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Australian Academy of Science submission on the 2022 Critical Technologies List Update

The Australian Academy of Science welcomes the opportunity to comment on the Department of Industry, Sciences and Resources (DISR) *2022 List of Critical Technologies in the National Interest*.

The Academy:

- Recommends that the List's purpose and framing be clarified via a stronger policy narrative
- Is concerned that the List may be used to unreasonably restrict the free movement of science
- Urges recognition that the free movement of science is in the national interest.

The purpose of the List should be clarified

The Academy **supports the intent of the List to be an enabler**, a recognition of what Australia needs and what it should be developing. The list should not act as a constraint upon what researchers can do.

The predominant approach to protecting Australian research is being undermined by both the rise of new players in the global science and technology ecosystem, as well as the changing nature of the scientific enterprise. Science is much more multidisciplinary, interdependent, and global than in the past. Much scientific knowledge and technologies are now multipurpose, have diffuse origins and are dependent on other technologies with multiple owners, users, and stakeholders from various jurisdictions.

It would be a mistake, in seeking to protect Australian research, to misunderstand the disruption to traditional notions of protecting Australian science and technology. Risks in the new global R&D ecosystem need to be managed without inadvertently slowing the development and application of technologies and competitive advantage. To the extent possible Australia should work to maintain a system where the exchange of knowledge remains open and free of impediments.

Further the Australian science community has seen an extraordinary increase in the number and complexity of policies, processes, procedures, and requirements governing the conduct of science, many of them opaque. These rules, despite the protestations of their proponents, are acting to limit the exchange of ideas and participation in international collaboration, slowing the pace of research and making the research environment less attractive to talented people.

While the Academy welcomes DISR's clarification in the consultation paper that the List 'is not intended to override or replace other specific government technology lists' (particularly the Defence Strategic Goods List, DSG), the Academy is concerned this outcome may occur in a *de facto* sense. The DSG remains the most appropriate instrument to support its intended purpose, and this aspect needs to be more strongly emphasised.

It is not immediately clear how the List is tied to policy objectives. This **policy ambiguity** constrains scientists from engaging with the List itself, in addition to the List update consultation process. A clearer policy narrative would help address the intended application of the List.

The underlying concept of 'national interest' is poorly defined, and its meaning in this context is not well understood by the scientific community. There **is a risk that 'national interest' is understood as synonymous with 'national security'**, whereas that does not appear to be the case for this particular instrument. Recent discussion around the appropriateness of the Australian Research Council's National Interest Test reflects the need for clear definitions and narratives when using this phrase.

Free movement of scientists should not be unreasonably restricted

The Academy is concerned that the List has the potential to be applied unreasonably, including impacting STEM professionals, particularly PhD and Masters students. Earlier this year, the Department of Home Affairs announced that visa screening would be reformed to ‘manage the risk of unwanted transfer of critical technologies’ under the *Migration Amendment (Protecting Australia’s Critical Technology) Regulations 2022 (PACT Regulations)* and *Migration Amendment (Postgraduate Research in Critical Technology—Student Visa Conditions) Regulations 2022*. These legislative instruments grant powers to the Minister which restrict types of study or research that can be undertaken by visa holders unless they are granted approval. These types of study or research are to be specified by Ministerial direction; a Department of Home Affairs website claims this will be informed by the *List of Critical Technologies in the National Interest*.¹

As outlined in its [October 2020 Position Statement](#), the Academy has a long-standing concern about unreasonable restrictions on the free movement of scientists and science.² The Academy recognises the need for the nation to maintain robust national security protections. Such protection must be evidence-based, proportional and designed to encourage the continuation of productive international scientific engagement, rather than hinder it. Indeed, international collaboration is key to Australia maintaining and improving upon its comparative position in science and technology. In other words: **freedom of science is in the national interest**.

The Department should be cognisant that the Critical Technologies List may, via the above instruments, unintentionally act to restrict international science collaborations.

The List’s design does not necessarily reflect research advances

The Academy notes that there is high potential for intersections between various technologies on the List to occur. An example would be the application of ‘Artificial Intelligence algorithms’ to various biotechnologies.³ There should be clarity on how these intersections are to be governed or addressed. Additionally, it is unclear how the List can respond to innovation if it falls ‘between’ rather than into one of the List technologies.

To discuss or clarify any aspect of this submission, please contact Mr Chris Anderson, Director Science Policy at Chris.Anderson@science.org.au.

¹ ‘Critical technology - enhanced visa screening measures’, Department of Home Affairs website, accessed September 2022, <https://www.homeaffairs.gov.au/about-us/our-portfolios/national-security/critical-technology>

² Australian Academy of Science, *Position Statement: International science collaborations*, 27 October 2020, https://www.science.org.au/files/userfiles/support/submissions/2020/AAS_position-statement_international-science.pdf

³ Michael Eisenstein, ‘Artificial intelligence powers protein-folding predictions’, *Nature*, vol. 599 (2021): 706-708, <https://www.nature.com/articles/d41586-021-03499-y>