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

Emerging research directions: Accelerating life science research through AI Australia is part of the EMBL international network of life science excellence, collaborating to gain a better understanding of the complex biological systems and using that knowledge to inform solutions that benefit human and planetary health. Driving biological discovery science: EMBL is an established and world leading player in developing and applying AI tools to address questions in life sciences, at molecular, cellular, organismal, and population levels. EMBL advances AI methods in research areas that are critical to Australian and international life sciences: including areas such as structural biology, imaging, and the omics. Providing large-scale open biological data as an enabler for AI: EMBL's European Bioinformatics Institute (EMBL-EBI) has been storing, curating, and making biological data generated by the global scientific community openly available to everyone. This invaluable data resource covers the length and breadth of biological fields, systems and technologies and is accessible to Australian researchers. In the future, it will provide unique opportunities to develop, train, and rigorously test AI-based approaches to tackle pertinent challenges in fundamental research and biomedicine. Example: The carefully curated and information-rich data managed by EMBL-EBI served as the perfect training ground for Google DeepMind's revolutionary AI system AlphaFold, which has produced accurate predictions for the structure of nearly all proteins known to science. This breakthrough was recognised through the award of the Nobel prize for chemistry in 2024. EMBL-EBI and DeepMind worked together to make all AlphaFold predictions freely and openly available to the world. These cover proteins from all species, including humans, plants, bacteria, and animals, opening up new research avenues across the life sciences, and supporting the development of solutions for global challenges.

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

Critical research infrastructure requirement: Human capital and workforce development Powerful digital research technology and AI are advancing at an unprecedented pace, enabling transformative science to support healthy and thriving communities. As a consequence, there is a growing global demand for highly qualified personnel with specialised scientific, technical, digital and professional skills. Successive NRI Roadmaps have highlighted the need for skills development, employment stability and clear progression pathways in Australia. Despite the clear need, little investment and progress has been made. Attracting and retaining top talent remains a significant challenge for research institutions, compounded by a lack of appropriate career recognition and training frameworks. This presents significant risks to the Australian research and research infrastructure ecosystems. Australia must remain globally competitive and attractive as an international partner for next-generation research domains. The EMBL approach to training is based on mutual respect and co-design. Working closely with subject matter experts in the respective research communities, EMBL co-develops training that builds competence, capacity, and culture. Through our associate membership, Australia has built a long-standing and enduring relationship with EMBL which can help shape workforce development programs tailored to the Australian research and innovation ecosystem. For example, EMBL already delivers ARISE" a fully implemented research infrastructure fellowship program, focused on attracting international talent, fostering innovation and developing novel career pathways. EMBL Australia is well positioned to provide effective stewardship for an Australian version of ARISE with consultation and conceptualization of a pilot program already underway.

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.

Pilot program / leveraging existing collaborations EMBL Australia is highly motivated to help shape Australia's NRI workforce. We are working on 'AusRISE', a pilot program focused on developing a highly skilled NRI workforce that is globally connected and supported by robust career recognition and accreditation frameworks. A conceptually solid proposal has been developed and is currently circulating with potential collaborators for a second round of input from existing NCRIS capabilities, Australian research institutions and global delivery partners. AusRISE will leverage international blueprints and experience to support NRI skills development at multiple levels. The pilot program is focused on talent development across three streams, investing in human capabilities and transferable skills that enable the NRI workforce to collaborate, innovate and co-create opportunities both nationally and internationally. - AusRISE Leaders: for established RI leaders, senior researchers / managers - AusRISE Fellows: for emerging RI scientists / engineers with deep tech knowledge and interest in service provision to support research (postdocs level) - AusRISE Next Gen: life science students from across Australia (PhD students) Collectively, the AusRISE community and their support networks will leverage the investment into national RI to future-proof Australia's digital RI ecosystem. The successful implementation of AusRISE will integrate workforce development efforts and lead to multi-faceted outcomes, including international knowledge exchange, talent attraction, training blueprints, innovative digital RI technologies and champions for ongoing NRI workforce development. Expected outcomes AusRISE aims to launch a network of globally connected RI scientists and provide a valuable testbed for future career pathways and tailored RI training frameworks in Australia. Its implementation across diverse career levels aims to create a strong and integrated talent pipeline, well-equipped to tackle current and future technological and societal challenges. Short- and medium-term outcomes (3-4 years) will include: - Australia's first RI Fellowship scheme, providing a concept and testbed for scalable NRI skills development - Recruitment of top talent into specialised NRI domains - New digital technologies / methods developed by AusRISE Fellows at their respective hosts - Activation of an integrated and globally connected network of established NRI leaders, emerging talent and life science students interested in digital RI careers. Long-term outcomes (5+ years): - Critical insights, templates and learnings to inform a national RI career recognition and accreditation framework - RI scientists equipped to embark on a variety of career pathways across academia and industry - Curated content that could be turned into 'NCRIS micro-credentials' - An opportunity to showcase Australia's NRI capability on the global stage Approach - Highly collaborative and complementary to other initiatives such as Technicians Commitment: - User-centric and contextualised to the Australian research and innovation system - Scalable and transferable frameworks - Reciprocal and consolidated effort to global knowledge management of RI operations, capacity building and policy development Stewardship EMBL and EMBL Australia are well positioned to provide stewardship for AusRISE. With the mandate of maximising Australia's associate membership to EMBL in Europe, EMBL Australia has a track record of international talent recruitment, research collaboration and training delivery, and is deeply networked into leading Universities and medical research institutes across Australia, evident in the EMBL Australia Partner Laboratory Network. Locally, EMBL Australia formally joined the NCRIS Health Group in 2024 and currently works in close collaboration with its members (BPA, NIF, TIA, Phenomics Australia, PHRN) as well as as other NCRIS capabilities including Microscopy Australia and ANSTO. Internationally, AusRISE will leverage EMBL's experience and demonstrated success in developing RI competencies for scientists (e.g. ARISE) and co-developing tailored capacity strengthening projects for different regions (e.g. CABANA, a project that accelerated the implementation of data-driven biology in Latin America through sustainable capacity-building focused on three challenges – communicable disease, sustainable food production, and protection of biodiversity). https://competency.ebi.ac.uk/framework/arise/0.5 https://www.embl.org/training/arise2/ https://cabana.online/ About EMBL Australia EMBL Australia is a national life science capability with a vision to build the next generation of Australian life science leaders. We attract talented scientists and provide training and long-term support for emerging research and technology leaders to build their careers at Australia's top universities and medical research institutes. https://www.emblaustralia.org/about/embl-australia-partner-laboratory-network/ https://www.emblaustralia.org/events-speakers/ EMBL Australia is a partner of the European Molecular Biology Laboratory (EMBL). We work towards better integration and participation of national scientific communities into EMBL science, infrastructure and training programs. https://www.emblaustralia.org/infrastructure/access-embl-scientific-services/ Monash University is the lead agent for EMBL Australia and hosts the EMBL Australia Secretariat. EMBL Australia is part of the NCRIS Health Group. https://www.emblaustralia.org/infrastructure/ncris-health-group/ https://www.emblaustralia.org/wp-content/uploads/2024/10/Approved_NCRIS-Health-Group-flyer-1-1.pdf

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.

European Molecular Biology Laboratory (EMBL) Bioplatforms Australia National Imaging Facility Phenomics Australia Population Health Research Network Therapeutic Innovation Australia Microscopy Australia

Q39.
3.3 Please indicate your (one or more) primary reasons for interacting with NRI:

- [x] For expertise or advice
- [x] Access to research resources or products
- [x] Access to equipment for research
- [ ] Access to equipment for operational reasons
- [x] Help in translating research
- [x] 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.

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.