

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

Imaging technology, datasets, and associated infrastructure are critical for improving health outcomes. This is evidenced by the utilisation of imaging in established national screening programs for breast cancer and lung cancer, and the critical role imaging will play in a future skin cancer/melanoma screening program (Roadmap under development (2025-2028) via Commonwealth funding in 24/25 budget). Imaging generates significant amounts of data that needs to be managed appropriately, and this becomes particularly complex for clinical imaging data due to its size, sensitivity, and heterogeneity. The ACEMID project believes there is a need for a national imaging translation pipeline/infrastructure that provides standards for imaging data management, a unified and coordinated approach for secure data access and analysis (particularly for sensitive clinical imaging data), and linkage of multi-modal, multi-jurisdictional, multi-institutional datasets to advance research. This infrastructure/platform should integrate the robust computational resources required for AI research, which has the potential to transform imaging in the health sector by enabling faster and more accurate diagnoses, minimizing both under and over diagnosis. Investment in this infrastructure will result in the development of large-scale health datasets to enable research that will ultimately inform better models of healthcare and utilisation of health resources. In parallel to this infrastructure, an enhanced research support network is needed for clinical research, particularly to assist researchers in navigating the complex digital research landscape. Access to training opportunities and specialized expertise to support the design, planning and execution of research projects, ensuring the utilisation of relevant NRI, frameworks, and standards, would empower researchers allowing them to drive research breakthroughs and maximise outcomes. Digital twin technology has been successfully leveraged in other medical fields, and the ACEMID project recognises the potential of developing and testing a 'Cutaneous Digital Twin', particularly for skin cancer monitoring and informing other skin health priorities. Successful implementation of this technology would rely on access to extensive data storage and data processing capabilities, and robust data management strategies for sensitive personal and clinical data.

Q24.
Defence

Q25.
Recycling and Clean Energy

Q26.
Space

Q27.
Environment and Climate

Q28.

Frontier Technologies and Modern Manufacturing

Quantum imaging technology is an emerging technology poised to revolutionise imaging and result in advanced imaging modalities. One example is terahertz (THz) imaging technology where preliminary studies indicate THz spectroscopy can be an important tool for discriminating between different types of skin pathologies.

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

This research priority is intended to develop technologies, tools and techniques for more Australians to enjoy healthier lives. The ACEMID project believes that imaging technologies and research play an important role in achieving this outcome, particularly in relation to the identified NSRP research outcome of improved preventive health through new screening, diagnostic and treatment techniques and models of care. Imaging enables earlier detection and disease tracking/monitoring, allowing for appropriately timed and targeted interventions to ensure improved healthcare outcomes and optimal utilisation of health care system resources. Imaging is central to Australia's established national screening programs for breast cancer and lung cancer, and will be critical to a future skin cancer/melanoma screening program (Roadmap under development (2025-2028) via Commonwealth funding in 24/25 budget). The ACEMID project data and outcomes will play an important role in informing the skin cancer/melanoma screening program roadmap. Details about ACEMID and ACEMID data can be found in the Other Comments section. Investment into research infrastructure and support for medical imaging is necessary to improve preventive health initiatives. In the case of ACEMID this will enable the mobilization of ACEMID health data to accelerate melanoma control, with transferrable benefits across the health data ecosystem. Support for an imaging translation pipeline that streamlines the availability and accessibility of clinical imaging data for research is essential. Consideration should be given to the development of national standards for data management, particularly in relation to accessing, centralising, analysing, and linking clinical data, which is even more complex for clinical imaging data due to its size, sensitivity, and heterogeneity.

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.

The ACEMID project believes the inclusion of skin imaging capability in the NRI is overdue, particularly considering recent Commonwealth government funding to develop a roadmap for a national targeted skin cancer screening program. Investment in national skin imaging capability would enable the development of reliable and evidence-based solutions to transform the early detection of melanoma and skin cancer, including improved early diagnosis, greater diagnostic accuracy, and standardised screening processes, enhanced by machine learning and intelligent support systems, for improved patient outcomes and optimal utilisation of health care resources. Skin imaging capability would also provide additional benefit outside of skin cancer/melanoma, resulting in positive impacts on the burden of other dermatological conditions and skin disease more broadly.

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.

INFORMATION ABOUT ACRF ACEMID and ACEMID DATA
ACEMID launched via a \$10M infrastructure grant from the ACRF in 2018. It has now established 15 total body 3D skin imaging sites in a telemedicine research network spanning metropolitan and regional, rural, and remote areas of QLD, NSW and VIC. Led by the University of QLD with the University of Sydney and Monash University, ACEMID partners with hospital and health service sites, eHealth entities, research institutions, and consumer groups. ACEMID is recruiting the world's largest melanoma cohort study: 15,000 individuals over 3 years with low, average or high risk of melanoma. Multidisciplinary data collected longitudinally includes total body 3D images, close-up dermoscopy images, questionnaire data (demographics, behavioural, quality of life, personal and family history data), clinical data (number of skin cancers diagnosed), biological samples (saliva for genetic testing, tissue samples for proteomic testing) and histopathological data (reports and scans of histology slides). The ACEMID Cohort Study is thus providing an unprecedented, highly annotated multimodal dataset from a "real world" Australian cohort. These data will facilitate validated and technologically advanced solutions that detect melanoma earlier. Machine learning and intelligent support systems will further enhance diagnostic accuracy and patient care. ACEMID evidence and innovations will therefore be critical to the development of a roadmap towards a melanoma and skin cancer screening program (\$10.3M from Aust Govt 2024/25 budget). The ACEMID project aligns with the vision of the 2021 NRI Roadmap. • ACEMID is integrating multimodal data at national scale from across imaging, genomics, proteomics, pathology and clinical care • ACEMID objectives lie at the cutting edge of health data acquisition, management and analysis: i) the data is sensitive and private yet must be mobilised for both care and research ii) data analysis across multi-jurisdictional, multi-institutional sources and storage sites will only be feasible through federated machine learning iii) its work will enable new products and processes delivering AI-supported health care benefit The ACEMID project is actively engaging with NCRIS capabilities, particularly the NCRIS Health Group and ARDC, around digital research infrastructure to address data challenges being encountered with our sensitive and multi-modal, multi-jurisdictional data assets. The NCRIS Health Groups view ACEMID as an exemplar project to develop, test and integrate frameworks and processes critical to NRI functions. Such activity would enable mobilisation of ACEMID health data to accelerate melanoma control and have transferrable benefits in the health data ecosystem.

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.