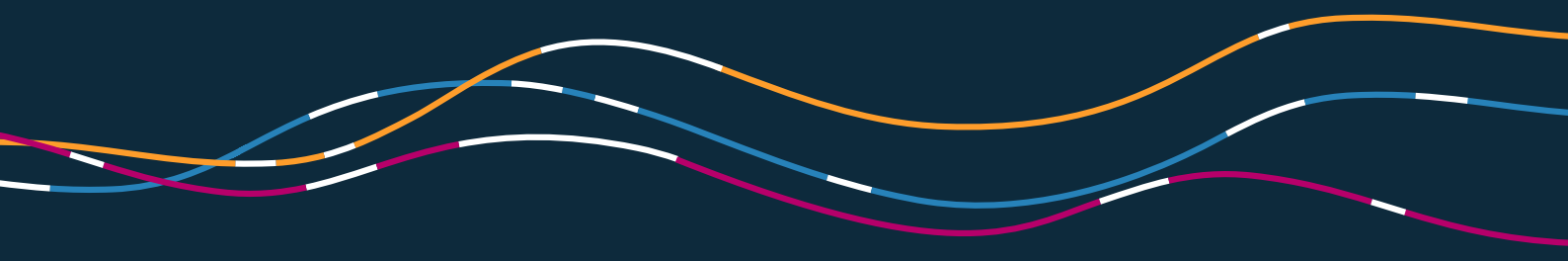
2021 NRI ROADMAP CONSULTATIONS

IDEAS JAM: Enabling better collaboration with industry

23 AUGUST - 7 SEPTEMBER 2021



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EXECUTIVE SUMMARY

In August 2021, the Roadmap Team launched an Ideas Jam on 'Enabling better collaboration with industry', to collect ideas from a diverse range of stakeholders. Over a two-week period, 83 ideas were posted and a total of 488 participants were involved in reviewing, commenting and voting on those ideas. This document presents the highlights of the Ideas Jam.

BARRIERS MOST COMMONLY ADDRESSED

- When posting ideas, participants were asked to nominate which of the identified barriers/needs was the primary focus of their idea: *Better visibility*, *Better access*, *Better co-ordination*, *Better co-operation*, *Better protections* or *Something different*.

- *Better access* and *Better co-operation* were the two barriers most commonly addressed in the ideas posted, attracting 29% and 28% of ideas respectively

KEY THEMES

- Overall, the solutions to better collaboration posed by participants clustered around the following themes:
  - *People Power* (related to the time and expertise required to pursue and maintain collaborations)
  - *NRI Adaptation, Expansion and/or Consolidation* (recognising the strengths of existing NRI and the potential benefits of greater integration)
  - *Data Development* (again, emphasising the benefits of integration)
  - *NRI Promotion* (referring to the need to raise awareness of NRI capabilities)
  - *Structural Integration* (including co-location, collaborative governance, and partnership grants).

HIGHEST RATED IDEAS

- At the close of the Ideas Jam, the 2021 Roadmap Team reviewed all ideas posted, and identified two distinct groups: those which either directly or partially addressed the theme of industry collaboration, and those which provided recommendations for new or expanded NRI, without a specific connection to the industry collaboration theme. Only those that addressed the theme have been included in the analysis of the Ideas Jam and in this report. Ideas for new or expanded NRI have been considered by the NRI Taskforce.

- Among those that did address the theme directly or partially, the two most highly rated ideas were 'Space infrastructure to grow our space industry' and 'Connecting critical mineral explorers with research data' (211 and 177 votes respectively). The latter reflects a recurring theme across many aspects of the 2021 NRI Roadmap consultations that data represents a considerable opportunity, and there is an urgent need to consider how data is used, shared and stored.

BACKGROUND

The Ideas Jam on **Enabling better collaboration with industry** ran from Monday, 23 August to Tuesday, 7 September. All participants were supplied with the following brief, questions, and briefing material.

BRIEF

National research infrastructure (NRI) drives research excellence and has potential to play a greater role in encouraging strong industry and research partnerships.

How can we improve Australia's research translation and commercialisation further by harnessing underpinning capabilities?

Working together, our research and industry sectors drive increases in innovation and productivity that produce social and economic benefits for all of us. To further strengthen this relationship, the Terms of Reference for the 2021 NRI Roadmap includes a call to identify more opportunities to improve collaboration between the research and industry sectors, particularly for small to medium-sized enterprises (SMEs).

In the 2021 NRI Roadmap survey, we asked people to tell us what was standing in the way of better collaboration between research and industry. Visibility, access, co-ordination, co-operation, and legal and commercial protections were the key barriers cited by the 2,900+ respondents.

In this Ideas Jam we're asking you to share your ideas for how NRI can address those barriers and help build stronger connections with industry, particularly SMEs.

QUESTIONS

Participants were asked to describe their idea in 300 words, with a 30-word summary, which industry sector they worked in (research, industry, both or other) and which industries they felt would benefit from their idea. Additionally, they were asked to nominate which of the following needs was the primary focus of their idea:

- **Better visibility** Making sure industry is aware of NRI and its benefits
- **Better access** Providing pathways for industry to access NRI equipment, services, data and expertise
- **Better co-operation** Bringing work cultures, practices, priorities and timings into alignment
- **Better protections** Preserving intellectual property rights and commercial sensitivities
- **Better co-ordination** Establishing consistent standards, processes and quality controls
- **Something different** Other ideas for addressing barriers to collaboration

BRIEFING MATERIALS

Participants were also provided with access to two documents:

- **The Issues Paper on Industry Engagement** (https://2021nriroadmap.dese.gov.au/get-involved/industry-engagement-issues-paper/)
- **The 2021 National Research Infrastructure Roadmap Survey: Industry Findings** (https://2021nriroadmap.dese.gov.au/wp-content/uploads/2021/08/2021NRIRoadmapConsultationReportIndustry200821.pdf)

OVERVIEW OF REGISTERED USERS

Research and industry stakeholders were actively recruited via the 2021 Roadmap website e-newsletter database, as well as through communications from the Department of Education, Skills and Employment (DESE) and Department of Industry, Science, Energy and Resources (DISER) to their connections, via social channels and email. The Ideas Jam was also promoted through Industry association networks. Additionally, new users were attracted organically, likely through word of mouth, from existing participants.

In total, 488 people took part in the Ideas Jam. A review of domain names used in the user registration process indicates that a number of organisations were particularly highly represented. As shown in Figure 1 the highest number of participants came from the Australian National University (ANU), University of Queensland (UQ), Australian Nuclear Science and Technology Organisation (ANSTO) and the University of Melbourne (UniMelb).

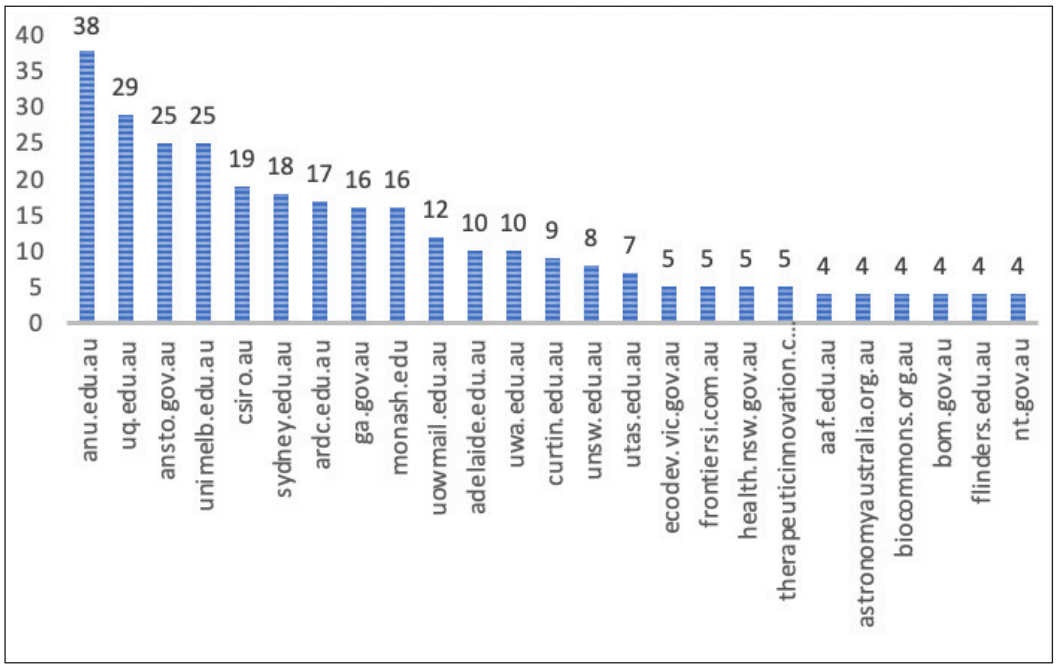

Figure 1: Number of registered users from participating organisations, informed by a review of user account domain names.

OVERVIEW OF INDUSTRY PARTICIPATION

As part of the registration process, new users were asked to identify whether they were part of the research or industry sectors, or both. This question was not compulsory. Of these, 17 identified as being from the industry sector and 79 as being from both the research and industry sectors.

Additionally, as part of the idea submission process, participants were asked which sector they belonged to: government, research, industry, both research and industry, or other. This question was compulsory. Of the 83 ideas posted, six were authored and/or co-authored by users who identified as being from the industry sector (7.5%), and 27 were authored and/or co-authored by users who identified as being from both the research and industry sectors (33%).

OUTCOMES

Two distinct groups of ideas were posted: those that directly or partially addressed the theme of industry collaboration, and those which provided recommendations for new or expanded NRI, without a specific connection to the theme. Only those that addressed the theme have been included in the analysis of the Ideas Jam and in this report. Ideas for new or expanded NRI have been considered by the NRI Taskforce.

BARRIERS MOST COMMONLY ADDRESSED

As noted on page 5, idea authors were asked to nominate which of the identified barriers/needs was the primary focus of their idea: *Better visibility*, *Better access*, *Better co-ordination*, *Better co-operation*, *Better protections* or *Something different*.

As shown in Figure 2, *Better access* and *Better co-operation* were the two barriers most commonly addressed in the ideas posted, attracting 29% and 28% of ideas respectively. *Better protections* attracted only one idea, although issues of intellectual property rights were discussed in other ideas across other categories.

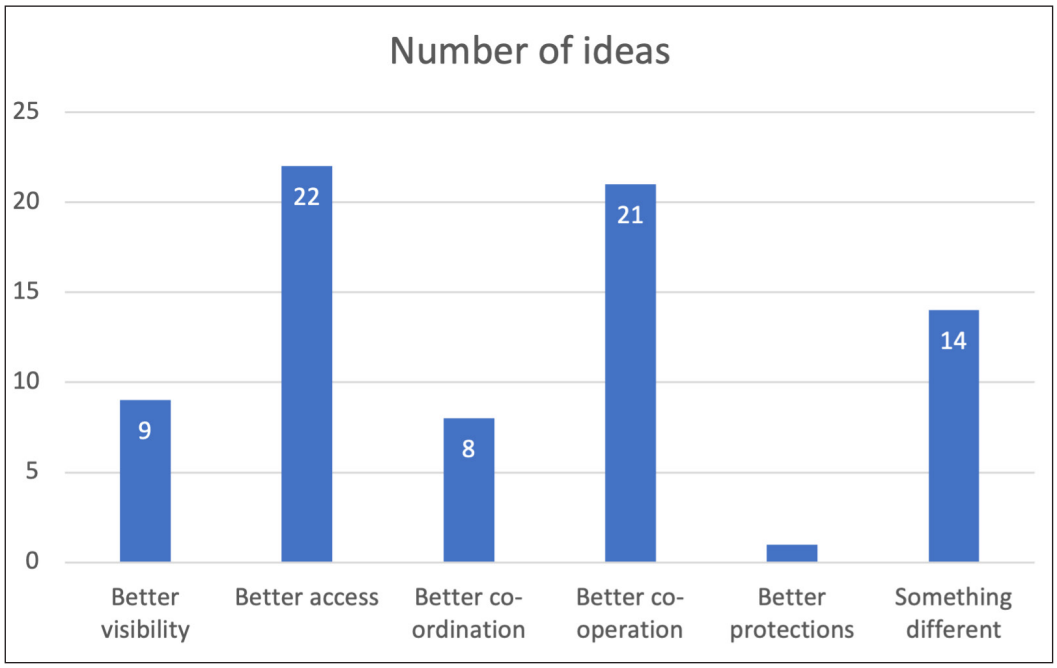

Figure 2: Barriers addressed by ideas posted in the Ideas Jam on Enabling better collaboration with industry.

KEY THEMES (OVERALL)

A review of all 75 ideas reveals some common themes.

1. People power
The idea that people were crucial enablers of collaboration was represented across all categories, and evident in more than one in five ideas overall. Idea authors acknowledged that the research workforce often didn't have the skills required to engage with industry, and/or that the highly competitive research environment was not conducive to researchers spending time on an activity that did not support career continuity or progression. Conversely, it was recognised that even when

they were aware of NRI, the industry workforce often didn't know how to access or take advantage of capabilities and services. Ideas for using skilled people to not only facilitate but drive collaboration included:

- NRI-embedded staff dedicated to industry engagement activities such as:
  - Outreach facilitators / contact staff
  - Promotions and marketing
  - Technical support / applied scientists
  - Business analysts / commercialisation experts
- Coaches/mentors dedicated to supporting translation/commercialisation project teams
- Research-industry exchange programs
- Taskforces dedicated to the pursuit of big international opportunities, similar to those that manage bids for major sporting events.

2. NRI adaptation, expansion and/or consolidation

Almost one in five ideas suggested that the adaptation, expansion or consolidation of existing NRI could shift the dial on collaboration between research and industry.

- Multiple ideas proposed that the amalgamation of data networks could provide a resource of great value to industry. Specifically, these included proposals for integrated marine data to support maritime industries, defence, and emergency services.
- Other ideas suggested that existing NRI capabilities could be expanded to fill a gap between research discovery and industry development. In this category, proposals included enhancing testing capabilities so that novel materials could be developed affordably and at speed.

3. Data development

Consistent with issues raised right across 2021 Roadmap consultations, multiple ideas looked for ways to improve data storage, management and access on the basis that improved data handling would aid industry collaboration. Additionally, a number of ideas identified that data from research and private/commercial sources could be integrated to produce data sets that were deeper, broader and better linked, to the benefit of both research and industry. Similarly, some ideas referred to the benefits of developing approaches for the management of legacy data, after a research or commercial project has run its course.

4. NRI promotion

Numerous ideas assigned to the Better visibility category proposed raising awareness of NRI capabilities through promotional activities like real-world and virtual open days and representation at industry-based conferences and seminars. Promotional activities were mentioned in response to other barriers, too, particularly in the category of Better co-operation where it was suggested that more could be done to actively target industry with communications about NRI offerings and the potential for NRI to add value to commercial activity.

5. Structural integration

A number of ideas proposed embedding research-industry integration at a structural level. These ideas included:

- a specific proposal for having industry representation in the development of space NRI
- proposals related to configuring grants for research-industry partnerships
- proposals for whole-of-NRI planning and review exercises undertaken by expert panels including representatives from both research and industry

Other common themes included:

- **Incubation / co-location** developing collaborative hubs, potentially co-located at NRI facilities
- **Innovative IP solutions** standardising and centralising IP activity
- **Subsidies for start-ups and SMEs** providing discounted access to start-ups and small to medium sized enterprises

OUTCOMES

KEY THEMES (BY CATEGORY)

The three most common themes within each barrier/need are shown in the table below. Only one idea was posted in the Better protections category, and thus only one theme is represented.

Better visibility	• NRI promotion • People power • Incubation/co-location
Better access	• NRI adaptation, expansion, consolidation • Data development • Structural integration
Better cooperation	• People power • NRI adaptation, expansion, consolidation • Structural integration
Better protections	• Innovative IP solutions
Better coordination	• Data development • People power • NRI adaptation, expansion and/or consolidation
Something different	• Data development • People power • NRI adaptation, expansion and/or consolidation

Figure 3: Most common themes by barrier category

HIGHEST RATED IDEAS (OVERALL)

In the second week of the Ideas Jam, participants were given access to a voting wallet containing 20 points and asked to vote for the ideas they believed could make a difference to how research and industry work together in the future. Points could be shared among multiple ideas, to a maximum of ten points for any individual idea.

Between 30 August and the close of the Ideas Jam on 7 September, 222 users cast a total of 752 votes of varying point values. It should be noted that the Ideas Jam was open to new idea submissions for all but one day of the voting period, meaning that some ideas had more exposure to voters than others.

Ideas which attracted 50 votes or more, are represented in the table on the following page.

OUTCOMES

VOTES	SCORE	TITLE
100-250 votes	211	Space infrastructure to grow our space industry
100-250 votes	177	Connecting critical mineral explorers with research data
75-100 votes	93	Facilitate This!: Promoting and facilitating industry access to NCRIS facilities
75-100 votes	87	Industry environmental data as a core component of Australia's NRI data fabric
75-100 votes	81	Integration of People
75-100 votes	80	Digital Innovation for a greener Exploration and Mining Industry
75-100 votes	79	Thematic Research Data Commons to Collaborate with Industry
75-100 votes	77	Making it easy for industry and government to access NRI
75-100 votes	75	Australian Research Data Commons to provide support for Industry Data
50-75 votes	70	Make It So We Can Take It: Support for GMP-grade Manufacture of Clinical Trial Material
50-75 votes	63	FAIR data legacy
50-75 votes	59	Data Partnerships between Research, Government, and Industry are critical
50-75 votes	59	Consistency and longevity in National Research Infrastructure
50-75 votes	58	Supercharging IP creation: Establishing a National Medicinal Chemistry Network
50-75 votes	58	Timing is Everything: Encouraging Rapid Industry Access to Research Infrastructure Using Access Vouchers
50-75 votes	56	Industry application scientists
50-75 votes	56	Increasing Quality Management Standards to Increase NCRIS Value to Industry
50-75 votes	54	Industry engagement in planning major facilities for emerging growth sectors
50-75 votes	54	Linking the Virtual Library of Australia's geology to national geoscience datasets
50-75 votes	51	The Australian Quality Preclinical Efficacy Network: Translation of Research Discoveries into Therapeutics
50-75 votes	51	FAIR Digital infrastructure for sustainable resource management
50-75 votes	50	Open Access to Research Publications and Data
50-75 votes	50	Underpinning operations: delivering products to support industry
50-75 votes	50	Short-Run Manufacturing Facility

Please note:

- *Appendix B contains summaries of all the ideas which addressed the theme directly or partially, and attracted 50 votes or more. Each summary includes the title of the idea, summary text, and a key quote from the submission.*

OUTCOMES

HIGHEST RATED IDEAS (BY CATEGORY)

The tables below include ideas which addressed the theme directly or partially, and attracted 50 votes or more, broken down by category of barrier/need.

Better visibility

VOTES	SCORE	TITLE
75-100 votes	93	Facilitate This!: Promoting and facilitating industry access to NCRIS facilities
50-75 votes	50	Open Access to Research Publications and Data

Better access

VOTES	SCORE	TITLE
100-250 votes	177	Connecting critical mineral explorers with research data
75-100 votes	77	Making it easy for industry and government to access NRI
50-75 votes	70	Make It So We Can Take It: Support for GMP-grade Manufacture of Clinical Trial Material
50-75 votes	58	Supercharging IP creation: Establishing a National Medicinal Chemistry Network
50-75 votes	58	Timing is Everything: Encouraging Rapid Industry Access to Research Infrastructure Using Access Vouchers

Better co-operation

VOTES	SCORE	TITLE
100-250 votes	211	Space infrastructure to grow our space industry
75-100 votes	87	Industry environmental data as a core component of Australia's NRI data fabric
75-100 votes	81	Integration of People
75-100 votes	80	Digital Innovation for a greener Exploration and Mining Industry
75-100 votes	79	Thematic Research Data Commons to Collaborate with Industry
50-75 votes	56	Industry application scientists
50-75 votes	56	Increasing Quality Management Standards to Increase NCRIS Value to Industry
50-75 votes	54	Industry engagement in planning major facilities for emerging growth sectors

OUTCOMES

Better protections

VOTES	SCORE	TITLE
75-100 votes	75	Australian Research Data Commons to provide support for Industry Data

Better co-ordination

VOTES	SCORE	TITLE
50-75 votes	63	FAIR data legacy
50-75 votes	59	Data Partnerships between Research, Government, and Industry are critical
50-75 votes	54	Linking the Virtual Library of Australia's geology to national geoscience datasets
50-75 votes	51	The Australian Quality Preclinical Efficacy Network: Translation of Research Discoveries into Therapeutics

Something different

VOTES	SCORE	TITLE
50-75 votes	59	Consistency and longevity in National Research Infrastructure
50-75 votes	51	FAIR Digital infrastructure for sustainable resource management
50-75 votes	50	Underpinning operations: delivering products to support industry
50-75 votes	50	Short-Run Manufacturing Facility

APPENDIX A: Participation

PARTICIPATION ANALYTICS

An invitation to sign up for the Ideas Jam was shared on Monday, 16 August, accompanied by some thought-starter materials. The Ideas Jam opened a week later on Monday, 23 August. It closed to submissions on Monday, 6 September. Participants were then provided with an additional day for comments and votes, closing Tuesday, 7 September. In total 83 ideas were posted*, 344 comments were posted, and 752 votes were cast, with values of between 1 and 10 votes per instance.

** Two additional ideas were provided after deadline and do not figure in these statistics.*

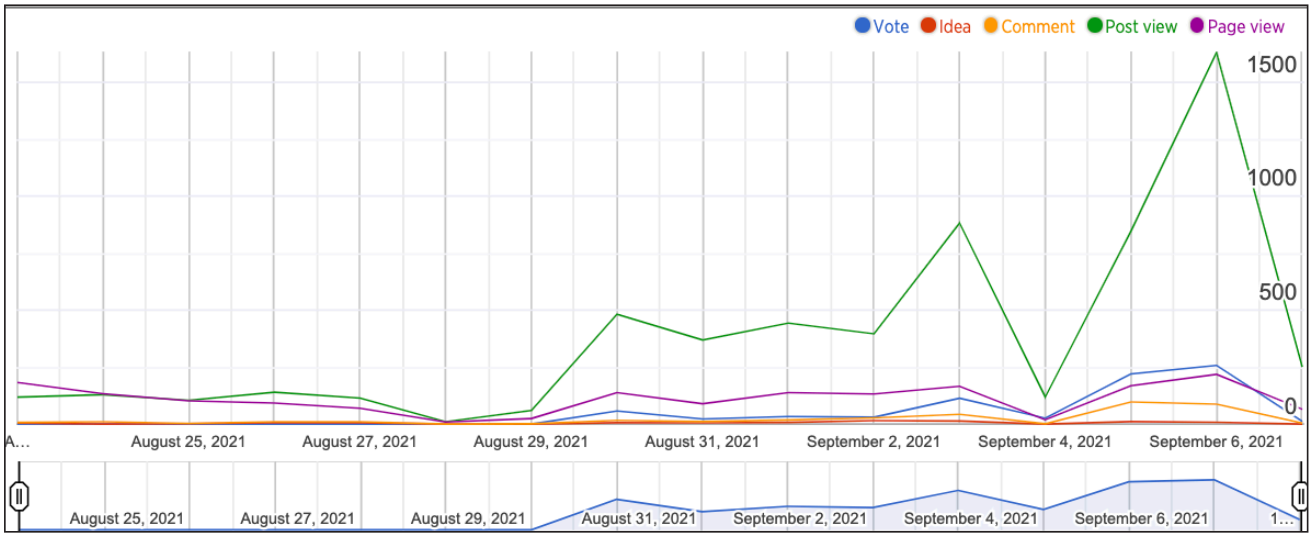

Figure 4: Ideas Jam: Enabling better collaboration with industry, participation analytics

Additional commenting and voting period

The additional 24-hour period, provided for commenting and voting only, saw a high level of activity. In that period 54 new users joined, 91 additional comments were made (representing more than a quarter of all comments), and 269 votes were cast (representing more than a third of all votes cast).

OVERVIEW OF ACTIVE PARTICIPANTS

Of the 488 registered users, many participated as observers only. Over the course of the Ideas Jam, the 83 ideas posted attracted more than 6,000 views in total.

Of those who were more actively involved in the Ideas Jams: 269 were co-authors of ideas (54%), 222 took part in voting (45%) and 97 commented on ideas posted (20%)

A review of registered user domain names indicates participants from some organisations were particularly active in the voting and commenting process. Figures 5 and 6 on the following page show participation by organisation.

APPENDIX A: Participation

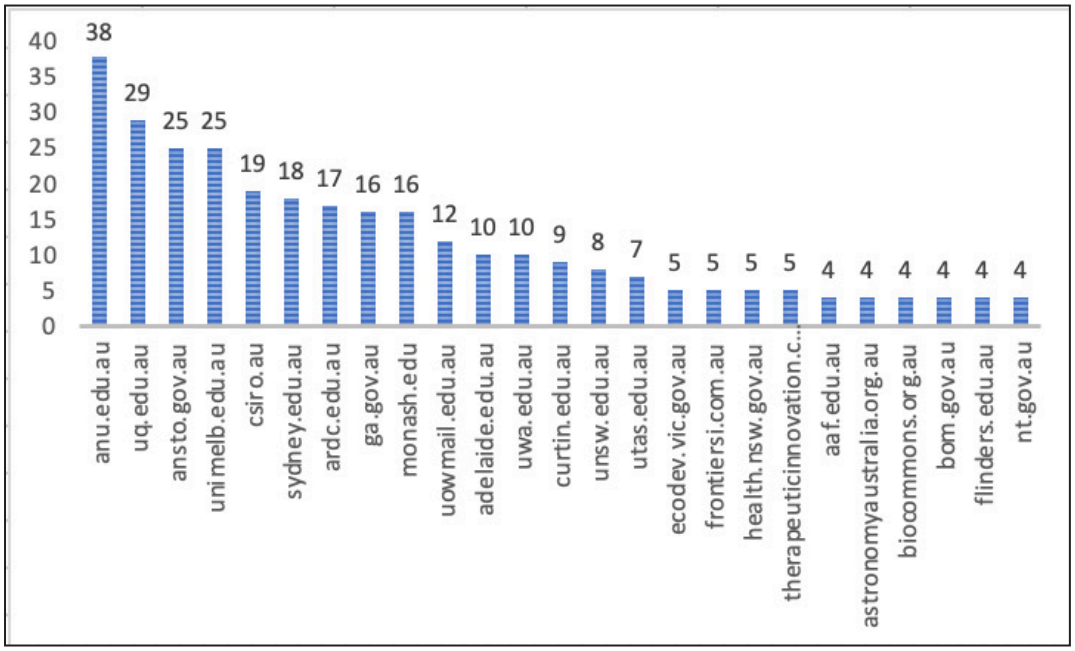

Figure 5: Number of registered users from participating organisations involved in the voting process, informed by a review of user account domain names.

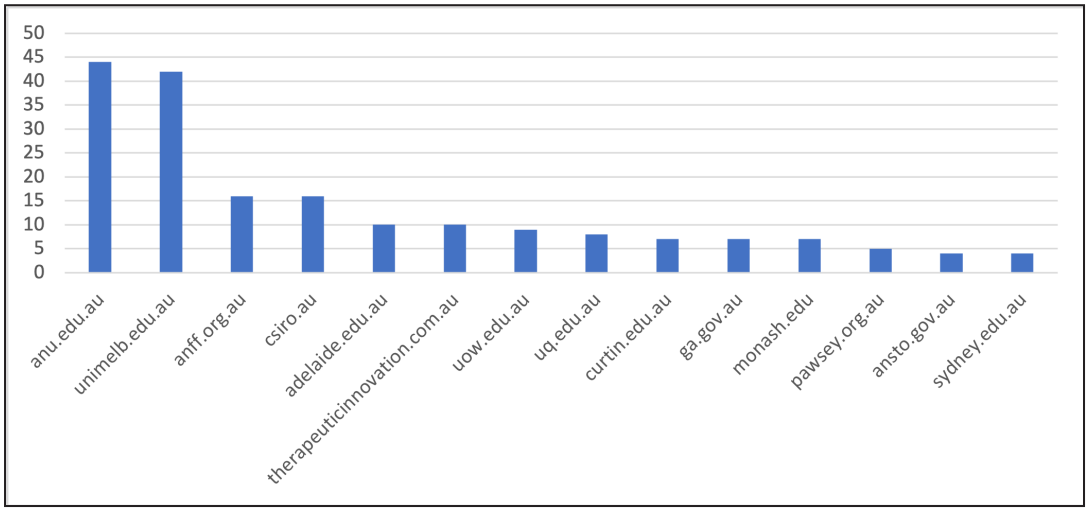

Figure 6: Number of comments made by registered users from participating organisations, informed by a review of user account domain names.

APPENDIX B: Summaries

> ideas that attracted 50 votes or more

Participants were asked to contribute ideas on the theme of enabling better collaboration with industry, and were asked to self-select which of the following needs was the primary focus of their submission:

- **Better visibility** Making sure industry is aware of NRI and its benefits
- **Better access** Providing pathways for industry to access NRI equipment, services, data and expertise
- **Better co-operation** Bringing work cultures, practices, priorities and timings into alignment
- **Better protections** Preserving intellectual property rights and commercial sensitivities
- **Better co-ordination** Establishing consistent standards, processes and quality controls
- **Something different** Other ideas for addressing barriers to collaboration

Two distinct groups of ideas were posted: those which directly or at least partially addressed the theme of industry collaboration, and those which provided recommendations for new or expanded NRI, without a specific connection to the theme.

Below are summaries of all the ideas which addressed the theme directly or partially, and attracted 50 votes or more. Each summary includes the title of the idea, summary text and a key quote from the submission.

BETTER VISIBILITY

Facilitate This!: Promoting and facilitating industry access to NCRIS facilities
93 votes

Successful industry engagement relies on professional business relationships between customers and NRI staff. Such facilitation "soft-skills" are a useful addition to facilities and, as noted in the Ideas Jam issues Paper there is demonstrated value in appointing subject matter experts in non-technical broker/ facilitation roles, to provide support and advice to prospective facility users and to properly direct enquiries to the correct facility as quickly as possible.

> *"A 'unified and knowledgeable front door' which works across a number of NCRIS facilities should significantly improve industry access to NRI."*

Open access to research publications and data
50 votes

We can make it easier for industry to connect with researchers by making their research outputs (journal articles and research data) easier to discover and read through open access. Lack of access to research outputs by industry is a barrier to the discovery of future research partners and the impact of existing research on industry practice. We should give industry access to the academic record through mandated, widespread open access.

> *"... lack of visibility of published research is a barrier to engagement."*

APPENDIX B: Summaries

> ideas that attracted 50 votes or more

BETTER ACCESS

Connecting critical mineral explorers with research data
177 votes

As we strive to achieve Net-zero 2050 emissions targets we need to revolutionise energy generation and transport industries in Australia. One of the most significant potential barrier to this growth is the lack of sovereign supply of critical minerals and copper. Better access to research data and tools will drive development of predictive geoscience capability.

> *"Over the next two decades, as we transition to greener forms of transport and energy production and work towards Net-Zero 2050 goals, we will need to access new sovereign supply of critical minerals, rare earth elements (REEs), and perhaps most importantly, copper. The development of electric cars, solar and wind energy generation and advanced manufacturing supply chains all depend on these raw materials. The mineral exploration industry in Australia has collectively identified that access to a variety of national geoscience and geophysics datasets, analytical tools and software products is required to develop the predictive geoscience capability that allows us to explore in regions where fertile rocks are hidden beneath by thin cover sequences."*

Making it easy for industry and government to access NRI
77 votes

Accessing NRI by industry needs to be simple with users logging in to NRI using their existing organisational credentials. University researchers already do this and we need to extend this to industry.

> *"Being able to log in is the first step, making sure that it's the right person accessing the right resources and data is even more important."*

Make it so we can take it: support for GMP-grade manufacture of clinical trial material
70 votes

Manufacturing therapeutic product for clinical trials is expensive. Specific targeted funding for GMP manufacture of materials, available to early-stage SMEs and academic researchers, would enable early-stage clinical trials, drive projects to value inflection points and foster sovereign manufacturing capabilities within Australia.

> *"...manufacturing of therapeutics for use in human clinical trials or for administration post-approval must meet regulatory requirements and align with good manufacturing practice (GMP) to achieve a TGA licence for manufacture. The technical transfer of manufacturing from lab based process to clinical trial ready GMP product is expensive and seldom feasible in a research laboratory setting. For academic researchers and SMEs, this transition marks a huge financial obstacle to progress to clinical trials. The need for onshore capabilities for therapeutics in Australia has never been more apparent than in the wake of the coronavirus pandemic."*

APPENDIX B: Summaries

> ideas that attracted 50 votes or more

Supercharging IP creation: Establishing a national medicinal chemistry network
58 votes

There is a bottleneck in the provision of medicinal chemistry services in Australia with a sovereign need for an expansion of training, jobs and infrastructure in this key capability for drug development, industry engagement and commercialisation. We propose the establishment of an Australian Network of Medicinal Chemistry (AUS-MEDCHEM) of knowledge and capability that will provide pivotal support to identify tractable small molecule leads against biological targets to develop drugs.

> *"As a consequence of more readily accessible screening capabilities … discovery and development of therapeutic drugs for the treatment and management of diseases has been hastened. There is a resulting increase in the requirement for Medicinal Chemistry capability, knowledge and advice at the stage when bioactives from a biological screen need assessment before proceeding further down the drug development pathway. This is especially relevant for future interaction with industry as at the conclusion of the screening phase, the academic investigator does not yet have a small molecule candidate ready for commercialisation of IP as they are only at the beginning of the genuine phases of drug development. An industry voice advising or participating in such a management or advisory group would be critical to ensure that only projects with a clearly defined pathway of development progress."*

Timing is everything: encouraging rapid industry access to research infrastructure using access vouchers
58 votes

Voucher-based schemes have proven to be tangible and rapid mechanisms to increase the visibility of national research infrastructure and strengthen engagement with industry partners.

> *"The rapid turnaround times possible with these schemes adds a "just in time" aspect to access to research infrastructure as and when required – this is a critical consideration for SMEs seeking first-mover advantage, or racing against patent timelines. The flexibility of these schemes also allows targeted calls. For example, in the early stages of the COVID-19 pandemic, TIA was able to organise, launch and implement a COVID-19 specific Pipeline Accelerator scheme in the space of a few weeks – three of the ten awarded projects were SME-related. [Voucher-based schemes] increase the visibility of national research infrastructure and strengthen engagement with industry partners."*

BETTER CO-OPERATION

Space infrastructure to grow our space industry
211 votes

With the establishment of the Australian Space Agency three years ago, Australian R&D, industry and government have coordinated synergistically with the aim to grow our space industry capability. The timing is right now to propose a space NRI co-designed with our industry. This will ensure our space industry has optimum access, visibility, and co-operation, as well as accelerating the translation of space research out of the University sector.

> *"A space focused NRI is a vital engine for space industry growth and provides access to collaborative research infrastructure outside the scope of our growing industry sector. This won't be accomplished effectively without hearing directly from our industry sector, starting here."*

APPENDIX B: Summaries

> ideas that attracted 50 votes or more

Industry environmental data as a core component of Australia's NRI data fabric
87 votes

Deeper engagement with industry through a focus on improving the capture, integration and re-use of their data assets into existing NRIs has the potential to enrichen our understanding of the state, change and future state of Australia's environment.

> *"In the case of biodiversity monitoring and related environmental data, it is estimated that greater than 75% of current data acquisition occurs to support the activities of the private sector (e.g. by environmental consultants) to meet either Commonwealth or state and* territory *statutory environmental assessment and monitoring requirements. Rarely does this data contribute to the broader NRI data fabric supporting transformational science, while also delivering benefit back to industry, government and communities. Benefits to industry can include the development of more effective and efficient biodiversity offset tools, new technologies to support the design and delivery of carbon markets, or improved sustainability reporting for the agricultural, minerals and financial sector. These industry-led advances could find global markets given Australia's world-class environmental science, and data infrastructure expertise."*

Integration of people
81 votes

I'd like to see a program where researchers spend time in industry and industry spend time with researchers. It's the people that can have a boot in both camps that can really make a difference.

> *"An exchange program, with researchers working on site conducting exploration in the winter, and exploration geologists working in a research lab over the summer. It could also involve NEXUS style programs for industry. A geophysics summer school, or a data integration summer school. It could involve getting specialists with different expertise into the field together, or into the core shed together. It would lead to transfer of skills."*

Digital innovation for a greener exploration and mining industry
80 votes

The idea is to develop a platform to enhance access to data analytics, 3D modelling and enable improved data integration to practitioners in the exploration and mining industry.

> *"The platform would also provide training and knowledge transfer opportunities essential for uptake in the industry and bettering collaborations."*

Thematic research data commons to collaborate with industry
79 votes

The Australian Research Data Commons to implement a number of thematic Research Data Commons, national-scale capabilities targeted to the needs of entire domains involving academia, industry and government.

> *"Establishing thematic data commons ensures researcher needs from different sectors are met (e.g. data volume and complexity) across the different stages of uptake of eResearch methodologies, while formalising a structure that will allow interoperability. Implementation of the thematic RDC model will require thorough analysis of the research landscape to identify potential areas of activity, including current gaps and the intensity of demand for the infrastructure. The criteria for selection will include alignment with national research and industrial transformation priorities and NCRIS principles. A portfolio of RDCs would build on mature, organically grown clusters and incubate new emerging areas. The ARDC's Thematic RDC program aims to enable better collaboration with industry and support translational research. We would be interested in your thoughts on how this would apply in your industry sector."*

APPENDIX B: Summaries

> ideas that attracted 50 votes or more

Industry application scientists
56 votes

Dedicated support for industry clients seeking to access NRI.

> *"The industry clients we support are seeking analysed results (rather than training), and frequently require results within days."*

Increasing quality management standards to increase NCRIS value to industry
56 votes

The value of NCRIS to industry will increase through the broader adoption and implementation of quality output, management and reporting standards.

> *"Appropriate adoption of industry standards that increase quality will: Increase confidence of industry to engage with NCRIS research capabilities, Increase the calibre and consistency and timeliness of the capabilities provided, Improve the reproducibility of the results generated, Reinforce the improvement-cycle to ensure that services operate at their peak, Ensure provenance and trustworthiness of data generated, Increase confidence in the capability provided, Ensure security of information and Provide quantitative evidence for validation."*

Industry engagement in planning major facilities for emerging growth sectors
54 votes

Identifying medium/large-scale infrastructure needs of emerging growth areas like space, advanced manufacturing and medical technologies.

> *"Ideally, after the finalization of each Roadmap, we could start the process of identifying the longer-term needs of areas of strengths in Australia, and areas of national importance that require sovereign capabilities. These could be via focused workshops with participation from Industries, Industry bodies, Universities, Research Organisations and Government Departments. Involving Industries right at the planning stages will ensure that new infrastructure is set-up to cater to a diversity of user."*

BETTER PROTECTIONS

Australian Research Data Commons to provide support for industry data
75 votes

The Australian Research Data Commons can provide advice and support of industry adoption of persistent identifiers for data, standardised vocabularies and ensure research outputs are FAIR - Findable, Accessible, Interoperable, Reusable.

> *"Adoption of FAIR by industry aims to perfect the information market, such as by reducing duplication of research effort, not missing valuable commercialisation opportunities, or simply knowing information exists to support better business decisions. Adoption of FAIR for research outputs from industry does not mean they will be 'open'. Companies still retain the right to decide who has access."*

APPENDIX B: Summaries

> ideas that attracted 50 votes or more

BETTER CO-ORDINATION

FAIR data legacy
63 votes

National Research Infrastructure to support CRCs, Industry Hubs and similar to ensure they leave behind FAIR data legacies.

> *"Too often, there are no good 'legacy arrangements' in place in relation to the knowledge and data assets created. NRIs could and should become custodians of those on behalf of the nation. Mechanisms to involve NRIs at the planning stage of these innovation centres should be introduced to ensure that data resulting from CRCs, Industry Hubs and similar organisations is FAIR (Findable, Accessible, Interoperable, Reusable) during and beyond the lifespan of these organisations to increase the return on investment."*

Data partnerships between research, government, and industry are critical
59 votes

Priority investments in cross-sector "data partnerships" and cooperation to build, make accessible and/or use high-value national data assets are critical to integrate data in societal priority areas such as health, human services, demography, education, agriculture, transport, housing, resources (groundwater, minerals, energy) and geo-location.

> *"The Roadmap should prioritise investments in appropriate cross-sector "data partnerships", to build, make accessible and/or use high-value national data assets that integrate data in societal priority areas such as health, human services, demography, education, agriculture, transport, housing, resources (groundwater, minerals, energy) and geo-location."*

Linking the virtual library of Australia's geology to national geoscience datasets
54 votes

Expand the scope of The Virtual Library of Australia's geology - AusGeol.org - to become a maintained National repository and resource for field geology visualisations that is cross-referenced against key Australian geoscience databases already maintained and delivered by Geoscience Australia, to improve the quality of geological interpretations and thus the effectiveness of mineral/energy exploration and earth resource management across the Nation.

> *"The idea is to expand the scope of AusGeol.org to become a single point national portal that is maintained and cross-linked to a range of other national geoscience databases, to create, upload, cross-reference, display and deliver visualisations that can be interrogated, reinterpreted and used to improve the quality and effectiveness of geological model building, and grow the understanding of the geology of the Nation."*

APPENDIX B: Summaries

> ideas that attracted 50 votes or more

The Australian Quality Preclinical Efficacy Network: translation of research discoveries into therapeutics
51 votes

Before a potential new therapeutic can enter the clinical trial stage of development, it needs to undergo rigorous testing in animal models. This process is known as preclinical efficacy testing. Information from such tests is a crucial element of data packages to support first-in-human trials, which is a major value inflexion point in commercialisation and needs to be undertaken with high quality management systems. There currently is a gap in Australia in the provision of such services.

> *"The establishment of the Australian Quality Preclinical Efficacy Network (AQPEN) of quality accredited facilities offering preclinical efficacy testing services critical to therapeutic development. This network would be comprised of several University-or MRI-based centres that provide access to specific research services, in much the same way as existing TIA facilities, but each node of AQPEN would focus on fee-for-service or merit-based access to services related to a specific set of disease models and associated efficacy assays. AQPEN would offer quality-accredited testing services for a variety of therapeutic modalities, including pharmaceuticals, biologics, vaccines and cell & gene therapies. It would close an existing gap in national medical research infrastructure and align critical quality-accredited translational research capabilities with key national health priority areas."*

SOMETHING DIFFERENT

Consistency and longevity in National Research Infrastructure
59 votes

Initiatives to improve industry engagement are very welcomed. As highlighted in the discussion paper reducing risk to industry is a key factor in encouraging engagement with the national research infrastructure. We need to also remember that long-term planning, consistency across research and research infrastructure, and domestic access all play a role on whether industry is going to engage in the national research infrastructure.

> *"One of the most important drivers for industry engagement in research and research infrastructure is risk. There are a number of ideas on how risk can be reduced for industry who wants to engage with research but a key requirement is consistency and longevity in research infrastructure."*

FAIR Digital infrastructure for sustainable resource management
51 votes

Develop an open-source FAIR (findable accessible interoperable reusable) digital toolkit for resource management - including 3D geological modelling, geostatistal modelling, geophysical inversion and geological data analytics.

> *"Many of the important decisions made during the resource management workflow are based on the results of geological modelling, resource modelling and geophysical data integration. These processes are often subjective (dependent on the professional making the model) and the software used for modelling... The proposed project would develop a standardised library for computing these core functionalities – similar to the Chenath engine, a library developed by CSIRO for modelling the Australian National House Energy Rating Scheme. A standardised open-source resource management library would ensure that resource exploration and management is consistently applied throughout Australia."*

APPENDIX B: Summaries

> ideas that attracted 50 votes or more

Underpinning operations: delivering products to support industry
50 votes

A range of Australian industries operate in highly variable ocean environments. Decisions related to when and where to safely operate and how to increase efficiency depend on understanding ocean conditions.

> *"Providing observations that inform and support operational decisions ensures that current industries can continue to operate efficiently and safely and promotes their growth in the future. However, delivery of data alone is not adequate to support industry operations. There is a need for data products that summarise and forecast environmental conditions to underpin operational decision-making."*

Short-run manufacturing facility
50 votes

A facility that helps medical device companies get past the early production stage and regulatory approvals. The facility would provide resources, expertise and education to help medical device companies get through early production and clinical trials to regulatory standards.