

National Research Infrastructure Roadmap 2021 Exposure Draft

January 2022

The Australian Technology Network of Universities (ATN) welcomes the opportunity to contribute to the development of the National Research Infrastructure Roadmap 2021 through this submission on the exposure draft.

ATN is the peak body representing Australia's six most innovative and enterprising universities: Curtin University, Deakin University, RMIT University, The University of Newcastle, University of South Australia (UniSA), and University of Technology Sydney (UTS). Together, we are home to over 300,000 students and 23,000 full and part-time staff.

ATN strongly supports continuing and expanded investment in national research infrastructure and broadly agree with the findings and recommendations outlined in the exposure draft of the Roadmap.

Strategic and targeted investment in shared research infrastructure is crucial to make efficient use of the resources available and encourage collaboration and cooperation between universities, research institutes, and other external parties.

It is important that this infrastructure contributes to the overall research ecosystem in Australia which supports a pipeline of research and talent from fundamental discovery research through to translation and commercialisation.

Key messages

- **Industry engagement should be a fundamental tenet of the Roadmap.** This should be articulated across all activities in the Roadmap and not treated as a discrete or standalone exercise. This is especially important given the long-term, bipartisan emphasis on research translation and commercialisation.
- **We must plan for National Research Translation Infrastructure.** This is needed to fulfill the aims of the Government's University Research Commercialisation Scheme and address the opportunities identified in the Roadmap.
- **Our focus must be broader than current national priorities.** Close alignment and awareness of policy like the National Manufacturing Priorities is welcome in order to achieve a cohesive and connected research system, but we must also have the flexibility to pursue broader opportunities (especially in the humanities, arts and social sciences).
- **The inclusion of a National Digital Research Infrastructure Strategy is strongly supported.** This infrastructure can benefit a broad range of disciplines, improve our ability to engage with external partners in Australia and internationally, and recognises the growing quantum and potential of data.
- **Further detail and consultation will be needed to realise the goals of the Roadmap.** Providing greater certainty about the resources available, timelines and governance and management is crucial to provide universities and their partners the confidence to plan and undertake multi-year, collaborative research.

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Key message: Industry engagement should be a fundamental tenet of the Roadmap

ATN supports Recommendation 6 that industry engagement with national research infrastructure must be improved. However, industry engagement should be a fundamental principle of the Roadmap to ensure that is embedded and integrated across the whole range of activities outlined in the Roadmap.

Industry engagement can be a valuable driver of the NRI Principles by:

- Using industry expertise to maximise capability and economic, social, national security and environmental outcomes
- Using industry networks to improve collaboration with external partners in Australia and internationally
- Encouraging the exchange of people, skills and knowledge, data, processes and equipment between research and industry sectors
- Making the most efficient use of existing capability and infrastructure across public and private sectors
- Making infrastructure as accessible as possible.

Key message: We must plan for National Research Translation Infrastructure

The Roadmap needs to plan for National Research Translation Infrastructure in order to deliver on the key challenges identified (such as resources technology and critical minerals processing). To make a real impact in each of these areas we must support both fundamental discovery research and research translation. Dedicated infrastructure is needed to integrate research with Government initiatives like the Modern Manufacturing Strategy and the Blueprint for Critical Technologies.

This translation infrastructure could be modular facilities that can be configured in different ways depending on the product or process workflow. It could include a network of facilities designed to accelerate and scale-up production of chemical, pharmaceutical and innovative materials products. Similarly, it could also include facilities that focus on pilot-scale manufacturing processes and workflows, and manufacturable minimal viable product development.

Crucially, this translation infrastructure would provide a focus point for the development of research translation professionals and knowledge, skills and networks.

Key message: Our focus must be broader than current national priorities

The challenges identified in the Roadmap are closely aligned with the National Manufacturing Priorities, which is important to create a cohesive and connected national research system in which various Government initiatives and strategies are working effectively.

The Roadmap - and the infrastructure it supports - must also be flexible enough to allow universities to take advantage of emerging priorities and innovations. The nature of fundamental discovery research means that new ideas can emerge from any field.

In line with Finding 5 that the “creative arts, humanities and social sciences play an important role in ensuring social acceptance and uptake of research outcomes, adoption of new technologies and ensuring ethical and responsible development and application of emerging technology”, the Roadmap should have a greater emphasis on these areas (and other non-manufacturing areas of science, technology, engineering and mathematics).

The Roadmap does not adequately acknowledge significant challenges of a social and cultural nature that impact many Australians, for which new knowledge and solutions are required. Many relate directly to the areas which are being prioritised:

- **Poverty** e.g. an increasing number of people cannot afford a nutritious diet
- **Precarity** e.g. many forms of health are adversely impacted by anxiety from increasingly precarious, unsupported lives
- **Exclusion** e.g. many people are effectively excluded from participation and choice in Australian life, including many areas of arts and culture
- **Unaffordability** e.g. unmet basic material/human needs such as unaffordable housing stands out as a priority for Australia.

Research infrastructure that supports the humanities, arts and social sciences would not be an exclusive benefit to those areas – many of the facilities would support a wide range of cross-disciplinary research.

Key message: The inclusion of a National Digital Research Infrastructure Strategy is strongly supported

Digital research infrastructure has the potential to support a wide range of disciplines, including those in the humanities, arts and social sciences. This can build on previous initiatives such as Government investment in research infrastructure to support improved management and use of Indigenous data collections.

The Government provided \$8.9 million to create a data network that will transform how Australian social and cultural data is accessed, curated and analysed. The project supports the development of eResearch platforms and tools for visualisation, transcription and entity recognition.

New digital research infrastructure can be integrated with existing infrastructure such as AARnet to improve the connectivity and collaborative capacity of Australian universities and research institutions. This is especially important to connect these institutions with external partners in Australia and around the world – taking advantage of the efficiencies of real-time, remote connections and the ability to use virtual laboratories.

Key message: Further detail and consultation will be needed to realise the goals of the Roadmap

The Roadmap lays out a strategic plan and policy guidance for the development of national research infrastructure, but this will need to be supported by further detail and consultation in order to operationalise the Roadmap. We recommend the collaborative development of action plans including timelines, resources and budgets.

In particular, the action plans should make provision for the governance and management of the supported infrastructure and how it will be maintained and developed in the medium-to-long term. This is also an opportunity to formalise relationships with key external partners and closely involve them in the development of new infrastructure. Key stakeholders like the Chief Defence Scientist (considering her role as the capability manager for Defence Science and Technology Group) should be engaged.

Further enquiries should be addressed to:

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