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

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.

In the next 5-10 years, Australia will remain at the front line of accelerating global climate change and environmental degradation, requiring biodiversity monitoring and mitigation efforts to retain ecosystem services and quality of life for our increasing populations. As the repositories of primary biodiversity information, Australian fauna and flora collections – such as museums and natural history collections - play a key role in this process. Our biodiversity collections increasingly rely on digital imaging to expand the detail and public availability of their data, using Australia's excellent imaging infrastructure. Computed Tomography (CT), micro-CT, laser/structured light surface scanning, or photogrammetry are now standard tools to digitise museum objects, producing accurate, easily shared specimen representations that are otherwise locked up in collections. In the case of tomographic data, 3D images can even add previously inaccessible information on a specimen's internal structure. 3D imaging represents a step change in Australian biodiversity research through its potential to make critical biodiversity data available to the scientific community. Well curated, updated and accessible 3D datasets are paramount in accurate identification of biodiversity, including invasive species, new or endangered species, contraband natural history objects (e.g., fossils) and assessment of heritage objects (e.g. archaeology). However, this potential cannot be realised without appropriate infrastructure. Unfortunately, critical resourcing shortages currently prevent the sector from developing infrastructures that realise the potential of 3D imaging. Instead, many collections do not control their own data, despite the accelerating growth in 3D-imaging based research. Terabytes of imaging data from disparate, short-term funded initiatives sit on inaccessible hard drives, often in the collections themselves, or on unsuitable storage solutions (e.g., Dropbox). In many cases, researchers use informal ad-hoc permissions to publish 3D data. For example, the US-based MorphoSource platform hosts thousands of 3D object images from Australian natural history collections, but only a fraction of these is controlled by the collections from which they were acquired. As government funding is the chief funding source of these images, the opportunity and economic cost to collections and Australian science is immense. However, an excellent example of how this can work are the well-supported digitisation strategies in the CSIRO National Research Collection of Australia, which has benefitted from substantial investment into data migration, infrastructure and online sharing of images. In a submission to the Academy of Science [1], the National Imaging Museums Special Interest Group outlined the areas in which urgent support is required to mobilise existing and appropriately manage future data, with the following priorities: - Nationally based, centrally supported digital storage infrastructure - Equitably distributed data and metadata curation capacity - Support for well-developed frontline data management - A national Copyright and IP policy framework - Structures to help prioritise and provide equitable access As mostly state-governed institutions historically designed for archival of physical items, Australia's biodiversity collections are neither designed, equipped, nor funded to address such a tremendous emergent task. However, Australia's excellent research infrastructure provides most components for a successful national 3D imaging framework for biodiversity collections (as well as others, like cultural heritage collections). These include - Potential national storage solutions e.g. through NECTAR; - Entities specifically catering to requirements of data curation, platforming, management and coordination, such as the Australian Research Data Commons and National Imaging Facility; - Existing IP and copyright expertise; and - Clear existing federal guidelines for Public Data Policy (e.g., [2]) We therefore call for sustained investment into the priority areas identified above over the next 5-10 years. This would allow the sector to harness existing capabilities to catch up with the digital age, and develop future-proof infrastructure that maximises the use of Australian 3D biodiversity collections. A preferred approach would be through a community of practice to ensure sustainability, and safeguard against obsolescence. This would involve a period of stakeholder consultation to develop implementation frameworks followed by technical implementation (e.g., storage allocation, platform design and deployment, and legal development) and a well-funded adoption initiative (e.g., resourcing of collections to adopt solutions and staff training). [1] Weisbecker V, Fisher N, Goscinski W, Kench P, Keogh S, Melville J, Patalwala D, Peachey T, Rampe M, and Tatarnic N (2023) National Imaging Facility Museums Special Interest Group - Submission to the AAS Accessing Australia's Research Collections stakeholder consultation. Zenodo. doi: https://doi.org/10.5281/zenodo.10776122. [2] Australian Government Department of Finance (2015) Public Data Policy Statement. http://www.dpmc.gov.au/resource-centre/data/australian-government-public-data-policy-statement National Imaging Facility Museums Special Interest Group Assoc. Prof. Vera Weisbecker (Flinders University) Dr Alice Clement (Flinders University) Nicole Fisher (CSIRO National Research Collection of Australia) Dr Scott Hocknull (Queensland Museum) Prof. Scott Keogh (Australian National University) Dr Jane Melville AM (Museums Victoria) Diana Patalwala (University of Western Australia/National Imaging Facility) Thomas Peachey (Australian Museum) Michael Rampe (Macquarie University) Dr Nik Tatarnic (Western Australian Museum) Assoc. Prof. Laura Wilson (Australian National University)

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.

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.