

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

The transition to net zero will require a whole of society response and the digital transformation of social and economic services will play a critical role in this transition. Digital platforms, services and smart devices, from news and search to transport and smart homes, play a key role in providing access to commercial and public information, advertising, personal and sensor data and services. However researchers and regulators have limited access to the data generated through our interactions with digital platforms. To address this we need to invest in innovative data collection methods such as data donation and APIs, and new approaches to visualisation, digital twins and simulations combining social and environmental data and analysis. Extending the capability of the Australian Internet Observatory will give researchers across the environmental sciences, humanities and social sciences access to new technologies and data, allowing them to explore new resources for the net zero transition, connecting social and sensor data and synthetic models with environmental and urban data and models. An enhanced AIO will work collaboratively with other research infrastructure facilities including AURIN, the ARDC Planet Research Data Commons and integrated Social Science data to support cross disciplinary insights from social data and new technologies. An enhanced AIO will support key research directions for the transition to a new zero future identified in the NRPs including attitudes to adopting and applying new technologies, advancing critical technologies such as artificial intelligence (AI) in responsible ways, and providing the necessary skills and training across HASS disciplines and beyond.

Q31.

Supporting healthy and thriving communities

Recent digital transformations have had a major impact on the way in which individuals, families and communities access and share health and wellbeing information and services, generate data, interact with the health system. Digital platforms and services play a critical role in Australia's health systems, yet our capacities to observe and analyse the systems remain extremely limited. To maximise the benefits and address the harms of digital technologies on the health and well-being of Australians, we need new forms of research infrastructure designed to meet the digital transformation challenge. The Australian Internet Observatory (AIO) is currently developing tools for collecting and auditing data from a range of platforms and services using data donation methods and visualisations. The proposed Phase 2 of the AIO will expand to include new ways of collecting data from personal devices and sensors, create digital twins and innovative visualisations and develop Digital Public Infrastructure to ensure data portability, privacy and algorithmic diversity. An expanded Australian Internet Observatory will provide the critical research infrastructure needed to support many of the key research directions identified as NRPs for supporting healthy and thriving communities including: social, cultural, developmental and environmental drivers of individual and community health; preparing for pandemics; social and technological solutions for improved care; Aboriginal and Torres Strait Islander-led, place-based and culturally appropriate approaches to build community; and addressing the impacts of climate change on communities.

Q32.

Elevating Aboriginal and Torres Strait Islanders knowledge systems

The digital transformation challenge provides many benefits and challenges for Indigenous communities and represents a critical area of investment for research and research infrastructure for Indigenous researchers. AIO supports investment in an Aboriginal and Torres Strait Islander Research Data Commons (ATSIRDC) as a dedicated NCRIS facility as a recommendation in the 2026 Roadmap. At the same time the work of AIO will support Aboriginal and Torres Strait Islander digital research methods by providing access to data donation collection tools and methods for conducting research with Indigenous communities on digital platforms, services and sensors. It will also prioritise interdisciplinary approaches, and support Indigenous-led frameworks and data governance principles. AIO is currently working within the HASS & Indigenous Research Data Commons and the ARDC and developing our understanding of and frameworks for working with Indigenous data governance. The proposed Phase 2 of AIO aims to further collaborate with Indigenous researchers and NRI facilities to develop digital public infrastructure standards that ensure data interoperability. GenAI tools and Digital Twins will also provide new forms of analysis, and expand the capacities for data collection and control from digital platforms and sensors by Indigenous researchers and communities. Phase 2 of the Australian Internet Observatory will provide the critical research infrastructure needed to support a number of the key research directions identified as NRPs for Elevating Aboriginal and Torres Strait Islander research and data governance including: incorporating Aboriginal and Torres Strait Islander expertise into the development and application of critical and emerging technologies, particularly digital and data technologies; and approaches to climate change adaptation to support regional and remote communities.

Q33.

Protecting and restoring Australia's environment

Participatory research and citizen science approaches have become increasingly important for environmental research and the Australian Internet Observatory is also adopting and adapting many of these methods and developing new ways of collecting data and engaging with participants that will benefit and inform environmental research. Digital platforms, services and the IoT present a huge source of data currently not readily available for environmental researchers. Environmental research will also benefit from new ways of connecting and visualising diverse data, via simulations and digital twins, and the tools to ensure information is reliable and verifiable, including ways of auditing the flow of information across platforms. Digital public infrastructure lies at the heart of a circular economy, ensuring data portability, standards and public interests are protected. Phase 2 of the Australian Internet Observatory will provide the critical research infrastructure needed to support a number of the key research directions identified as NRPs for protecting and restoring Australia's environment including: new and innovative approaches to discovering, protecting and restoring biodiversity; tools and techniques to collect and analyse environmental data; and transitioning to a more circular economy.

Q34.

Building a secure and resilient nation

Investing in national infrastructure for digital observability is critical for ensuring that researchers, regulators, and the public can effectively scrutinize political activity in an era where online communication is both increasingly diffuse and intentionally obscured. Given the centrality of the Internet for communication, public interest information, the economy and national security, research infrastructure to address the digital transformation is absolutely essential to building a secure and resilient nation. Many cyberthreats, digital scams, and misinformation campaigns go undetected as they require observability from a user perspective and large scale testing in secure environments. The emergence of AI-driven misinformation and fraud, particularly in political and economic/financial sectors is a growing threat to the stability of democracy and free markets. The fragmentation of the media and communications landscape is also making it increasingly difficult to monitor national and international conversations, posing serious challenges for election integrity, policymaking in all areas, and public accountability. Without robust data access, unethical campaigning, disinformation, and digital political manipulation will go unchecked. New tools are required to detect, capture and respond to these emerging threat actors. Continued investment in emerging data donation tools being pioneered through the Australian Internet Observatory would allow greater capture of these emergent threats and challenges through the development of GenAI and Simulation environments to test and respond to various kinds of cyber attacks and the development of Digital Public Infrastructure principles and standards to ensure national sovereignty over data portability and standards. Phase 2 of the Australian Internet Observatory will provide the critical research infrastructure needed to support many of the key research directions identified as NRPs for Building a secure and resilient nation including: secure and resilient technologies; technologies that support Australian resilience to natural and human-induced challenges; technology design frameworks that increase democratic resilience; causes, impacts and mitigation of misinformation and disinformation; responding to natural disasters.

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 recent years a new wave of digital transformation has seen a new generation of platforms, devices and AI capabilities impacting almost every aspect of social and economic life. The pace and scale of this change is only set to continue over the next decade presenting a wide range of challenges which will require new tools, skills and training for social science, arts and humanities (HASS) research. To achieve national research priorities and address the benefits and harms of digital technologies we need investment in research infrastructure to meet this new digital transformation challenge. Observability of digital platforms, services and smart devices is critical to our capacity to research, regulate and manage digital technologies for national benefit - to address research priorities such as health and wellbeing, community resilience and natural disasters, misinformation and social cohesion, scams, manipulation and cybersecurity, and much more. We therefore need to invest in the kinds of research infrastructure needed for HASS and Indigenous researchers, as well as the wider research community to address the digital transformation challenges of the next decade. Infrastructure capability: an expanded Australian Internet Observatory To support research in a rapidly changing and dynamic field, we need to build on and expand the capabilities of the Australian Internet Observatory and other HASS capabilities. This includes capabilities to collect, analyse, and interpret the rapidly expanding range of data from new digital services, networks and devices. New visualisation tools that can work with Generative AI and digital simulations, develop open standards and data governance for digital public infrastructure and uplift the next generation of social science and humanities researchers in digital research methods and emerging technologies. The digital transformation challenge requires investment in an expanded Australian Internet Observatory (AIO) as critical HASS NRI, focussing on 5 key areas: Data collection and auditing tools: Digital platforms, services and smart devices Development of automated, adaptive data collection tools for digital platforms and services, smart data and Internet of Things (IoT) Expanded forms of crowdsourcing and data donation tools to provide access to a wide range of digital systems for auditing at scale Web scraping and API-based tools for data collection from established and emerging digital platforms, services and smart devices. GenAI and ML Research Infrastructure Domain-specific LLMs for Australian contexts, including models trained on local datasets relevant to law, health, and media studies and tools for fine-tuning open-source generative models tailored for research in HASS Secure, institutionally managed AI systems that support text, image, audio, and video synthesis for research while ensuring privacy and compliance. Visualisations, Simulation Environments and Digital Twins Researchers need a range of tools to visualise and analyse data and new technologies are opening up innovations for data analysis from digital and social data that are unprecedented. Sandbox environments that simulate platform interactions to determine algorithmic and social drivers of misinformation spread, and rigorous and independent testing of platform effects. Digital Twins for observing and analysing platforms and communication ecosystems to model the impact of regulatory interventions. A range of synthetic data and interactive visualisation tools are also required to provide insights into large scale systems and connect data across disciplines and related NRI facilities. Digital Public Infrastructure (DPI): Systems and Standards DPI is an emerging concept being adopted around the world which involves networked open technology standards built for public interest, governance frameworks and a multisector community of participants working to drive innovation in the operations of public goods. AIO's DPI program aims to: Build the capacity of all actors to implement, innovate, scale, and lead digital transformation, ensuring digital sovereignty and a thriving local digital ecosystem. Develop systems and standards for AIO and related DPI to enable data portability and interoperability which is a fundamental precondition for service delivery, credential verification, security, data privacy and data sharing in areas of social security, health, education, travel, and finance. Training and Translation Research translation and engagement: A whole-of-society approach is essential for inclusive digital transformation. Governments, the private sector, civil society, academia, and individuals must have access to tools and research findings to support policy development and regulation, digital inclusion and new social and economic innovations. Expanding the skills and capabilities of the next generation of HASS researchers to understand and work with new tools and methods is critical if we are to address the digital transformation challenge. The AIO program will develop specialised training for uplift across HASS disciplines. Research communities AIO Phase 1 is being developed and led by RMIT University in partnership with Queensland University of Technology, The University of Queensland, The University of Melbourne, Swinburne University of Technology and Deakin University. An expanded AIO will look to develop new partnerships including with facilities such as the International Digital Policy Observatory at University of Sydney and the Australian Data Archive. AIO Phase 2 will continue to work closely with the wider research infrastructure sector, particularly the ARDC, AURIN, HASS and Indigenous NRI facilities, as well as Health and Environment facilities to develop interoperable, integrated and collaborative data and technology solutions.

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) interacted 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.

Q39.

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

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

We strongly support strategic investment in new NCRIS capabilities for HASS and Indigenous researchers and communities through an integrated, collaborative approach which will provide: Large scale integrated data and analytical capabilities which ensures the value to be obtained from combined administrative, research and commercial data A coordinating hub, providing strategic leadership and overall visibility of the strategy, and supporting cross disciplinary, institution and sector coordination and collaboration Capacity to prototype new data sources, methods and applied technologies Support cross-disciplinary and cross-sector collaborations focused on national research priorities. Federated data services offering curated access to data for priority research areas, progressively developed to integrate key data infrastructures. Digital public infrastructure, standards and open protocols for national sovereignty and interoperability. A public-facing citizen-centred communication, engagement, and participation program A data ethics and governance program to support safe, responsible and inclusive research systems and FAIR and CARE practices A research capacity-building program to work with new forms of data, pilot access to and use of new data sources, and support cross-disciplinary and cross-sector collaborations addressing national research priorities. A national research and training program for data access and analytics in the humanities and social sciences and beyond Links Further information on the Australian Internet Observatory's strategic vision along with reports and resources are available on the AIO website <https://internetobservatory.org.au/strategy> Other key documents include: ACOLA (2022). Australia's Data-Enabled Research Future: Humanities Academy of Social Sciences Decadal Plan for Infrastructure 2024 - 2032 (2024) <https://socialsciences.org.au/projects/decadal-plan/>

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.