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

There is a growing demand and significant opportunity for a more integrated national research infrastructure (NRI) ecosystem to support development of medical products in Australia. The importance of medical products development was recognised in the 2021 Roadmap for NRI development and subsequent investments have made progress in addressing that challenge. Recent experience has highlighted the value of a more coordinated development ecosystem approach. A number of health-related NCRIS capabilities, including BPA, EMBL-A, NIF, PA, PHRN, and TIA, have collaborated to provide more coordinated support to Australian researchers through the NCRIS Health Group (see NCRIS Health Group), including cross capability referrals, shared staff, common voucher schemes and joint proposals . Additional investment in this collaboration cluster will expand Australia's capacity to develop, test, and bring medical products to market, ensuring a robust, efficient pipeline for innovation. A critical priority area is biobanking. Successive NRI Roadmaps have highlighted the importance of biobanking but little has been achieved. The time is right to take a national approach which will integrate genomic, phenomic, imaging, clinical and population health data into a unified, research-ready infrastructure. This integrated approach will reduce the demand for siloed, disease-specific biobanks and enhance the accessibility and utility of data for research and related medical product development. Researchers will be able to draw on data from a wide range of biobanks, addressing rare and complex diseases and facilitating research translation. The NCRIS Health Group is well placed to drive this initiative which already has significant underlying NRI components in place. Moreover, the integration of AI and digital health infrastructure is poised to transform medical product development. Routine electronic health record (EHR) systems are being deployed across Australian health services, and enabling researcher access to this data in privacy-preserving ways will accelerate medical product development by minimizing the need for expensive and fragmented clinical data collection efforts. Leveraging AI with digital clinical data will facilitate faster drug discovery and personalized medicine, improve diagnostic accuracy through AI-driven tools, reduce medical errors, enhance treatment plans, and expedite drug repurposing. This integrated infrastructure will also help identify existing treatments that could be adapted for new diseases, offering quicker solutions to emerging health crises.

Q24.
Defence

Linked population health data available through existing NRI remains essential for pathogen and pandemic preparedness and response. Enhancement of this data through inclusion of additional clinical data is a high priority.

Q25.
Recycling and Clean Energy

Q26.
Space

Q27.

Environment and Climate

There is a need to develop NRI to enable health data to be more systematically included in research related to the impact of the changing environment/climate. This includes the impact of rising temperatures particularly in urban areas, extreme weather events, rising sea levels which impact prevalence of vector-borne disease and poor air quality including from bushfire smoke. The Coastal and the Australian Urban Climate RI proposals are examples of the necessary NRI.

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

The continued development of National Research Infrastructure (NRI) to support research into healthy and thriving communities is essential. Integrating omics, imaging, clinical, and population data will enhance personalized medicine and address prevalent chronic diseases, including mental health conditions that significantly impact community health, well-being, and national productivity. Despite the availability of linked population-based health data, there are critical gaps, particularly in well-being data and data related to social determinants of health, such as education, family dynamics, and justice systems. While jurisdictions hold relevant datasets, there is a need for systematic collection, integration, and accessibility at local, regional, and national levels. Initiatives like the Population Health Research Network (PHRN) and Western Australia's PeopleWA have made progress in this area, but further NRI investment is required to support thriving Australian communities. Moreover, the scope of "Supporting Healthy and Thriving Communities" is much broader than the "Medical Products" theme in the last National Research Infrastructure Roadmap. This previous framing was restrictive and did not adequately recognize large and important areas of health and medical research such as preventive health, health services research, social determinants of health, and epidemiology. Future research and infrastructure planning must adopt a more inclusive approach that acknowledges these vital areas. The 2021 Roadmap utilized a challenge framework to support NRI planning and investment. Looking ahead, several trends will shape research priorities over the next 5-10 years: 1. Expansion of Integrated Health Data Infrastructure: Improved integration of social determinants of health data with clinical and biomedical datasets to facilitate a holistic approach to health research. 2. AI-Driven Healthcare Innovations: Greater investment in AI-powered analytics to enhance disease prediction, treatment customization, and drug discovery. 3. Advanced Biobanking Strategies: Transitioning from fragmented biobanks to a national integrated biobanking system to optimize resource utilization and research accessibility. 4. Resilient Biomanufacturing Capabilities: Strengthening Australia's ability to produce essential medical products domestically, reducing dependence on international supply chains. 5. Climate-Health Research Infrastructure: Expanding research on climate change's impact on health, necessitating new NRI investments in environmental health monitoring.

Q32.

Elevating Aboriginal and Torres Strait Islanders knowledge systems

Q33.

Protecting and restoring Australia's environment

There is a pressing need to develop NRI that enables health data to be systematically incorporated into research on the health impacts of climate change. Rising urban temperatures, extreme weather events, rising sea levels, vector-borne disease prevalence, and poor air quality (including bushfire smoke) have significant health implications. Proposals such as the Coastal and Australian Urban Climate Research Infrastructure (RI) initiatives exemplify the necessary NRI investments needed to address these challenges effectively.

Q34.

Building a secure and resilient nation

The COVID-19 pandemic underscored the necessity of strengthening Australia's biomanufacturing capacity to reduce reliance on imported medical products. A more coordinated health-related NRI is critical to achieving this goal. National research infrastructure must support the development and commercialization of medical products by fostering a well-integrated ecosystem. Investments in collaborative initiatives, such as the NCRIS Health Group (which includes BPA, EMBL-A, NIF, PA, PHRN, and TIA), have facilitated cross-capability referrals, shared staff, common voucher schemes, and joint proposals. Expanding investment in these collaborations will bolster Australia's ability to develop, test, and bring medical innovations to market, ensuring a robust pipeline for medical product development. A critical priority area is biobanking. Successive NRI Roadmaps have recognized its importance, yet progress has been limited. A national biobanking strategy integrating genomic, phenomic, imaging, clinical, and population health data into a unified research-ready infrastructure is needed. This integrated approach will mitigate the need for fragmented, disease-specific biobanks, enhancing research accessibility and utility. By drawing on a comprehensive network of biobanks, researchers can address rare and complex diseases, expediting research translation and medical product development. The NCRIS Health Group is well-positioned to drive this initiative, leveraging existing NRI components. The integration of AI and digital health infrastructure also presents a transformative opportunity for medical product development. As electronic health records (EHR) become more prevalent across Australian health services, privacy-preserving researcher access to this data will accelerate medical product innovation by minimizing the need for expensive and fragmented clinical data collection. Leveraging AI with digital clinical data will facilitate faster drug discovery, enhance diagnostic accuracy, reduce medical errors, improve treatment personalization, and accelerate drug repurposing. Furthermore, this integrated infrastructure will support the identification of existing treatments adaptable to emerging health crises, ensuring rapid responses to future public health challenges.

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.

Australian Biobank The need Successive NRI Roadmaps have highlighted the need for a national approach to biobanking but this has not resulted in any progress. A national approach to biobanking is critical in the health and medical research area. Meanwhile several developed national, most notably the UK, have invested in biobanks which have provided a major boost to health and medical research and delivered significant impact on medical product development and health outcomes improvement. The proposed infrastructure A federated, inclusive infrastructure is proposed that leverages existing NRI and institutional capabilities is proposed. It will incorporate genomics, other omics, imaging, clinical and population data. Key components include a platform to support data discovery, access and advanced analytics. Good governance including strong stakeholder engagement will be critical to success Medium term goals Operationalise the Australian Biobank (Health and Medical) platform by 2029. Impacted research communities Most health and medical research communities will benefit from the Australian Biobank including those looking at common health conditions such as cancer, cardiovascular, respiratory and mental health, and those involved with rare diseases. The Biobank will also support researchers involved in medical product development, clinical trials, precision medicine, infectious diseases and population health. Timeframe The need is urgent. Interested groups including the NCRIS Health Group and the Collections Working Group are working collaboratively to progress the Australian Biobank and have well thought through, spade-ready plans. Integrated Clinical Data The need Health and medical researchers around Australia are seeking greater access to clinical data. Major Australian health and medical research funders continue to invest heavily in infrastructure to collect clinical data but this may duplicate existing data collection processes. Digital clinical data is becoming more readily available as electronic health records systems are implemented by health service providers across Australia. There is a critical need for this data to be captured, linked/ integrated with Australia's rich linked health data assets and made available in privacy preserving ways for ground-breaking health and medical research. This infrastructure would support the work done by state and national clinical quality registries and may reduce the need for aspects of siloed clinical registries. The proposed infrastructure The new infrastructure will build on the existing PHRN data linkage infrastructure. Every jurisdiction in Australian has its core health and human services data linked via a PHRN-supported data linkage unit and researchers access linked data through these systems. Regional and state-wide clinical data will be incorporated into the linkage systems. Good governance including stakeholder engagement will be a critical component of this infrastructure. Medium term goals Incorporate key clinical data including pathology and imaging into Australia's population-based data linkage systems by 2030. Impacted research communities Most health and medical research communities will benefit from more systematic access to linked clinical data. This includes researchers investigating common health conditions such as cancer, cardiovascular disease, respiratory and mental health, and those involved with rare diseases. The integrated clinical data will also support researchers involved in medical product development, clinical trials, precision medicine, infectious diseases, evidence-based care and population health. Timeframe With appropriate investments, key clinical data including pathology and imaging can be incorporated into Australia's population-based data linkage systems by 2030. PHRN has already piloted incorporation of pathology data into the linkage systems and several jurisdictions are well advanced in a state-wide approach to collection of clinical data from public hospitals and other components of the public health system. Some regional research centres also have excellent, functional clinical data repositories which could be included in a national harmonised system.

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.

A significant issue in national research infrastructure is the lack of coordination between research funding and NRI funding, leading to duplication and inefficiencies. While the Australian Government has long supported a robust national research infrastructure through NCRIS and other initiatives, funding bodies such as NHMRC and MRFF frequently receive grant applications proposing the development of new data collections, biospecimen repositories, and data platforms. These proposals are often submitted without consultation with existing NRI capabilities or consideration of whether similar infrastructure already exists. As a result, research grants are being used to create fragmented and often unsustainable infrastructure, rather than leveraging or enhancing national capabilities. The National Research Infrastructure Roadmap should clearly delineate that research funding is intended for conducting research, while NRI funding should support the development and operation of national-scale infrastructure. Encouraging alignment between these funding streams will prevent redundancy, ensure sustainability, and maximize the impact of government investment in research infrastructure.

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.