

Please note: the substantive content of the 2026 NRI Roadmap Survey begins at Question 20 (with prior questions dealing with administrative and other information).

As such all submissions that are published include the responses submitted from Question 20 onwards only.

Q20.

Part 2: Research themes

2.1 NRI comprises the assets, facilities and associated expertise to support leading-edge research and innovation in Australia and is accessible to publicly and privately funded users across Australia and internationally. We are seeking your input on possible directions for future national-level investment - i.e., where the requirements are of such scale and importance that national-level collaboration and coordination are essential.

The [2021 Roadmap](#) used a challenge framework to support NRI planning and investment. With this in mind, consider likely future research trends in the next 5 - 10 years, and with respect to one or more of the 8 challenge areas identified in the 2021 Roadmap as listed below:

- describe emerging research directions and the associated critical research infrastructure requirements that are either not currently available at all, or not at sufficient scale and
- describe current national infrastructure requirements that you anticipate will no longer fit the definition of NRI in 5-10 years.

Do not limit your commentary to NCRIS funded capabilities.

Q21.

Resources Technology and Critical Minerals Processing

Q22.

Food and Beverage

Q23.
Medical Products

Q24.
Defence

Q25.
Recycling and Clean Energy

Q26.
Space

Q27.
Environment and Climate

Q28.
Frontier Technologies and Modern Manufacturing

UoM strongly supports development of a new NCRIS capability to underpin and support the growth of quantum information technologies research and development in Australia. A national Quantum Device Testbed Network would provide essential quantum measurement, analysis and quantum device modelling and test facilities to help support and facilitate growth of quantum technologies capabilities and industries in Australia. The Quantum Device Testbed Network would complement the activities and capabilities of the existing NCRIS platforms for device fabrication, The Australian National Fabrication Facility (ANFF), the Heavy Ion Accelerator Platform with quantum device fabrication capabilities, and f Microscopy Australia that provides visualisation capabilities at the nanoscale. There is enormous scope for growth in quantum information technologies development in Australia but there is currently no national infrastructure providing support for quantum measurement, modelling and quantum device testing. The Quantum Device Testbed Network would provide this necessary support helping to accelerate Australia's international standing and competitiveness in quantum technologies and industries. Through network partnerships with UoM, RMIT, UNSW, University of Southern Queensland, and potentially University of Western Australia and the Australian National University, the Quantum Device Testbed Network would offer quantum technologies researchers and industries access to the quantum measurement, analysis and modelling resources that will accelerate their research and technology transfer needs and which would otherwise be cost-prohibitive and time-consuming to develop independently. The network resources would include cryogenic quantum device measurement platforms, confocal systems with interferometry and single-photon detectors, quantum sensing labs, computing and quantum computing resources and the associated expertise to facilitate user access. In parallel there would be scope to develop a Training Hub to provide a conduit for Australia's workforce to upskill in this critical field. UoM has provided very strong support for quantum computing and quantum technologies related research since its inception as a field of research. The University recognizes that the growing ecosystem of quantum technologies research in Australia cannot be adequately supported by individual facilities at this stage of its development and there is a strong need to develop a national approach. Development of a national Quantum Device Testbed Network strongly aligns with identification of step-change and priority areas as discussed in the 2021 roadmap, including research translation infrastructure and the National Research Infrastructure Workforce, and the research theme of Frontier Technologies and Modern Manufacturing.

Q29.

2.2 The 2024 statement of National Science and Research Priorities (NSRPs) includes outcomes linked to each priority to assist in identifying critical research needed in the next 5 to 10 years.

Consider the priority statements and, with respect to one or more of the 5 priority areas as listed below:

- describe emerging research directions and the associated critical research infrastructure requirements that are either not currently available at all, or
- not at sufficient scale and describe current national infrastructure requirements that you anticipate will no longer fit the definition of NRI in 5-10 years.

Do not limit your commentary to NCRIS funded capabilities, and where relevant, refer to the underpinning outcomes and research identified in the NSRPs document.

Q30.

Transitioning to a net zero future

Q31.

Supporting healthy and thriving communities

Quantum technologies development has scope to assist with health-related issues such as drug design on a timeframe that at this stage is projected to be longer than 5-10 years but with incremental improvements possible as quantum computing infrastructure improves. Quantum sensing has scope to provide benefits in the health sector due to its very high sensitivity and with prospect for quantum devices to be developed within the 5-10 year timeframe.

Q32.

Elevating Aboriginal and Torres Strait Islanders knowledge systems

Q33.

Protecting and restoring Australia's environment

Q34.

Building a secure and resilient nation

Q35.

2.3 The case for a new NRI capability, or enhancements to existing capabilities, typically emerges through advocacy from research communities clustering around rigorously identified needs and goals. Such a concept could respond to a requirement for novel or expanded capacity within a domain, or across domains, and must be such that it could only be made available with national-level investment.

If you have identified such a requirement, briefly describe the need, the proposed infrastructure capability, the medium-term goals, impacted research communities, and the timeframe over which you advocate its establishment. Your response can include links to relevant existing reports.

Quantum Device Testbed Network Australia's world-leading developments in quantum computing, quantum sensing and quantum technologies development has been made possible by the nanofabrication resources that have been developed within the NCRIS Australian National Fabrication Facility, quantum device fabrication capabilities through the NCRIS Heavy Ion Accelerator platform, visualisation capabilities through Microscopy Australia and device and materials modelling capabilities through access to high performance computing infrastructure. However, to maintain this international competitiveness there is now a need for quantum measurement and related capabilities to be developed as a national NCRIS platform to support the near-term and growing future needs of researchers and technology start-ups in this fast developing field that is projected to have enormous societal impact and commercial potential in the coming decades. UoM strongly supports development of a new NCRIS capability to underpin and support the growth of quantum information technologies research and development in Australia. A national Quantum Device Testbed Network would provide essential quantum measurement, analysis and quantum device modelling and test facilities to help support and facilitate growth of quantum technologies capabilities and industries in Australia. The Quantum Device Testbed Network would complement the activities and capabilities of the existing NCRIS platforms for device fabrication, The Australian National Fabrication Facility (ANFF), the Heavy Ion Accelerator Platform with quantum device fabrication capabilities, and f Microscopy Australia that provides visualisation capabilities at the nanoscale. There is enormous scope for growth in quantum information technologies development in Australia but there is currently no national infrastructure providing support for quantum measurement, modelling and quantum device testing. The Quantum Device Testbed Network would provide this necessary support helping to accelerate Australia's international standing and competitiveness in quantum technologies and industries. Through network partnerships with UoM, RMIT, UNSW, University of Southern Queensland, and potentially University of Western Australia and the Australian National University, the Quantum Device Testbed Network would offer quantum technologies researchers and industries access to the quantum measurement, analysis and modelling resources that will accelerate their research and technology transfer needs and which would otherwise be cost-prohibitive and time-consuming to develop independently. The network resources would include cryogenic quantum device measurement platforms, confocal systems with interferometry and single-photon detectors, quantum sensing labs, computing and quantum computing resources and the associated expertise to facilitate user access. In parallel there would be scope to develop a Training Hub to provide a conduit for Australia's workforce to upskill in this critical field. UoM has provided very strong support for quantum computing and quantum technologies related research since its inception as a field of research. The University recognizes that the growing ecosystem of quantum technologies research in Australia cannot be adequately supported by individual facilities at this stage of its development and there is a strong need to develop a national approach. Development of a national Quantum Device Testbed Network strongly aligns with identification of step-change and priority areas as discussed in the 2021 roadmap, including research translation infrastructure and the National Research Infrastructure Workforce, and the research theme of Frontier Technologies and Modern Manufacturing.

Q36.

Part 3: Industry perspectives

This section is seeking input specifically from industry-based respondents. Other respondents can skip this section.

Recommendation 6 of the [2021 Roadmap](#) related to improvements in industry engagement with NRI. To complement work on this topic that has occurred since then, we are seeking additional advice on NRI requirements as perceived by current or potential industry-based users.

Q37.

3.1 Have you (or your organisation) interreacted with or used Australia's NRI?

☐ Yes

☐ No

Q38.

3.2 If so, please briefly outline the NRI capabilities you (or your organisation) have interacted with or used. Do not limit your response to NCRIS capabilities.

This question was not displayed to the respondent.

Q39.

3.3 Please indicate your (one or more) primary reasons for interacting with NRI:

This question was not displayed to the respondent.

Q40.

3.4 If you answered no, please indicate your (one or more) primary reasons:

This question was not displayed to the respondent.

Q41.

Part 4: Other comments

4.1 Please elaborate on any of your above responses or add any other comments relevant to the development of the 2026 Roadmap. Your response can include reference or links to existing reports that you recommend be considered during the 2026 Roadmap development process.

Q49.

4.2 Optional Document Attachment.

Note: Our strong preference is that answers are provided against the relevant questions in the survey. However, this file upload option is available for submissions in file format, where needed. Please ensure the document includes your name or organisation.