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

Addressing the attitude / behaviour gap is crucial if we are to better understand human behaviour and encourage environmentally responsible practices. With specific regard to consumption, whether this be energy, travel, food or the purchasing of manufactured goods, we need to be able to effectively monitor and measure human behaviour in order to effectively change it. To do this, researchers need access to infrastructure to undertake high-quality biometric research that is guided by behavioural experimental approaches to develop both fundamental and applied research in behavioural and decision science. On the fundamental side, access to physiological data that represents attention, interest, emotions and cognitive processing can provide extensive insight into human behaviour and decision making that cannot be observed via traditional research methods (e.g. questionnaires and interviews). Infrastructure such as eye tracking devices, biometric measurement tools that measure real time emotional responses and virtual and augmented reality technologies will enable researchers to investigate questions that explore the way people access information when making decisions and observe their subsequent behaviours. Being able to monitor human emotions when assessing the values of different options and assess the way attention is allocated to different aspects of a problem will provide extraordinary insight into how people make decisions that have environmental consequence in their everyday lives at scale. The technologies available will supplement declarative statements from human participants with the measurement of actual behaviour, providing a much richer understanding of human decision processes and the factors determining their behaviour across multiple environmental conservation scenarios.

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

With reference to critical research outcome " cognitive and social causes of engaging with misinformation and disinformation, and best practices for reducing their impact" research is needed to identify the key risk factors behind consumer vulnerability to scams and fraudulent activity. Infrastructure such as biosensor technologies, including but not limited to, eye tracking, electrodermal activity sensors and EEG, will enable researchers to understand how a consumers psychological, social and cognitive characteristics correlate with their vulnerability to misinformation and disinformation that inevitably lead to significant economic losses through scams and fraud. Currently, access to such equipment to support research at scale in this area is limited. A research agenda such as that noted above will result in the enhancement of consumer resilience to scams; contribute to the development of tailored solutions (e.g. effective marketing communications, educational programs) designed to target and mitigate consumer decision-making behaviours that compromise safety across multiple demographic segments; and, better protection of organisations whose reputations and customer relationships are jeopardised by scams and fraud.

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.

A new NRI capability that supports biometric research would indeed enhance the research capabilities of all researchers seeking to better understand human behaviour across multiple domains. Currently, there exists a research community of practice (Biometric Research Hub, Australia) comprising researchers who are applying biometric techniques to human behaviour research in the fields of marketing, psychology, management, neuroscience, education, economics and tourism. There has been great enthusiasm among this group to build the human and technological capital necessary to provide new insights on human behaviour, something that would only be possible with national-level investment The aspirations of this community align well with the Australian Government's science and research priorities, many of which require an understanding of human behaviour to drive positive change in society, processes, and practice. For example, the Australian Government has identified a need to increase policy and analytical capability across the Australian public service, including the experience of customers. This is noted as requiring collaboration with the university sector for the development of research led solutions to guide the reform of their internal and external human focused practices – all of which rely on a deeper understanding of human behaviour (https://ministers.pmc.gov.au/gallagher/2022/albanese-governments-aps-reform-agenda). Human behaviour and the decisions they make have a significant impact on job creation, economic growth, and the overall quality of life. An NRI capability that supports the development of sophisticated human behaviour laboratories that house biometric equipment at scale will provide a unique research environment where researchers across Australian academic institutions will have access to the latest technology and multi-disciplinary expertise to better understand these processes and offer effective solutions to complicated problems that continue to impact society. As a result, Australian researchers will be well-positioned to lead the development of new knowledge capable of offering effective solutions to complicated problems that impact the well-being of society now and in the future. With regards to the timeframe over which we would advocate the establishment of biometrics research laboratories across our institutions, we believe a seven year period would enable the accomplishment of our key goals, including but not limited to the following: • Establishment of a minimum of 8 fully equipped and administered Biometric Laboratories across Australian Universities • Generate awareness of the capabilities of biometric research technologies to industry and government with a focus on ground-breaking industry relevant research that aligns with key priorities of the public and private sectors • The provision of a physical, fit-for-purpose and clearly branded laboratories on all participating campuses where researchers from across the university can collaborate on projects that use high quality infrastructure for behavioural experiments. • Develop a national early career academic program that focuses on educating our next generation of human behaviour researchers in the use and application of biometric technologies.

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:

- ☐ I did not know about it
- ☐ Other facilities suit my needs better
- ☐ I would like to, but cannot get access due to geographical location
- ☐ I would like to, but believed that access was only available to academic researchers
- ☐ I am not aware of any capability that meets my needs
- ☐ Other (please specify) [ ]

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.