ATSE

SUBMISSION

Submission to the Senate Finance and Public Administration Reference Committee

Submission on Supporting the Development of Sovereign Capability in the Australian Tech Sector

23 February 2024

With appropriate investment, supportive policies, a common vision and incentives to excel, Australia is well-positioned to develop strong sovereign capability in technology. ATSE welcomes the opportunity to respond to the Senate Finance and Public Administration Reference Committee's Inquiry into supporting the development of sovereign capability in the Australian tech sector. ATSE makes the following recommendations to support the development of sovereign capability in the Australian tech sector:

Recommendation 1: Increase research and development spending in line with international peers to support the development of sovereign capability in the technology sector.

Recommendation 2: Establish a research and innovation policy framework that:

    i. Create infrastructural pillars to commercialise domestic research onshore to become global products.

    ii. Promote and support a culture of lifelong Science, Technology, Engineering and Mathematics (STEM) learning in the workforce to ensure Australia has the skills it needs now and into the future.

Recommendation 3: Establish coordination between different government agencies, and set clear objectives for both government and industry in the technology procurement process.

Recommendation 4: Prioritise domestic businesses in procurement strategies to catalyse domestic technological growth and foster cooperation between different domestic SMEs.

Recommendation 5: Develop robust risk management frameworks to help Government panels assess domestic small and medium-sized enterprises during the technology procurement process.

Recommendation 6: Support entrepreneurs from diverse backgrounds to be part of the technological innovation ecosystem.

Recommendation 7: Utilise the procurement framework strategically to assemble domestic value chains to drive innovation, create jobs, and enhance the overall resilience of the economy.

Increase investment in Research and Development (R&D)

Increasing investment in the Australian research sector is a necessary first step towards improving sovereign capabilities and the performance of domestic technological innovation. Gross expenditure on R&D (GERD) as a percentage of GDP has decreased by 0.12% since 2019-20 (see Figure 1), while OECD and US GERD figures have increased.

[ATSE's 2024- 25 Pre-Budget Submission](#) recommended an increase in national investment in research and development to 3% of GDP (ATSE 2024). The Federal Government can play an important leadership role in initiating, signalling and incentivising this priority, utilising policy levers and promoting investment and coordination between businesses and state governments.
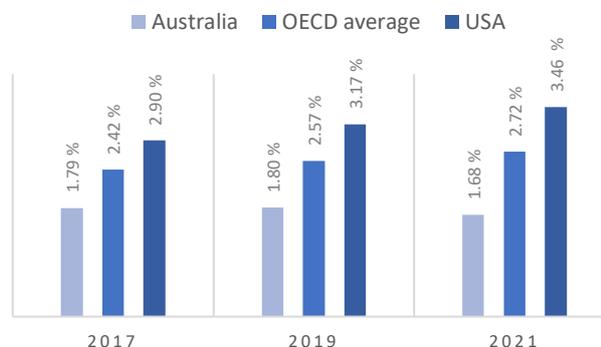
Figure 1 GERD as a % of Gross Domestic Product (GDP) (OECD 2023; ABS 2023)

Recommendation 1: Increase research and development spending in line with international peers to support the development of sovereign capability in the technology sector.

Strategic technology sovereignty

The potential portfolio of emerging technologies is too large for most national economies to achieve technology sovereignty across all fields. Technologies or products require access to extensive and global supply chains and therefore, a division of resources is necessary (Edler et al. 2023). Australian research has regularly featured in the top 10% of most cited journals for critical technology fields like artificial intelligence, advanced information and communication technologies, biotechnology etc. (ASPI 2023). However, this research grapples with commercialisation challenges like limited financial support available between R&D and production. Industry engagement is also lower than in countries like Germany or the

UAE, hindering collaboration for researchers to commercialise their research (Australian Government 2023; Robert Hughes 2023).

To establish sovereign capability in the technology sector, Australian research and innovation policy must be strategically oriented, with an emphasis on delivering translation infrastructure to accelerate commercialisation. The plan must establish infrastructural pillars that support post-discovery research in the commercialisation pipeline. Simultaneously, the research strategy should invest in programmes that promote knowledge transfer and foster a culture of lifelong Science, Technology, Engineering, and Mathematics (STEM) learning in the workforce to guarantee Australia has the skills it requires today and in the future.

Recommendation 2: Establish a research and innovation policy framework that:

    i.   Create infrastructural pillars to commercialise domestic research onshore to become global products.

    ii.   Promote and support a culture of lifelong Science, Technology, Engineering and Mathematics (STEM) learning in the workforce to ensure Australia has the skills it needs now and into the future.

Supporting innovation through procurement processes

The Commonwealth Procurement Rules (CPRs) form the core procurement framework for the Australian Government. Government agencies conducting their procurements apply and interpret the CPR and other procurement guidelines to meet their individual needs. This process creates significant variations in the application of the CPRs across agencies. The introduction of the Digital Transformation Agency has helped with whole-of-government ICT procurement but more strategic collaboration is needed to procure other technological capabilities. It is also necessary that the procurement process shift from defaulting to the same technology and solutions previously used to seek out new and innovative suppliers and solutions. Selecting existing providers or products is considered less risky — however, this does not always result in the best outcomes.

Ambitious procurement targets can enable the participation of innovative Australian companies irrespective of the contract value to create sovereign capability in the Australian tech sector. Establishing coordination between different government agencies, and setting clear objectives for both government and industry in the technology procurement process is needed. Procurement policies need to be used as a tool to achieve broader policy objectives for example in ATSE's submission to the National Health and Climate Strategy and the Victorian Government's 30-year Infrastructure Strategy we recommended procurement be used to reduce transport emissions and embedded carbon data be featured in procurement contracts to reduce carbon emissions (ATSE 2023a, 2023b).

Recommendation 3: Establish coordination between different government agencies, and set clear objectives for both government and industry in the technology procurement process.

Creating pathways for innovative Small and Medium-sized Enterprises (SMEs)

Domestic technology-focused Small and Medium-sized Enterprises (SMEs) face several obstacles in winning public sector business, with deals still routinely favouring large multinational players (Julian Bajkowski 2022). Technology contracts that lock in specific vendors do reduce the disruptions to productivity (shifting to newer technologies requires staff onboarding and training, reducing productivity) but also exacerbates challenges for SME involvement. While large companies continue to host major software platforms, there is a need for a procurement system that can balance between procuring from domestic and multinational organisations.

There is also no clear pathway for the domestic industry to pitch innovative solutions, nor the tools and incentives for government agencies to take them forward (Australian Government 2017). This results in Australian innovation having to find commercialisation opportunities overseas. For example, US and UK defence products have adopted seL4, a domestic innovation of an operating system kernel that is mathematically proven correct and secure (UNSW n.d.; Heiser et al. 2020).

The limited track record of smaller companies is another hurdle in showcasing their capabilities and reliability to government agencies when against huge multinational companies. This lack of historical performance is a risk for procurement panels and may undermine the competitive edge for SMEs in the procurement process. Assessing SMEs needs to be done by developing a transparent, robust risk

management framework that balances performance with the maximisation of opportunities for domestic innovation creating a sovereign technology ecosystem. Government funding should be targeted at promising innovations from SMEs that cannot raise the entire amount of capital required.

Australian SMEs also compete with large multinationals to recruit and maintain a diverse and inclusive workforce. ATSE has developed the Diversity and Inclusion Toolkit to provide SMEs with living resources that support and enable their businesses to reap the economic and social benefits of a diverse STEM-skilled workforce (ATSE 2022). It is important for policy also to help support diversity in the SME ecosystem. While each SME owner's experience is unique, barriers related to finance, experience, networks, and a lack of role models are among the common challenges diverse entrepreneurs face (CSIRO 2023; Evans and Polidano 2022). There is a need for policy to support diverse entrepreneurs by establishing dedicated incubators and accelerators and ensuring their participation in the innovation ecosystem.

Recommendation 4: Prioritise domestic businesses in procurement strategies to catalyse domestic technological growth and foster cooperation between different domestic SMEs.

Recommendation 5: Develop robust risk management frameworks to help Government panels assess domestic SMEs during the technology procurement process.

Recommendation 6: Support entrepreneurs from diverse backgrounds to be part of the technological innovation ecosystem.

Reforming procurement policies to support the growth of Australian tech companies

While the adoption of non-Australian technology enables the public service to access global innovations, an over-reliance on such technology can negatively impact the domestic tech sector. Critical government systems or infrastructure heavily relying on non-Australian technology may be vulnerable to changing geopolitical scenarios creating risks beyond the control of our government. If the public sector predominantly adopts non-Australian solutions, local tech companies also have fewer opportunities to innovate and develop solutions tailored to the specific needs of the Australian government and the public.

Ensuring that Australia can continue to foster and develop its domestic capabilities in the technology sector to achieve policy objectives while pursuing global co-operation and open trade, will require maintaining a delicate balance within global trade agreements. Australia should advocate for open data flows with carefully defined exceptions for protecting sensitive information, especially regarding government data and systems. These data localisation and domestic cloud service requirements impose costs for SMEs that would need Government support. This approach would balance economic interests with national security concerns in the digital age.

Establishing domestic capability in the broad portfolio of needed technologies does not spontaneously emerge; it requires a catalyst, and that catalyst can be the presence of a paying customer. The procurement framework can be the catalyst for both small and large businesses to cooperate within these global technological value chains and boost the growth of domestic companies. There have been successful examples where the procurement framework fostered local innovation, such as the Australian Defence Forces pulling together a mix of domestic companies to develop a communications solution to compete with solutions proposed by global companies like L3 Technologies and Boeing (EM Solutions Pty Ltd 2018). By designing procurement strategies that prioritise local businesses, governments can stimulate economic growth and foster the development of a robust and competitive technology sector. In doing so, procurement policies become a powerful tool for orchestrating the assembly of value chains that drive innovation, create jobs, and enhance the overall resilience of the domestic economy.

Recommendation 7: Utilise the procurement framework strategically to assemble domestic value chains to drive innovation, create jobs, and enhance the overall resilience of the economy.

ATSE thanks the Senate Finance and Public Administration Reference Committee for the opportunity to respond to the Inquiry into supporting the development of sovereign capability in the Australian tech sector. For further information, please contact academypolicyteam@atse.org.au.

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