

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

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

Coordinated approach to Trusted Research Environments for handling of sensitive data.

Q32.

Elevating Aboriginal and Torres Strait Islanders knowledge systems

Maturation of governance and systems at institutions that house this.

Q33.

Protecting and restoring Australia's environment

Q34.

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.

Outcome 6 of the NDRI strategy (NDRI “maximised by openly available research software tools”) suggests that research software should be recognised as critical NDRI. Targeted investment in research software engineering capability (as proposed) will help to lift data intensive NDRI, but still leaves a gap in that broader aim of recognition and visibility, especially in areas not traditionally served by existing NDRI investment. And more broadly realised visibility and useability of software is still needed by Australian researchers (DOI: 10.5281/zenodo.7340033). A “Software Sustainability Institute” (following the UK, and now US equivalent) would provide a national-level capability for that broader aim of recognition, and to address the visibility, shaping and sustainability concerns where the production is distributed across the nation rather than in a specific domain. Software isn’t an domain or institution-bound activity. Such a change can only be achieved through leadership and advocacy at a national level. The SSI in the UK runs advocacy/policy analysis, consultancy, community building and training activities as BAU, and hosts funded change activities as challenges are identified. They were critical in the maturation of the (separate but connected) research software engineering movement in the UK. They’ve been doing it for a decade and have given UK a world leading position in research software and research software engineering. I propose that a scoping study, conducted for the department as an early part of the roadmap. A suitable consultant with a good understanding of the Australia research software and NDRI landscape could investigate the viability of setting up a new capability to perform this function, as well as more fully articulate the desire for such a capability. Such a capability could host change activities. For instance, right now, in addition to their BAU, the UK SSI are running a fixed-period research software maintenance fund, and a specific program addressing software needs in the social sciences. Over 10 years, they’ve run a great variety of programs. In an Australian context, suitable change activities might include those given the ARDC’s National Agenda for Research Software (mentioned in the NDRI Strategy, DOI: 10.5281/zenodo.4940273, which I was the primary author of). The draft Agenda (DOI: 10.5281/zenodo.4940274) contains more detail on specific activities, to which I would also add the following as potential change activities: - A mirror of Software Heritage (an archive of the world’s open source software code) positioned next to Tier 1 HPC for research purposes. Software Heritage is a place that already preserves most of the openly developed research software produced in Australia, and is supported by UNESCO (<https://www.unesco.org/en/articles/softwareheritageorg-unesco-and-inria-open-archive-digital-age>). - Programs to assist research intensive organisations in better tracking of software used and created by their research staff. Possibilities include maturing policy and/or infrastructure. An approach taken in the US is establishing Open Source Program Offices (<https://sloan.org/programs/digital-technology/ospo-loi>). An OSPO for NCRIS might also be a possibility. - A research software infra-scope as proposed in DOI:10.5281/zenodo.8404846 (alongside several other suggestions to make software more visible). This is a publication monitoring capability to reveal the tools used in specific disciplines through mentions of software in papers. It can reveal commonly used tools and newly invented ones. A catalogue of software tools by discipline based on use rather than curation could be developed. - A recurrent survey of the size and nature of the workforce producing software for the benefit of researchers, repeating and improving on the one conducted in 2022 (DOI:10.5281/zenodo.6335998). Such detail may help to surface suitable targets for NDRI software engineering capabilities, and forms a measure for tracking change. - A cross-NDRI forum for careers in research software, and/or application of software engineering practices for research software infrastructure. Even a cross NCRIS visiting software fellows scheme to foster connections. Such a capability would naturally benefit the domains where software production is highest, but which is under-represented as a target of NCRIS investment: Computer Science and Engineering, Mathematics and Statistics, Physics and Digital Humanities are domains with strengths in computational methods development. They are the more common by estimates of production of software arising from public research funding, but software is actually produced in every domain of research (DOI:10.5281/zenodo.10530615). A structural constraint makes support for this kind of software harder to surface when asking one research community to articulate support for a different research community: software produced these “method making” domains is used by researchers in other domains, and so is less readily recognised by software-using research communities as a need (it is just assumed to be available and supported). Because of this, a scoping study which seeks to gather measures of support between these communities, as well as a careful assessment of possible change activities that might underpin a new capability and a roadmap for establishment, would be a sensible first step for the Roadmap for an NDRI landscape that is maximising openly available software tools. And such a scoping activity can comfortably run in parallel to specific investments in software engineering capability to bolster existing NCRIS facilities, especially those that are more domain focussed.

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.

I have worked across the NCRIS capabilities from my time at the ARDC, first in engagements, then as program manager of the Research Software Program and as Solutions Architect for the HASS and Indigenous Research Data Commons. My network includes colleagues at NIF, MA, BPA/BioCommons, ALA, TERN, NCI, Pawsey, AARNET and so on.

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.

For Research Software: <https://doi.org/10.5281/zenodo.7340033> describes how researchers find (or don't find) software for use in research, broken down by domain of research. Useful for understanding research software visibility challenges. <https://zenodo.org/records/10060255> provides a prioritised list of infrastructures required to improve the visibility of research software <https://doi.org/10.5281/zenodo.10530615> estimates the size of and characterises the Australian workforce producing software for use in research The UK Software Sustainability Institute: <https://www.software.ac.uk/> Their (current) software maintenance fund: <https://www.software.ac.uk/programmes/research-software-maintenance-fund> Their (current) approach to social sciences tools: <https://www.software.ac.uk/programmes/research-software-practices-social-sciences> The US Research Software Sustainability Institute: <https://urssi.us/> <https://www.softwareheritage.org/> An archive of open source software https://en.wikipedia.org/wiki/Open_Source_Program_Office A description of what an OSPO is and does <https://sloan.org/programs/digital-technology/ospo-loi> The Sloan Foundation's current program to seed OSPOs in US universities.