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

One of the most significant shifts in research is the growing emphasis on tackling complex, real-world challenges through multidisciplinary approaches. This model integrates every stage of the research lifecycle, ensuring a more holistic and impact-driven approach. This shift is particularly evident in fields such as critical minerals (and indeed all other themes), where researchers rely on infrastructure that not only supports individual research stages but also facilitates seamless collaboration across the entire value chain. Imaging: A range of imaging technologies, including X-ray, CT, PET, and MRI, are currently used to support research in mining and minerals processing. For example, users of the National Imaging Facility (NIF) utilise PET and CT imaging to study liquid and gas flow in coal fractures, aiming to io on mprove methane recovery during coal mining. However, existing infrastructure is insufficient to meet the scale and complexity of evolving research needs, particularly in resource technology and critical minerals processing, e.g, there is a growing need for advanced in-situ characterisation capabilities, particularly for reactive environments, that go beyond what is currently available in X-ray facilities. Microscopy: An emerging research direction is the development of new materials for the sustainable harvesting of critical minerals such as lithium. Powerful electron microscopes, largely enabled through Microscopy Australia here in Australia, have been critical to such work. Improvement of lithium-harvesting technology requires characterisation at the atomic scale and its behaviour within the newly designed materials. Lithium, being the third lightest element, is extremely difficult to detect, locate and map at the nanoscale, let alone the atomic scale. There is a critical need for national infrastructure that can identify the position, bonding and dynamics of individual lithium atoms within atomic structures. Determining the journey of lithium atoms in a lithium-harvesting material so that this material can be optimised or better designed will require new infrastructure that includes next-gen transmission electron microscopes able to combine measurements of atomic structure with electronic structure and time-resolved measurements, and to do this with the lowest possible electron dose, requiring electron microscopes with ultrafast, high dynamic range single-electron detectors. Digital and AI: The accelerating adoption of AI, machine learning, automation, and robotics is also driving significant demand for high-performance computing infrastructure that is faster, more scalable, and capable of keeping pace with technological advances (e.g., AI supercomputing and emerging quantum computing technologies). Enhanced data-sharing frameworks will also be critical to enable collaboration and ensure that AI and automation capabilities are effectively integrated across the research landscape.

Q22.

Food and Beverage

Q23.

Medical Products

Australia has a unique opportunity to strengthen its position as a global leader in medical product innovation by investing in research infrastructure that fosters collaboration and translation. By building clusters of expertise and enhancing partnerships between academia, industry, and healthcare, we can accelerate the development of cutting-edge diagnostics, therapeutics, and medical technologies. Strategic investment in the below areas will ensure that Australia remains at the forefront of biomedical research. These investments will not only drive scientific breakthroughs but also support the commercialisation of new medical products, delivering significant health and economic benefits. Imaging and Theranostics: A robust imaging pipeline is essential for translating biomedical research into medical products. Investment in imaging and radiochemistry is needed to expand preclinical imaging capacity and establish end-to-end imaging services. Further, theranostics is emerging as a new pillar of cancer treatment. To remain globally competitive and ensure patient access, Australia must expand radiochemistry expertise and invest in sovereign radiochemistry infrastructure, including a dedicated cyclotron/accelerator for alpha and long-lived isotopes, and next-generation PET/SPECT imaging. Synthetic biology: We can now computationally design, synthesise and screen new biomolecules at an unprecedented scale. Synthetic biology enables the development of novel proteins with desirable biochemical activities, the generation of bespoke protein complexes and engineering antibiotics, antifungals, RNA medicines and epigenetic inhibitors and drugs. Furthermore, human genetics requires large synthetic libraries of variants to enable classification of pathogenic disease. There is no service in Australia available for generation and screening libraries of such molecules. Omics: AI-driven diagnosis, prognosis, and treatment, powered by omics data, will revolutionise personalised medicine. Spatial and single-cell technologies are central to this shift, but expanded infrastructure is needed to support large-scale data analysis, including greater bioinformatics capacity, GPU computing power, and data storage. Disease Modelling: Advances in genome modification and gene manipulation continue to drive insights into disease mechanisms and drug development. Measuring the efficacy and toxicity of candidate drugs requires further investment in animal facilities, particularly centralised national capabilities, to support discovery and preclinical testing. Microscopy: Advanced electron microscopy (available through MA) is essential for designing biomaterials, including biodegradable implants, nanomaterials for drug delivery, and biosensors. Investments in ultrafast, high dynamic range single-electron detectors and next-generation transmission electron microscopy will enable low-dose imaging while preserving material integrity and enhancing biomedical capabilities.

Q24.

Defence

To drive innovation and research translation in the defence sector, strategic investment in NIR tailored to defence-focused research and development is essential. Establishing, expanding and enhancing clusters of defence-related research infrastructure will foster stronger partnerships between universities, industry and government, enabling cross-disciplinary collaboration and accelerating translation. By enhancing dedicated facilities, Australia can build sovereign capabilities, address emerging national security challenges, and ensure that cutting-edge research translates into real-world applications. . The strategic importance of AUKUS further heightens the need for cutting-edge national research infrastructure to support advanced materials research, nuclear science, sovereign manufacturing capabilities, and workforce training. Investment in infrastructure capable of supporting both classified research environments and collaborative partnerships with international allies will be essential to underpin Australia's future defence innovation ecosystem. Specifically, future NIR should enable: - Advanced materials development, processing, characterisation and testing to support the development of high-performance, durable materials for defence applications. - High-fidelity modelling and simulation platforms, including capabilities for computational fluid dynamics, multi-physics modelling, and real-time digital twinning, essential for submarine design, aerodynamics, and system integration. - Integrated AI and automation infrastructure, combining high-performance computing (HPC), secure data-sharing platforms, and machine learning pipelines to accelerate innovation in information warfare, autonomous systems, and human-machine teaming. - Specialised fabrication facilities, including advanced additive manufacturing capabilities for producing corrosion-resistant alloys, lightweight metals, and other materials tailored to defence and aerospace needs. - Secure research environments, including both physical infrastructure and secure data environments, to enable the handling of classified and sensitive data and facilitate collaboration with domestic and international defence partners. - Quantum sensing and quantum computing capabilities to support advanced undersea detection, secure communications, and novel sensing technologies critical to future defence operations.

Q25.

Recycling and Clean Energy

A major shift in the recycling and clean energy sector is the increasing focus on tackling complex environmental and sustainability challenges through a fully integrated innovation pipeline. Addressing these challenges requires research infrastructure that not only supports each stage of development but also enables seamless collaboration across materials discovery, process engineering, product design, performance testing, circularity planning, and environmental impact assessment. Microscopy: Many future research directions in recycling and energy require advances in materials. For this, advanced microscopy provisioned through Microscopy Australia (MA) will be critical to addressing emerging challenges. There is a growing need for capabilities that enable the analysis of beam-sensitive materials and the detection of light elements, which are often difficult to characterise using conventional techniques. Moreover, microscopy that enables time-resolved imaging will provide the necessary 4th dimension to materials characterisation that enables an understanding of material evolution. These techniques will need to be coupled to advanced imaging processing capabilities, leveraging large language models (LLMs) and advanced computational facilities linked through NCI or Pawsey, or through networked institutions that collectively enable such capability. X-ray: Another critical infrastructure gap in this sector is the lack of open-access, high-energy laboratory X-ray facilities to support advanced materials characterisation. These facilities are essential for understanding the structure, composition, and performance of materials across the full lifecycle—from raw materials and recycled inputs through to novel materials used in renewable energy systems, batteries, and energy storage solutions. Traditional waste processing and recycling infrastructure that focuses solely on basic materials separation and low-value commodity recovery is likely to become obsolete. Future systems will increasingly be driven by circular economy principles, with a strong focus on high-value material recovery, smart materials tracking, and fully integrated material and energy recovery processes.

Q26.

Space

Q27.

Environment and Climate

Climateworks Centre, an independent non-profit based at Monash University, drives system-level transitions toward net-zero emissions across Australia and the Asia-Pacific. Working at the intersection of research, policy, and industry, Climateworks collaborates with governments, businesses, and financial institutions to develop evidence-based strategies for emissions reduction and sustainable economic transformation. A key trend in the climate and sustainability sector is the shift toward a holistic, end-to-end approach to addressing complex environmental challenges—from fundamental discovery to applied translation. Achieving meaningful impact requires integrated research infrastructure that supports each stage of the innovation pipeline while enabling seamless data sharing and cross-disciplinary collaboration. To meet these needs, targeted investment in research and digital infrastructure is essential: - Enhanced climate modeling systems – Expanding high-performance computing capabilities to improve climate model accuracy, supporting mitigation and adaptation strategies. This can be done through ongoing investment into ACCESS-NRI, but also AUScope. - Advanced data analytics platforms – Deploying sophisticated data analysis and visualisation tools to interpret complex climate data, enhancing decision-making and policy development. This can be done through dedicated provisions to ARDC. - Integrated digital collaboration tools – Establishing platforms that connect stakeholders across sectors and regions, supporting coordinated climate action. Such tools have the capability to be developed and deployed in collaboration through NCRIS projects such as ARDC and AURIN. Further, a critical infrastructure gap exists in quantifying and tracking the contribution of individual projects toward national sustainability and emissions reduction targets, such as those under the Net Zero Plan by 2050. Developing standardized metrics, data collection methods, and baseline methodologies for assessing project-level emissions reductions will provide essential insights into their collective impact, enabling more effective investment and policy decisions. Traditional climate modelling systems, if operating in isolation, are unlikely to meet future NRI requirements. To remain nationally significant, these systems must be integrated with advanced digital twin technologies, supercomputing, AI-driven modelling, and real-time climate impact assessment capabilities.

Q28.

Frontier Technologies and Modern Manufacturing

Australia’s ability to remain at the forefront of drug discovery, medtech innovation, and advanced manufacturing relies on sustained investment in cutting-edge research infrastructure. Establishing and strengthening clusters of research capabilities will drive collaboration between universities, industry, and healthcare providers, accelerating the translation of scientific breakthroughs into real-world applications. Advanced materials, precision medicine, biomedical imaging, and AI-driven diagnostics all require specialised facilities that support the seamless transition from fundamental research to commercialisation. Advanced materials and manufacturing: As industries move towards green manufacturing, there is growing demand for infrastructure to develop and test advanced structural materials. These materials must offer extended lifespans and perform reliably under sustainable production conditions. Infrastructure must support testing under real-world environmental stresses to ensure they meet modern application demands. Precision medicine: Precision medicine is set to transform diagnostics and treatment through spatial and single-cell proteomics, multi-omics, and advanced imaging. This requires investment in high-throughput analytical systems, next-generation imaging platforms, and powerful computational tools to process vast datasets and visualise biological processes. Expanding clinical translational infrastructure is also critical to bridging the gap between research labs and clinical practice, enabling personalised therapies. Investments in biofabrication and automation, particularly through the MCN, will be key to scaling the manufacturing of these therapies. Biomedical imaging: Imaging technologies are advancing diagnostic capabilities and accelerating research translation into patient care. Innovations like quantum sensing and optically pumped magnetometers are already enhancing sensitivity, resolution, and new imaging modalities. Quantum-enhanced MRI and wearable devices could transform brain science, diagnostics, and continuous health monitoring. Additionally, total body PET, cyclotrons, and photon counting CT are essential for molecular imaging, while Magnetic Particle Imaging and Hyperpolarized Gas MRI are emerging as key tools for high-resolution, non-invasive lung studies. Digital and AI: Investment in digital and computational infrastructure is critical. Current systems lack the scalability to handle vast datasets from multi-omics and biomedical imaging. High-capacity data storage and enhanced computational power are needed to process large-scale data efficiently. Integrating AI-driven predictive models into research pipelines will also improve diagnostic accuracy and treatment predictions.

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 a net zero future will require NRI that supports multi-disciplinary, end-to-end solutions. Currently, there is no sufficiently large-scale, integrated infrastructure capable of supporting this holistic approach, limiting the ability to monitor progress and translate research into measurable outcomes at scale. Large-scale infrastructure is essential to support the integration of renewable energy sources. As the transition to a net-zero future accelerates, the need for scalable and efficient infrastructure to accommodate these technologies becomes more critical. This includes the development of sophisticated systems that can manage and monitor the performance of renewable energy sources in real-time, ensuring that energy generation is efficient, reliable, and responsive to fluctuations. It would also include dedicated national facilities (or networks) aligned to areas of the national net-zero transition, such as solar manufacturing, battery development, hydrogen, etc. These capabilities shouldn't be just technological, but also characterisation based. For example, advanced X-ray and neutron-based characterisation capabilities are essential for developing materials and processes that underpin clean energy and green manufacturing. Current X-ray technologies can accommodate some in-situ non-ambient sample environments, but they are not equipped for reactive in-situ sample environments. Even at national facilities such as the Synchrotron, reactive sample environments are limited, and the available capacity is insufficient to support emerging cross-disciplinary research. Expanded capabilities, which should include time evolution and testing under defined working conditions, would be seen as a major step forward. This can be in part done through existing NCRIS projects, i.e NIF, MA, NSF and ANFF. Emerging research in sustainable materials and energy includes lithium extraction, battery materials, solar cells, green catalysis for decarbonising industrial processes, improving material recyclability, lightweight structural materials for transportation and construction, and new materials for communication and sensing. Advancing these technologies requires next-gen electron microscopes with ultra-high spatial resolution for three-dimensional imaging with minimal material disturbance, the ability to detect difficult-to-locate elements like lithium at the atomic level, and high temporal resolution to track material evolution under stimuli. Additionally, ultra-high sensitivity, high dynamic range electron detectors with advanced time, energy, and spatial resolution are essential to characterise these next-generation materials and support Australia's transition to net zero.

Q31.

Supporting healthy and thriving communities

Investing in cutting-edge research infrastructure is essential for advancing drug discovery, medtech innovation, and large-scale research translation to improve health outcomes. Continued investment in imaging, radiopharmaceuticals, omics, and health data through NCRIS will drive innovation, enable precision medicine, and enhance preventive healthcare. A coordinated approach to strengthening these capabilities will foster collaboration with industry and healthcare providers, accelerate innovation, and position Australia as a global leader in health research. Imaging: Biomedical imaging plays a pivotal role in addressing health challenges by providing critical data for disease monitoring and preventive healthcare. As AI and emerging technologies advance, imaging systems will be key to enhancing early detection, reducing healthcare costs, and improving patient outcomes. To support these innovations, we must sustain an imaging translation pipeline to fast-track research from discovery to clinical application, including funding next-generation MRI, PET, MEG, CT, and radiochemistry infrastructure and facilities, and invest in initiatives to expand imaging data availability for research. This includes developing digital infrastructure to ensure secure access to clinical imaging data and creating a national prospective digital biobanking strategy to improve reference data, enhance health research, and increase study productivity. Radiopharmaceuticals: Sovereign manufacturing of radiopharmaceuticals is essential for ensuring reliable access to life-saving medical treatments, supporting health and well-being at both individual and community levels. It fosters innovation in precision medicine, enables rapid response to emerging medical needs, and strengthens national research capabilities by reducing reliance on external suppliers and mitigating supply chain disruptions. By developing local production capabilities, we can accelerate the commercialisation of radiopharmaceuticals, facilitate cross-disciplinary collaboration, and ensure equitable access to critical healthcare resources. Omics: The integration of AI and advanced omics technologies, particularly single-cell and spatial omics, will transform the way we diagnose, treat, and prevent diseases. Achieving this vision requires investment in cutting-edge omics platforms, robust computational infrastructure for AI-driven analysis, and developing the workforce to build expertise in these emerging fields. Health data: There is a need to address gaps in clinical and epidemiological data infrastructure, especially to track disease patterns in Australia's evolving population, such as the increasing prevalence of conditions like sickle cell disease. Comprehensive data infrastructure that captures clinical practice trends, patient outcomes, and cost-effectiveness analyses is essential for informing government bodies and policy-makers, including the PBAC and MSAC, to guide evidence-based decision making.

Q32.

Elevating Aboriginal and Torres Strait Islanders knowledge systems

NRI should fully acknowledge the critical role that Indigenous knowledge plays in shaping research, particularly when addressing the unique needs of Aboriginal and Torres Strait Islander communities. Future investments in NRI must align with Indigenous Data Sovereignty principles, which ensure that Indigenous communities retain control over their data. This approach not only respects cultural protocols but also fosters self-determination, in line with the Australian Government's Framework for Governance and Indigenous Data. By recognising Indigenous perspectives, the NRI can contribute to more culturally appropriate, effective, and community-driven health solutions. The use of data must be approached with heightened sensitivity when working with Aboriginal and Torres Strait Islander communities. In such contexts, this requires careful consideration of ownership, control, and access to ensure alignment with Indigenous Data Sovereignty principles. This includes establishing clear and culturally appropriate protocols for the use, sharing, and storage of data, ensuring that all practices respect the sensitivities and values of Indigenous communities. Engaging Aboriginal and Torres Strait Islander leaders—including Elders, community representatives, and Indigenous researchers—should be a foundational step in any research project. Involving these leaders early on allows for the integration of Indigenous data governance principles from the outset, ensuring that research projects are ethically designed, culturally relevant, and empowering to the communities involved. By adopting these measures, we can facilitate research that not only benefits public outcomes but also upholds the rights and dignity of Indigenous peoples in research and decision-making.

Q33.

Protecting and restoring Australia's environment

Future research will require integrated infrastructure that enables multi-disciplinary collaboration across diverse sectors. This includes systems that can support large-scale data collection, long-term environmental monitoring, advanced modelling, and the rapid deployment of innovative technologies. Addressing complex challenges such as biodiversity loss, climate adaptation, and ecosystem restoration demands infrastructure that connects real-time environmental data with cutting-edge analytical and predictive capabilities. Imaging: Biomedical imaging instruments such as CT and MRI are playing an increasingly important role in the digitisation of biological collections, including rare and delicate specimens of Australian flora, fauna, and fossils. The digitisation of these collections offers benefits, including greater accessibility and preservation of valuable biological and cultural data. However, challenges exist around managing and storing data generated, and there is a growing demand for more robust systems to handle this information. Advanced manufacturing: Another critical gap is the need for advanced manufacturing to support the development and testing of next-generation structural and engineering materials. Current infrastructure, particularly in additive manufacturing, must be extended to enable testing under service-relevant conditions, ensuring materials are suitable for high-stress environments necessary for national security, infrastructure resilience, and defence applications. Microscopy: Emerging research in environmental sustainability focuses on membranes and porous materials, green catalysis to decarbonise industrial chemical processes, improving material recyclability, and sustainable food and packaging solutions. Advancing these technologies requires next-generation electron microscopes with ultra-high spatial resolution for three-dimensional imaging with minimal material disturbance, the ability to detect difficult-to-locate elements like lithium at the atomic level, and high temporal resolution to study material evolution under applied stimuli such as light, temperature, force, and electrical current. Additionally, ultra-high sensitivity, high dynamic range electron detectors with advanced time, energy, and spatial resolution are essential to characterise these next-generation materials. Data: The establishment of data-driven emergency response and disaster resilience centres is essential to improving Australia's preparedness for natural and human-induced hazards. These centres would integrate real-time data, advanced modelling, and predictive analytics to assist decision-makers in assessing risks, coordinating responses, and building long-term resilience in communities.

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.

To position Australia as a global leader in drug discovery, med tech, and advanced manufacturing, it is essential to develop sovereign capabilities that drive innovation and commercialisation at scale. Continued investment in research infrastructure is key to building the strength and capacity needed to attract partnerships, leverage funding, and foster economic growth. By establishing advanced research networks and facilities in these areas, Australia can enhance its capabilities in emerging technologies, drive breakthroughs in health and manufacturing, and ensure that innovations are rapidly translated into real-world applications. Strengthening these NRIs will not only support scientific advancements but also position Australia to respond to critical global challenges and emerging industries. Advanced Manufacturing Advanced Materials Manufacturing Research Infrastructure Network (AMM-RIN): Structural materials are essential for load-bearing capabilities, biomedical materials are crucial for implants, and functional materials enable energy conversion, sensing, and advanced manufacturing solutions. However, Australia faces significant challenges in developing and scaling these materials. Addressing these challenges can be achieved through the establishment of the AMM-RIN as a hub and spoke national model, focusing on the following key areas: Discovery: Advances in automated materials discovery systems, coupled with large language models (LLMs), present an opportunity to accelerate the discovery of functional and structural material candidates, processed through digital twin models. Feedstocks: There is a limited ability to scale new engineered materials from laboratory-scale to intermediate kg-to-ton levels, which is essential for commercialisation. Transforming these materials into useful form factors for advanced manufacturing, such as additive manufacturing, is a critical next step. Advanced Manufacturing: Developing world-class facilities that support various advanced manufacturing processes is a national opportunity. These facilities would foster coordination, reduce fragmentation, and address the current limitations in TRLs. Testing and Characterisation: There remains a critical gap in assessing the performance, fatigue, and stability of materials under real-world conditions, including in-operandum, controlled, and extreme environments, as well as accelerated testing for larger components or fully functional technologies. X-ray Characterisation Hub: Australia's local lab-based X-ray facilities, equipped with highly complementary techniques to those offered at national facilities, are well-positioned to enhance national capabilities through closer collaboration and coordination. With targeted investment in technical expertise, research staff, and infrastructure, these facilities could evolve into a national X-ray Characterisation and Technology Hub, serving as a critical hub for X-ray technology R&D (e.g., fabrication, characterisation, and prototyping of energy materials, high-tech materials, and devices). The centre would fill a critical gap in in-situ and specialised X-ray techniques, particularly for reactive diffraction and scattering experiments, which are not currently available at scale. Drug Discovery, Development and Medtech Advanced spatial transcriptomics: Spatial transcriptomics platforms, such as 10x Genomics Xenium, enable researchers to map gene expression within tissue with unparalleled molecular, cellular, and spatial imaging data. This is transformative for biomarker discovery, disease profiling, and advancing precision medicine. To support drug discovery and development, Australia needs enhanced computational infrastructure, particularly GPU-based supercomputing capabilities, to manage, integrate, and interpret complex multi-omic datasets efficiently. Digital biobanking: Digital population biobanks integrate genetic, imaging, phenotypic, and health data from broad population samples, giving researchers secure access under strict ethical guidelines. The UK Biobank has demonstrated how well-structured biobanks drive breakthroughs in epidemiology, genomics, public health, clinical research, and personalized medicine. Although Australian researchers rely heavily on this data, no equivalent national resource exists. National coordination and standardisation of biobanking data—both digital and physical—are essential. Fragmented collections hinder access, so a community-driven strategy with common standards and a centralized digital platform is needed. Establishing a national prospective population biobank, similar to the UK Biobank, will provide essential data for medical and health research. National clinical registry: Clinical registries track epidemiology, clinical practice, and outcomes, providing vital benchmarking data for hospitals, clinicians, and policymakers. This supports continuous improvement and reduces low-value care. However, existing registries often suffer from insufficient funding, institutional support, and policy recognition, limiting their potential. A long-term commitment to funding, stronger institutional backing, and formal policy recognition is required, with participation in key clinical registries becoming a standard practice for clinicians and healthcare providers. Skin imaging: Australia is making strides in establishing a National Targeted Skin Cancer Screening Program, with Commonwealth funding allocated for a strategic roadmap. With the country's high rates of melanoma and its significant healthcare burden, integrating skin imaging into the nation's medtech infrastructure is both timely and crucial. A national skin imaging capability would facilitate the development of reliable, evidence-based solutions for early melanoma detection, improving early diagnosis, testing of treatments, standardized screening, and diagnostic accuracy in clinical settings.

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.

Investment in national-scale research infrastructure through NCRIS, alongside local collaborative initiatives like the ARC LIEF, has been fundamental to Australia's innovation ecosystem. Sustained—or ideally increased—investment in NCRIS is critical to ensuring Australia remains competitive, particularly given rising global costs. Maximising the impact of Australia’s NRI also requires sustained, coordinated investment in national capabilities to ensure the research community can address future challenges and opportunities. Close collaboration between federal and state governments is essential to ensuring that investment is well-targeted, reduces duplication, and optimizes infrastructure deployment. A national infrastructure strategy must include robust mechanisms to align efforts across all levels of government, facilitating streamlined decision-making and resource allocation. While RI investments have traditionally focused on STEMM disciplines, there is a growing need to support the social sciences. Robust data platforms, longitudinal studies, behavioral research facilities, and policy labs are essential for understanding human behavior, assessing policy effectiveness, and evaluating societal impacts. These capabilities help address barriers to technology adoption, inform ethical frameworks, and align scientific advancements with community needs. Dedicated infrastructure—such as integrated data hubs, living labs, and secure environments for sensitive research—enhances interdisciplinary collaboration, strengthens evidence-based policy, and accelerates the real-world impact of research. Digital research infrastructure is now indispensable in this process. A well-connected network of capabilities—where assets and services are highly visible, accessible, affordable, and governed through standardized, transparent protocols—is critical for optimizing research outcomes. The ability to store, share, analyze, and model vast datasets in real time accelerates discovery, streamlines experimentation, and enables seamless integration across disciplines. High-performance computing, AI-driven analytics, secure data platforms, and interconnected digital workflows are essential for tackling complex challenges efficiently. Finally, the Research Infrastructure Specialist workforce plays a critical role in ensuring that NRI remains operational, innovative, and accessible. Ongoing investment in this highly skilled workforce—including targeted professional development, career pathways, fellowship programs, and workforce planning—is vital to maintaining world-class research capabilities. A skilled, adaptable workforce will be key to the long-term sustainability of Australia’s research infrastructure, ensuring that it remains at the forefront of emerging trends and continues to deliver innovative solutions to complex global challenges.

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.