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

Changing climate and increasing globalisation of human movement and trade has dramatically increased the exposure of countries to new pests and diseases that can have devastating economic, environmental, and social impacts. Consequently, governments, industry and environmental groups must innovate and become more efficient in how they estimate and manage these risks. To meet this ever-increasing challenge, the ARDC, other government organisations and industry have made significant investment has focused on the development of standardised biosecurity databases (e.g. AusPestCheck; not funded by NRI) and new surveillance technologies (e.g. drones, Satellite imagery analysis). However, a critical gap has only recently been tackled – the need for a standardised, easy-to-use risk analytics platform that harnesses existing data, estimates risk, and ultimately, informs policy and operational decisions focused on managing biosecurity risk. Until recently, cutting-edge risk analytics are developed by academics, for academics. Consequently, these tools are largely inaccessible to the people who need them most – surveillance practitioners, policymakers, and decision-makers. This lack of access has resulted in national inconsistencies in how risk is estimated and managed, with different jurisdictions and industries utilising different models and datasets for informing operational decisions such as where to allocate finite surveillance resources. The investment that ARDC (via the Planet RDC initiative) has made into analytic platforms such as Biosecurity Commons (www.biosecuritycommons.org.au) is in my view gold-standard in making cutting-edge science available to applied practitioners in government and industry. The platform is open-access, cloud-based and user-friendly for modelling and analysing biosecurity risk and response, developed specifically for the Australian biosecurity sector -- but applicable globally. NRI focus should continue to make data more accessible (especially spatial datasets) but also to continue to refine and build analytical platforms such as Biosecurity Commons such that governments and industry can better manage the increasing risk posed by changing climate and trade.

Q23.
Medical Products

Q24.
Defence

Q25.
Recycling and Clean Energy

Q26.
Space

Q27.
Environment and Climate

Changing climate and increasing globalisation of human movement and trade has dramatically increased the exposure of countries to new pests and diseases that can have devastating economic, environmental, and social impacts. Consequently, governments, industry and environmental groups must innovate and become more efficient in how they estimate and manage these risks. To meet this ever-increasing challenge, the ARDC, other government organisations and industry have made significant investment has focused on the development of standardised biosecurity databases (e.g. AusPestCheck; not funded by NRI) and new surveillance technologies (e.g. drones, Satellite imagery analysis). This lack of access has resulted in national inconsistencies in how risk is estimated and managed, with different jurisdictions and industries utilising different models and datasets for informing operational decisions such as where to allocate finite surveillance resources. The investment that ARDC (via the Planet RDC initiative) has made into analytic platforms such as Biosecurity Commons (www.biosecuritycommons.org.au) is in my view gold-standard in making cutting-edge science available to applied practitioners in government and industry. The platform is open-access, cloud-based and user-friendly for modelling and analysing biosecurity risk and response, developed specifically for the Australian biosecurity sector -- but applicable globally. ARDC have also made similar investments in other environmental platforms such as EcoCommons, WildObs and EcoAcoustics. All these platforms will be game-changers for how environmental and biosecurity management is conducted in Australia and overseas. More importantly, they significantly facilitate the implementation of high quality science in informing operational and management decisions. I believe in the era of AI, such platforms will only become increasingly important.

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

Changing climate and increasing globalisation of human movement and trade has dramatically increased the exposure of countries to new pests and diseases that can have devastating economic, environmental, and social impacts. Consequently, governments, industry and environmental groups must innovate and become more efficient in how they estimate and manage these risks. To meet this ever-increasing challenge, the ARDC, other government organisations and industry have made significant investment has focused on the development of standardised biosecurity databases (e.g. AusPestCheck; not funded by NRI) and new surveillance technologies (e.g. drones, Satellite imagery analysis). This lack of access has resulted in national inconsistencies in how risk is estimated and managed, with different jurisdictions and industries utilising different models and datasets for informing operational decisions such as where to allocate finite surveillance resources. The investment that ARDC (via the Planet RDC initiative) has made into analytic platforms such as Biosecurity Commons (www.biosecuritycommons.org.au) is in my view gold-standard in making cutting-edge science available to applied practitioners in government and industry. The platform is open-access, cloud-based and user-friendly for modelling and analysing biosecurity risk and response, developed specifically for the Australian biosecurity sector -- but applicable globally. ARDC have also made similar investments in other environmental platforms such as EcoCommons, WildObs and EcoAcoustics. All these platforms will be game-changers for how environmental and biosecurity management is conducted in Australia and overseas. More importantly, they significantly facilitate the implementation of high quality science in informing operational and management decisions. I believe in the era of AI, such platforms will only become increasingly important.

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.

I think the ARDC Planet RDC initiative is doing an exemplar job of making both data and analytics more accessible to environmental practitioners across the academic, government and industry sectors. However, I think a logical next step it to carefully consider how the data and analytics can be shared across platforms. For example, at the moment Planet RDC invests into 4 platforms: 1) EcoCommons -- An analytics platform & spatial database focused on species Distribution modelling (mostly for conservation contexts) and largely targeted at researchers. 2) Biosecurity Commons --An analytics platform & spatial database that provides access to cutting edge risk analytics for informing operational decisions associated with surveillance and risk management. Largely targeted at government and industry stakeholders. 3) Open EcoAcoustics -- An analytical platform and database of recorded animal sounds data. 4) WildObs (NEW) -- An analytical platform and database of camera trap data. Each of these 4 offer incredible opportunities in future research directions and their implications on real-world management of our environment. However, to facilitate this I believe there needs to be some thought into how information can be readily exchanged across these disparate platforms. For example, information obtained from WildObs or Open EcoAcoustics can be directly used within Biosecurity Commons to inform the occupancy and/or density of potential disease hosts such as feral pigs and deer. Similarly the information obtained from these platforms can be used to construct my advanced species distribution models in EcoCommons. I do not advocate that all these platforms be merged into one mega platform, but rather there should be some focus on opportunities to pull or push data to other platforms as the need arises. I think the this is where the is huge potential for the "Data Spaces" initiative to have significant impact. I think if NRI/ARDC can work with platform stakeholders, their funding partners and governments more broadly I believe significant progress could be made in this space within the next 5 years. I also think there is an opportunity to embed government and industry users into AAF. Currently government has invested in the development of VanGuard. A single sign on for government users. However, its coverage over government agencies (particular non-commonwealth agencies) is poor. I think there is opportunity for both VanGuard and AAF to collaborate and onboard more organisations

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.

Biosecurity Commons and EcoCommons which are built off of NECTAR infrastructure. I am also a regular users of AAF which is the primary means of accessing both platforms.

Q39.

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

- [ ] 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.