian and coalition soldiers on operations over the last two decades.

At the core of the Thales ethos lies a commitment to customer success, supported by a dedication to innovation, and research and development (R&D). These pillars are fundamental to mastering the complexity of the systems and solutions Thales provides. In light of this, Thales globally invests around \$1.6 billion annually in R&D activities with the objective of creating next generation technologies and solutions.

One of the ways in which we support and sustain our extensive and diverse supply chains is by actively engaging with Australian small to medium enterprises (SMEs) and start-ups. By leveraging their unique skills and technologies, we can collectively deliver leading solutions to the ADF. Thales takes this a step further through its contribution to the Defence Global Supply Chain Program, which links highly innovative Australian companies with opportunities to supply into the broader Thales Group.

Central to Thales' breadth of manufacturing capabilities is our approach to product development and innovation—the 'Thales Innovation System'. This system is realised through the deployment of a number of core processes, practices and methods that assure systematic scanning of the environment, strategic impact assessment, and deployment of actions to develop and implement the technologies and capabilities that will underpin the creation of next generation solutions.

Any successful product innovation and development process is underpinned by:

1. A deep understanding of customers and the challenges they face.
2. Mastery of core enabling technologies.
3. A risk-based deployment of emergent technology.
4. Access to the technologies of tomorrow.

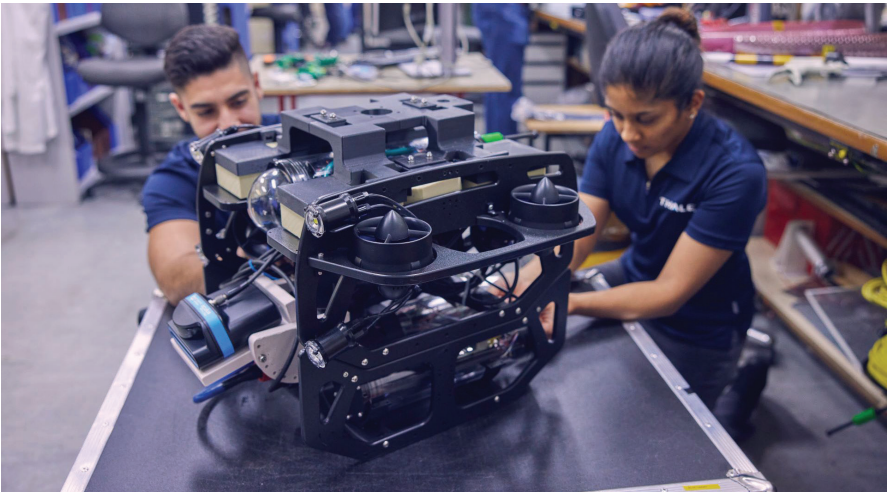
Thales' approach to research and innovation is centred on collaboration with the local research ecosystem, which includes universities, public sector research organisations and research consortia.

A great example of this is Trusted Autonomous Systems (TAS), established as a Defence Cooperative Research Centre through the former Next Generation Technologies Fund. Thales conceived and led the TAS-funded 'Mine countermeasures in a day' project, that aimed to enhance detection and clearance of underwater mines close to shore, while simultaneously improving safety for Navy personnel. The project has designed, developed and tested teams of collaborating autonomous underwater and surface vehicles to provide a mine clearance capability that operates in the amphibious zone close to shore. On this project, Thales worked closely with four leading Australian universities and two innovative SMEs.

This case additionally demonstrates the value of research consortia as a mechanism to pursue innovation in cases where capabilities from multiple parties are required to deliver a complex solution, and when there is an intention to build a supply chain to deliver the solution at industrial scale. The project team members bring different yet complementary perspectives, while end users or their representatives provide the use case. Moreover, universities and public laboratories contribute basic research expertise and infrastructure, and industry adds the rigour of formal engineering and manufacturing processes to realise solutions.

A further example of this is the Advanced Strategic Capabilities Accelerator funded, and DMTC managed, Advanced Piezoelectric Materials and Applications Program. As the lead industry participant in the program, Thales is developing the capability to manufacture single crystal piezoelectric materials to deliver next generation undersea sensing solutions. Single crystal piezoelectric materials hold the prospect for creating sonar transducers with enhanced sensitivity and bandwidth. These features will enable delivery of superior performance in traditional sensing payloads, or optimisation of payload SWAP (space, weight and power) for unmanned surface or underwater vehicles.

Current strategic circumstances demand that we align our innovation, research and industrial activities with the objective of rapidly delivering minimum viable capabilities that support ADF preparedness and asymmetric advantage. To achieve this, we engage collaboratively with SMEs, academia, public sector research organisations, research consortia and our wider supply chain. By leveraging collective expertise and resources, we can ensure that our solutions are agile, adaptable, and aligned with the evolving needs of our customers and end-users. This collaborative effort reinforces our commitment to innovation, excellence, and the delivery of effective, tailored capabilities that contribute to overall mission success. ●



IMAGES: Supplied