

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

NMR is essential infrastructure for food/beverage testing

Q23.

Medical Products

Nuclear magnetic resonance spectroscopy (distinct from imaging) is a technology that is central to many disciplines ranging from chemistry and biochemistry to agriculture, materials science and beyond. It is essential for many physical, chemical, medical and biological sciences - both for pure and for applied research. There are currently ~\$200M worth of NMR hardware (>100 instruments) across universities and other institutions in Australia. These instruments require periodic hardware upgrades to remain functional. Essentially all of these instruments are owned by individual institutions, meaning that these organizations have to work separately to seek the required upgrades through LIEF grants and similar approaches. A national NMR network would be an enormous improvement in the way NMR was managed across Australia and would ensure the best access, hardware, collaboration and coordination of resources - benefitting everyone and providing direct and essential support for a huge range of researchers. I write all of this in the Medical products box but it is equally relevant to the other boxes I indicate.

Q24.

Defence

Q25.

Recycling and Clean Energy

NMR is essential infrastructure for materials science.

Q26.

Space

Q27.

Environment and Climate

Q28.

Frontier Technologies and Modern Manufacturing

NMR is essential infrastructure for advanced manufacturing and new technologies.

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

NMR is essential infrastructure for materials science.

Q31.

Supporting healthy and thriving communities

NMR is invaluable for drug screening and discovery pipelines

Q32.

Elevating Aboriginal and Torres Strait Islanders knowledge systems

Q33.

Protecting and restoring Australia’s environment

NMR is invaluable for the measurement and monitoring of environmental samples.

Q34.

Building a secure and resilient nation

NMR is invaluable for the measurement and monitoring of environmental samples.

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.

I repeat the text written several pages earlier: Nuclear magnetic resonance spectroscopy (distinct from imaging) is a technology that is central to many disciplines ranging from chemistry and biochemistry to agriculture, materials science and beyond. It is essential for many physical, chemical, medical and biological sciences - both for pure and for applied research. There are currently ~\$200M worth of NMR hardware (>100 instruments) across universities and other institutions in Australia. These instruments require periodic hardware upgrades to remain functional. Essentially all of these instruments are owned by individual institutions, meaning that these organizations have to work separately to seek the required upgrades through LIEF grants and similar approaches. A national NMR network would be an enormous improvement in the way NMR was managed across Australia and would ensure the best access, hardware, collaboration and coordination of resources - benefitting everyone and providing direct and essential support for a huge range of researchers. It would allow both (a) the coordination of ambitious goals for cutting edge infrastructure, which are beyond the normal funding mechanisms, and (b) the best possible management and coordination of the diverse and extensive expertise and infrastructure that already exists nationally. In many ways, it would be a mirror of Microscopy Australia in its mode of operation. Discussions have already begun over the last year among major NMR users to work towards establishing such a network, and it is clear from these discussions that the best possible setup would be an NCRIS-type organization. The entire community are enthusiastic about such an arrangement and the value that it would bring. In terms of timeframe, the community are ready now to establish such a framework.

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) interacted 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.

Q39.

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

- ☒ For expertise or advice
- ☒ Access to research resources or products
- ☒ Access to equipment for research
- ☐ Access to equipment for operational reasons
- ☐ Help in translating research
- ☐ Access to data
- ☐ Support for clinical trials
- ☐ Other (please specify)

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.