

## Australian National University

7 April 2025

## Response to the Strategic Examination of Research and Development Discussion Paper

Dear Expert Panel,

We are pleased to see the Department of Industry, Science and Resources seeking input into the strategic examination of research and development in Australia. We are sharing our perspectives as academics at the Australian National University working in disciplines that underpin sovereign capability development. Our expertise conducting research and providing education and training in areas of national priority informs our response to the SERD discussion paper. We address two key questions:

- How should Australia support basic or 'discovery' research?
- How should we better target R&D resources towards national priorities?

Discovery research is a critical part of our R&D sector. It:

- Provides the foundational knowledge on which to build novel, world-first applications.
- Ensures education and training are based on cutting edge information.
- Attracts students into a particular field, helping build a suitably qualified workforce.
- Supports informed public discourse on critical issues, e.g. social license for nuclear technologies, climate change, gene technology, etc.
- Ensures Australia has continuing access to expertise needed to address key national issues regardless of changes to the global geopolitical climate.

As a result, discovery research, applied research and our capacity to deliver on national priorities are intrinsically linked. Any targeting of R&D resources to support national priorities must also include the relevant discovery research.

However, current funding models and research assessment practice are not well designed to allow discovery research to support applied research, particularly when that applied research is non-public domain. The existing grant cycles and structures designed to support collaboration with industry are often not compatible with industry requirements. Additionally, academic metrics require open publication, public grant seeking, and the ability to recruit students and postdoctoral researchers. None of these are supported by applied R&D work that cannot be published openly, such that non-public domain work inherently risks future grant funding for discovery research.

A further challenge is that current funding models and grant review structures only support disciplines where there is existing research capacity (i.e. researchers and academics). There are no mechanisms to create capacity where it does not already exist and few incentives for institutions to invest in areas of sovereign need. There are also few mechanisms for supporting continuity of funding for individuals working in such areas. R&D funding should be designed not just to fund R&D but to ensure we have a sufficient baseline of research (and therefore education and training) capacity in critical areas.

Therefore, a different approach is needed to ensure R&D resources can effectively contribute to national priorities in a timely manner.

One successful model of doing this – from the United States R&D system – is worth considering for Australia. In the Department of Energy, the Department of Defence, and other similar government-led industries, program managers, who often had formidable research careers in their own right and have a deep understanding of how both academia and their area of government works, provide a mechanism

for sustained communication and collaboration between academia and government. They also serve as translators of national need and holders of R&D funding budgets. A key part of their role is to identify unclassified R&D problems that can contribute meaningfully to classified national needs and use their deep understanding of the R&D community in the US to ensure such problems can be addressed effectively and appropriately by the most capable people available to carry out the work.

In the current Australian system, researchers (who often do not have security clearances) are often left guessing what government priorities, issues, constraints, and operational requirements are important, which reduces the probability of producing successful research outcomes. Facilitating strong communication between Government stakeholders and researchers is critically important to the success of strategic research endeavours.

An approach like the US model would also provide a mechanism to ensure we have discovery research capacity in strategically critical fields, such as nuclear science, quantum technologies, and hypersonics. Foundational research in these areas supports career pipelines that are crucial to our ability to maintain and grow sovereign capability for the national interest. In Australia, this could be achieved through longer-term (5+ year) grants that strategically support *research groups* with demonstrated expertise in strategically important areas of fundamental research. Such grants could complement rather than replace peer-reviewed project-based funding and allow for better support of sovereign capability development and sustainment in key areas.

The US approach also features regular reviews of how a research group is contributing to the career pipeline in the area of identified national need. They do this by seeking evidence that students and postdoctoral researchers are receiving excellent training and support while contributing to this work and are largely choosing careers that relate to the identified national priority when their studies or research positions finish. This review process approach ensures the research is fit for purpose, supports a strong and nationally relevant career pipeline, and is appropriately achieved through an open university environment. This model is complemented by grant schemes that support early and mid-career researchers through fellowships (much like the existing ARC fellowship system), which provide these researchers with incentives and the resources needed to continually strive for excellence in their research.

We do not suggest that Australia directly adopt the US program manager model without considering how best to achieve similar aims within the current R&D system. We note instead that the approach used in the US both supports foundational research and ensures that R&D funding effectively addresses national priorities. We propose that this model, which some of us have first-hand experience with, could offer some practical solutions for Australia by providing a mechanism to identify emerging national priorities, target discovery research funding to address identified gaps in national capability, and create a pipeline of educated and skilled workers to underpin critical capability delivery for the nation in a timely manner.

## Best regards,

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