

ARDC Research Link Australia Project Interim Report

The ARDC RLA project team

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Executive Summary

Collaboration among research, industry and government is critical for innovation in Australia. An important step to enable collaboration is connection. Better connection will help researchers and innovators find the collaborators and resources they need. The Research Link Australia (RLA) project aims to enhance the success of all services and activities that are linking universities and research organisations, businesses, industry and government, through access to richer information. With dedicated funding from the Australian Government's National Collaborative Research Infrastructure Strategy (NCRIS), RLA will develop a technical platform and a strategic framework to enable information sharing and improvement. The platform will leverage the ARDC's existing national data catalogue Research Data Australia, information standards, services, technology capabilities and networks.

RLA project has adopted a consultative and co-design approach to ensure we develop and iteratively improve these capabilities together. The project has undertaken consultations (November 2022 through March 2023) and a series of co-design workshops (May through August 2023) focused on activities to understand the sector's capability and needs, identify data sources, and to shape and test the design and deliverables of the project. The project has also established an Advisory Committee as a part of the project governance. The committee membership represents a broad range of stakeholders.

The project plan for Research Link Australia includes the development of a Shared Strategic Framework that will guide the development and further evolution of RLA. The RLA team identified community input relating to aspects of strategy during the initial stakeholder consultations. Strategy feedback was also derived from consultant evaluations and recommendations. Additionally, each co-design workshop delivered deeper on specific aspects of the strategy. The goal of developing a "shared" strategy is working with others, participants and partners, to articulate our joint commitment to the vision of a better, richer and shared information environment. The goals for this draft release of the Shared Strategic Framework include testing the essential components, drafting a clear articulation of RLA's role and intended service model, and ensuring that the draft framework can guide subsequent project activities. The planned project actions are also included below.

This report covers the 4 milestone 1 targets and deliverables:

- A draft strategic framework
- Environmental scan of sector capabilities and gap analysis
- Proof of concept system demonstrating aggregation of available national information on publications, competitive grants and datasets
- Awareness raising outreach with key stakeholders

The Project Context

Consultations

Initial stakeholder consultations, occurring from November 2022 through to March 2023, confirmed the importance of working with others to:

- *“add real value to the whole ecosystem, boosting the success and capacity of other programs and services that facilitate”* - noting especially that the challenges to research-industry linking are many, multi-staged, and benefit from multiple services and support being available.
- provide *“pre-competitive information infrastructure”* - working towards the purpose of uplifting the entire ecosystem, that is augmenting existing capabilities (not competing), addressing gaps, and working on shared challenges.
- address sector wide problems, especially those that may not fall on any one stakeholder to address - noting especially that we are not alone, and there is a need to progress the conversation together (to cohere, advocate, progress a strategy).
- ensure *“RLA’s benefit would go beyond research collaboration to building Australia’s sovereign capability.”* - again noting this cannot be done alone.

This highlights the need for a “shared strategy”, which is relevant not only to RLA but to all people who have a stake in such information improvement, specifically, for the purposes of better connecting industry and research.

Co-design Workshops

Each of the co-design workshops (May through August 2023) have focused on aspects of the strategy. The proposed structure of the strategic framework was presented at the initial advisory committee meeting in May and was presented and tested at the first and second co-design workshops. The following areas are the structural components that RLA presented and sought to build in co-design workshops with stakeholder groups. The draft developed below, in some areas, might articulate how RLA will commence addressing these components based on feedback.

- **A Vision & Model** – a clear articulation of RLA’s role and intended service model, situated in the wider information and research-industry linking ecosystem, will guide the development of the RLA platform and service, and will better inform how participants and partners engage RLA.
- **Shared Information Standards** – identified information source needs, prioritised, with ongoing

access and usage arrangements investigated, for inclusion or demonstration on an RLA platform. Eventually a roadmap for information improvements and new information sources (either existing or envisioned).

- **Sustainability Strategy** – aspects of the service governance, data quality governance, sustainable models for partnering with information providers, other research-industry linking facilitators, and other service providers in this environment.
- **Trust Framework** – monitoring the quality of the information, identifying that it is from a trusted source, and identifying that it is up to date. As an information platform, aggregator of information, and provider of information, understanding related responsibilities, such as aspects of privacy, risk management or impact assessments, provider arrangements terms of use. Enabling not just use, but greater sharing and reuse, for example principles of open access and FAIR. (Governance and Trust have been combined in this draft strategy framework.)
- **Evolution** – users and partners will play an important role in driving the evolution of the information environment, RLA service model, and RLA platform. RLA must improve, evolve and ensure it can adapt to a changing environment and changing needs. (Sustainability and Evolution have been combined in this draft strategy framework.)

Final Feedback on the Draft

Overall the Project Actions, Shared Strategic Framework, Environmental Scan and Content Roadmap were well received and thought to be comprehensive by the final co-design workshop on 16th August and the RLA Advisory Committee on 18th August. The following includes a summary of feedback and discussions.

- General concerns were raised about the initiative sustainability and how it could be funded. RLA was intentionally funded to build national research information infrastructure and as part of NCRIS. The platform and operations will be folded into ARDC's existing infrastructure for the longer term, which are funded through NCRIS. We recognise aspects of information sharing may be required of others so demonstrating the value is important.
- A major challenge is ensuring the reliability and currency of the information streams. RLA recognises the challenge and that data quality also needs to be improved. RLA will obtain information from existing aggregators where possible. RLA is also recognised as an opportunity to work with others and advocate for change.
- Potentially not recognised in information source diagrams, when talking about research products, is industry reports from various sources (CSIRO, state government reports, universities) and these could be included as sources.

- What data will RLA collect to evaluate the impact and trace the performance of the initiative? This could include knowing what connections were made or what industry products resulted. RLA will develop an evaluation plan.
- Regarding complexity and availability of information about business R&D activity, RLA expects a high level of complexity, but this should be confirmed. Sources like the R&D Tax Incentive and the Entrepreneurs' Programme may hold significant data but some may be sensitive and not made available during the project period.
- Data CoPs are a good way to help ensure uptake of the platform, but support and sustainability of both communities and the platform needs to be considered. RLA expects to play a role supporting some aspects of focused communities, but not the entirety of any community which may evolve and go beyond shared information. We expect that research focus areas and priorities will also evolve over time.
- RLA should consider international and especially US patents information relating to Australian research, industry and innovation.
- Universities having collected similar information to those described in the content roadmap may have some concerns or may be reluctant to share certain information, for example, information regarding their industry partners. RLA will obtain information from existing aggregators, such as ORCID, but engagement with University will be important. There may be benefits for Universities having greater access to richer and linked information.
- Some felt an emphasis on exploring researcher affiliations and organisational centric approaches important, rather than individual profiles, but some stressed the importance of developing trust in researcher's online bios to document current interests/activity, not just historical work.
- RLA should consider investigating potential links to industry/market products based on successful research-industry links or patents.
- Challenges were recognised in tracking specific researchers and affiliations, including HDR students, adjuncts, and potentially academics more recently from industry who may have valuable connections and experience.
- A suggested additional action is to map other government initiatives addressing this issue. (This may align well with our proposed action to enable discovery of other linking services/schemes.)
- RLA should consider further promotion through trade fairs and event pages.

Project Actions that will Address the Strategy

The RLA team will undertake the following project activities identified in the original project plan:

- Business/industry engagement and related use case optimisation
- Negotiating access to prioritised and new content sources

- Consultation with key stakeholders and early partners towards further adopting (and/or refining) the Shared Strategic Framework
- The development and release of a pilot RLA platform covering initially available information sources, followed by the ultimate May 2024 release of a minimum viable product, at which point an updated gap analysis and roadmap for further development is expected.

Further to these, stakeholder consultation and co-design of the Shared Strategic Framework has resulted in the need to plan the following project activities:

- Engagement activities:
 - Industry engagement - while this was planned, it is important to note that resources will be dedicated to this activity to focus on engaging and obtaining industry perspectives.
 - Data communities - RLA will explore opportunities to foster targeted collaborations between stakeholders to generate domain-specific insights and context-driven data on research and industry capabilities. (See the section on “A Model for Evolution” below).
 - Research-industry policy insights - RLA will investigate opportunities to address the government policy persona or policy analyst, capturing the need to assess the value or impact of a funding program or interventions.
 - Linking services discovery - RLA will focus on opportunities to promote and boost multiple platforms and services by working with partners in the research-innovation linking “ecosystem”. This might include other platform providers, custom portals developers, data analysts, research-industry facilitators, broker contacts, related services and related training.
- Platform developments:
 - Prioritised information sources - Based on stakeholder priority requirements, the availability of related supporting information, and estimated complexity of acquiring information, RLA will focus first on information sources that can indicate “successful partnerships” and “potential partnerships”. Second priority information sources include those indicating “research capabilities” and “research facilities”. (See the section on “Shared information standards” below.)
 - Data insights portals - The RLA platform, to enable the above engagement activities, must allow domain experts to leverage existing data to gain and present insights into various aspects of research and industry engagements.

- Trusted secure platform - RLA platform will provide a secure platform taking into account responsible, private and ethical access for the integration of private datasets and private data.
- Community development work:
 - Data skills - Skilled information professionals will be necessary to realise the larger vision of research-innovation collaboration, and to meet the specific need of making the most of more available information. RLA could advocate for increased community activity, for example, connecting networks and developing people who can work with such information.
 - Facilitators and intermediaries - RLA could advocate for increased community activity, for example, fostering a professional community of research-industry facilitators, or developing a more visible network of facilitators and related services and support.

Shared Strategic Framework (Draft)

Vision & Model

RLA will be an information platform that focuses on benefits offered directly to identified users such as: industry and business sector innovators, academics and researchers, government stakeholders, and facilitators of research-industry collaboration.

As clarified by stakeholder engagements, the term “industry” in the context of RLA includes organisations beyond commercial and for-profit organisations, and the use of “research-industry” includes all innovation partnerships, for example with healthcare, not-for-profit and public service organisations.

Most importantly, RLA will act as a “window” or gateway to multiple platforms and services, promoting the capabilities across the ecosystem (initially our participants and partners), and so RLA will focus on benefits to these ecosystem participants. The ultimate goal is that users will have the “lion’s choice” of information, tools and services.

In addition, RLA will provide information infrastructure that can be used to underpin the development and operation of other platforms and services, providing benefits as an information aggregation and dissemination facility. Stakeholder feedback confirms that in doing so, RLA must seek to be an authoritative source of information relating to research-innovation capability and connections.

RLA will additionally provide a larger and richer data-set, to be made available for data scientists, experts who analyse information for their organisations or stakeholders. This will facilitate the discovery of new insights to better inform decisions, policy, programs and interventions.

Stakeholder consultation has confirmed the importance of RLA to continue to engage experts and user communities to realise this vision. In particular it was recognised that skilled professionals will be necessary to realise the larger vision of research-innovation collaboration, but also to meet the specific need of making the most of more available information. RLA could advocate for increased community activity, for example, connecting networks and developing people who can work with such information, fostering a professional community of facilitators, or developing a more visible network of facilitators and related services and support.

RLA's Mission Statement

Research Link Australia's mission is to provide an information platform available to industry and business sector innovators, academics and researchers, government stakeholders, and facilitators of research-industry collaboration. RLA will boost the success of multiple platforms and services which link university and research organisations, businesses and industry. Beyond the ability to discover and access richer information, the platform will enable the discovery of new insights to inform policy and decision making.

(Noting the distinction from the RLA project mission to develop a technical platform and a strategic framework that enables information sharing and improvement, connecting researchers and innovators.)

Service Model Focus

RLA will prioritise providing benefits directly to identified users. Identified stakeholder groups or user personas following on from consultation findings and co-design refinement.

- Researchers and research leaders
- Government departments, policy makers, funders
- Business and industry innovators
- Facilitators, intermediaries and service providers

Refinements from co-design workshops include:

- The government policy persona was missing an important aspect of the policy analyst, the need to assess the value or impact of a funding program or interventions, as evidence to stimulate greater research and industry uptake.
- From the perspective of government and specific research domains, the scope of “innovators” (perhaps the term “industry”) would need to include organisations beyond commercial and for-profit organisations, for example including hospitals, healthcare, not-for-profits and public service organisations.
- Clarification is needed as the facilitators, intermediaries and service providers may sit in a diverse range of organisations, eg. business development managers in universities, connection facilitators in CSIRO, community managers working for initiatives, innovation hub facilitators, and data analysis/platform providers.
- Engaging more people to obtain industry perspectives will be essential to test a number of suggestions and assumptions, for example managers from the business sectors. For example, the suggestion that smaller organisations would likely benefit more from low-stakes engagements (those with less resources involved).

Co-design participants raised an equal or even higher priority for RLA to promote and boost multiple platforms and services, essentially promoting the capabilities of partners and participants in the research-innovation linking “ecosystem”. The following are recommendations relating to this focus area:

- We need to investigate the model for how stakeholders can find the expertise needed to help them work with, gather insights from, or develop custom portals/views on the large amount of information available and the complex linking across that information.
- Multiple information platforms and services need to be discoverable. Many offer complementary insights and capabilities. Some offer development of custom portals/views.
- Research-Industry facilitators or services (eg. development managers) need to be discoverable
- Ensuring people can connect with the right person (assuming organisation has facilitator services)
- Researchers and Industry may not be aware of all funding opportunities, or funding opportunities they might be eligible for.
- We confirm the challenge of experience/skills/language/awareness of research-industry collaboration on all sides. Is there a need to discover who is providing workshops/training? Or who can verify training/skills/experience?

Finally, consultations and workshops stressed the need for RLA to partner with communities or domains of specific and current need and opportunity. The above will focus RLA on systemic information-ecosystem improvement, but it is also important to clearly demonstrate value and need for specific domains.

Sustainability Strategy & Evolution

The RLA development project is funded for an 18-month period. ARDC has committed to a further 3 years of product development, improvement and support. For the RLA product to sustain in the long run it requires demonstration of value and impact, the buy-in and evolving with communities including information providers, information consumers, services providers, facilitators, and future investors. ARDC will further utilise and develop the RLA platform in our development of infrastructure with partners in thematic areas that address Australia's science and research priorities. More specifically, RLA aligns with ARDC's strategic development of National Information Infrastructure to support the sector and the ARDC's Thematic Research Data Commons, as well as our Translational Research Data Challenges, and the National Persistent Identifier Strategy.

Demonstrate value and impact:

Consultations identified that the potential values of the project include:

- Providing researchers with a data platform that increases their ability to effectively partner with business, industry and government in order to perform nationally relevant research, translation and impact
- Providing an easy to access/search platform for industry to find capability information and to find/make connections. The search function needs to be powerful and flexible.
- Providing a data platform to boost the success of services which link universities and research organisations, businesses and industry, and government to advance the nation: economically, socially and environmentally.
- Addressing the information challenges to research-industry. Researchers and industry benefit from multiple services and support being available. Finding an appropriate service, scheme or facilitator is one challenge. Access to better, richer and shared information is another challenge for services and support in this national ecosystem.
- Greater access to more comprehensive and authoritative information has the potential to reduce duplication, reduce costs across this national ecosystem, and together we can seek to improve the timeliness and quality of information.

Achievable impact feedback:

- Consider the number of hits, return visitors, but also the conversion of hits to collaborations.

- Recommend measuring the numbers and types of businesses and researchers that engage with the project to demonstrate impact.
- Surveying to better gauge the engagements, types of engagement (eg. industry initiated, academic initiated), indications of the value of collaborations, associated funding, outcomes and types of outcomes.
- Consider the use of information for other engagement and impact reporting purposes, to potentially further reduce the barrier for participating researchers to engage in the longer term. This could include looking at the quality or value of the connections made over time.

Engaging and partnering with communities for buy-in and evolution:

The engagement and the maintenance of relationships requires careful and deliberate strategy. Stakeholder consultation suggested this as part of RLAs vision. Skilled professionals are already a part of the services and facilitation available to support research-innovation collaboration. Developing a network of people who are able to work with such rich information will become increasingly important. Experts and user communities will help us realise a shared vision. Feedback suggests RLA should advocate for increased community activity (with the ARDC's experience in supporting community activities) eg., connecting networks, developing people who can work with information, fostering a professional community of facilitators, or developing a more visible network of facilitators and related services and support.

Data/information providers challenges:

- Data quality and data latency are essential to the success of the platform. However, it is hard to rely on many individual data providers (for example universities, research organisations, multiple levels of government) to curate and keep all required information up-to-date. The project strives to use as much open data as possible (e.g. publications from the Crossref, researcher profile from ORCID, grants from funders or GrantConnect) and apply start-of-art technologies to clean and link data. Still, there are crucial data that need to be negotiated and collected from individual data providers.
- Gaps exist in obtaining information about business R&D activities that could provide research sector visibility of business capability or needs, and government for directing funding efficiently. It may be possible to extract partial information from publications, grant information, university held information, funder information, and government agencies.
- RLA will need to address the processes and models for working with data providers to continually improve information quality and/or prioritise additional information.

Service providers challenges:

- Some service providers synthesise data services from combinations of publicly available information (e.g. Lens, 4th Harmonic) and in-house data (e.g. Elsevier, Dimensions, SearTen).
- Some service providers could make use of data and data intelligence provided by RLA, either via API or web services, to support their clients and stakeholders.
- RLA will need to work with other service providers in a pre-competitive, collaborative and complimentary manner.

Facilitators and intermediary challenges:

- Facilitators service people or institutions or businesses seeking specialised knowledge and information. In addition facilitators provide expert services to identify and confirm potential research/industry partners, to aid in connecting partners, or to help set up R&D projects between organisations, e.g. business/commercialisation manager from research organisations, CSIRO SME Connect program, [UniQUEST](#), [ExpertConnect](#).

Information consumers challenges:

- Information consumers could be individuals (e.g. researcher or business owner) looking for partners, or services that access information from RLA in a systematic way for serving their customers.
- People often use their existing networks to get recommendations of potential collaborations. RLA aims to extend this type of connection by providing added information and a way to explore further connections. RLA expects to initially attract a small number of direct information consumers but will undertake further outreach and grow uptake.

Other Feedback on Sustainability:

- While the current ARDC services do not charge for use, stakeholders encouraged RLA to consider both free access and cost-contribution models.
- RLA is encouraged to investigate possibilities to promote and incentivise potential researchers and industry innovators to have greater engagement, for example attending research or industry events. RLA will investigate opportunities with other government policy initiatives, and test via upcoming industry engagement activities.

A Model for Evolution - Data Communities of Practice (Data CoPs)

Data Communities of Practice (CoPs) are an interdisciplinary approach to address the multifaceted challenges associated with data management, analysis, and collaboration across various domains. They

can foster cooperative environments that encourage knowledge sharing and innovation, bringing together experts from diverse backgrounds to work together in tackling complex problems using data-driven insights. These communities can play a role in bridging gaps between technical and non-technical stakeholders, while promoting ethical and responsible data practices to ensure that the generated insights are well-grounded in a more comprehensive understanding. Data CoPs are also an approach to co-design that aligns with the above stakeholder recommendations on sustainability and evolution: seeking to directly demonstrate value, and engaging and partnering with communities.

The RLA project will explore opportunities to foster targeted collaborations between stakeholders to generate domain-specific insights and context-driven data on research and industry capabilities. Beyond the project, such Data CoPs could prove to be a crucial engagement platform for stakeholders addressing common and national challenges.

Data CoPs encompass several practices that could play a crucial role in bringing together stakeholders to realise the full benefit of the more available and richer information environment. Key practices include:

- *Domain-oriented problem-solving*
- *Knowledge sharing and learning* - facilitating open exchange of ideas, experiences, insights and best practices among members
- *Building trust and relationships* - by providing a platform around which to interact which helps establish trust and rapport among stakeholders
- *Encouraging innovation* - promoting the cross-fertilization of ideas and techniques from diverse perspectives, and a mechanism for exploring innovative approaches to boost research-industry collaboration
- *Developing shared resources* - with outcomes having the potential to contribute new common tools, frameworks, and guidelines that benefit the entire community
- *Fostering community identity* - fostering a sense of shared purpose among stakeholders, potentially encouraging longer-term commitment and collaboration

Governance & Trust Frameworks

Establishing Data Governance

The Research Link Australia service will leverage ARDC's existing national information infrastructure services team and existing infrastructure, so aspects of service and governance will need to take into consideration existing organisational structures. We believe a trust framework will require development

and testing with partners as the service is established, and as it is further utilised and matures. Feedback has been to consider an advisory group for development consisting of agencies and individuals who are able to advise on security, privacy, aggregation and research metrics, as well as seeking involvement from aligned international initiatives.

RLA will need to provide secure environments taking into account responsible, private and ethical access for the integration of private datasets and private information. Such platforms should support community collaborations such as Data CoPs. RLA will need to track and provide information to stakeholders and users regarding where certain data has come from, as well as source requirements including conditions of release and reuse.

Trusted Platform

RLA's strategy and service principal will be to provide the widest possible access to aggregated and linked information to ensure the broadest possible reuse, and to boost the success of all services and activities that are connecting researchers and innovators.

RLA also intends to continue working with communities, priority innovation areas and challenges. This is likely to require augmenting private datasets (eg. from growth initiatives, commercially sensitive collaborations, perhaps defence) together with the public graph. RLA may then need to play a role as a trusted data broker, by allowing for access principles determined by different initiatives/communities, that can then be enabled by the provision of secure environments, secure platforms to generate insights from hybrid data, and in perhaps in securing access to the resulting data insights.

The RLA project will explore this requirement with early stakeholder users, and as the platform is implemented, with potential opportunities for Data Communities of Practice.

Shared Information Standards

Consultations and workshops have identified stakeholder groups and functional requirements of the information platform. These have been captured as part of the platform solution architecture for the upcoming implementation of the pilot platform and towards project delivery of a minimal viable platform and service. The identified capabilities of the information platform include first priority information sources but also go beyond to include supporting information capabilities. Both are listed here.

Information sources:

A detailed information model will develop as part of implementation. The environmental scan and gap analysis report provides more details about required data types and available information sources, taking into account indications of priority of requirements across stakeholders, the availability of related

supporting information, and estimated complexity of acquiring that information. First priority information sources will include those that can indicate “research capability”, with “successful partnerships” and “potential partnerships” important to investigate but expected to be challenging.

More challenging information such as relating to “Successful partnerships” could be improved by richer access to research grants information including all partners. Information could also be enhanced by government funding information (GrantConnect), IP and patent information (IP Australia), and non-R&D relationships information (organisation held contracts and CRM databases). Evidence of a researcher’s or organisation’s prior and successful industry engagements has been consistently prioritised.

“Potential partnerships” information could be improved via the same information sources and in addition through richer information within publications and non-traditional outputs such as datasets.

Information currency:

Information relating to people and their associated organisations should be as up to date as possible. Out of date information reduces usefulness of and trust in the platform.

Transforming data into insights:

The RLA platform should allow domain experts to leverage existing data to gain insights into various aspects of research and industry engagements in Australia.

Secure and trusted data integration:

The RLA platform will provide a secure platform taking into account responsible, private and ethical access for the integration of private datasets and private data. Such platforms should support collaborations such as Data CoPs.

Another aspect of trust is the ability for stakeholders and users to track where certain data has come from. Responsible information source requirements, such as conditions of release and reuse, should be captured.

Develop functional system interfaces:

The RLA platform will provide an easy to search platform for all stakeholders, including industry to find capability information and to find/make connections. The search function needs to be powerful and flexible, providing both simple filters and more advanced search for example, only returning researchers, or institutes, or companies. User customisable alerts should be investigated, for example based on additional entries found in specified areas. Generative and conversational AI-assisted search should also be investigated.

Develop reusable components and access interfaces:

The RLA platform should build modular components that can be connected into other systems, including those potentially built by facilitators and service providers, to enhance the interoperability of research information systems in Australia. Investigate options to place RLA information/interfaces on familiar sites where potential industry users are already looking. Other interfaces for investigation include query based APIs, bulk access APIs (download or synchronisation), and cloud based data environments.

Environmental Scan of Sector Capabilities & Gap Analysis

Significant progress has been made on an environmental scan of sector capabilities and gap analysis. The gap analysis commenced in late 2022 with stakeholder consultations to gather evidence of existing sector capabilities, gaps and opportunities, especially relating to information sources and existing facilitator services and support. Deeper analysis of these early stakeholder findings confirmed and expanded through feedback from the co-design workshops indicate gaps in the below areas:

Government:

- There are complex, disconnected and overlapping initiatives
- Information required for collaboration is held by different stakeholders and not easy to discover
- Agencies lack of (integrated) information that provides bird eye view of national research capability
- Not many businesses and not all researchers are aware of related funding opportunities

Industry / Business:

- Not knowing which government funds they are eligible to apply
- Difficult to find research collaborators/groups by website or web search
- Not knowing how to engage with researchers, research organisations, and their language
- Difficulty identifying researchers willing to collaborate/solve industry problems

Publicly funded research organisations (including research institutes and universities):

- Few researchers have built a network with industry partners
- Senior researchers act as 'brokers' to tap their peers/junior researchers to their industry network, thus less time on research projects
- Researchers aren't aware of all funding opportunities
- Collaboration readiness of prospective business partners are unknown to researchers

Use Cases & Personas

The project team collected about 70 use cases from the initial consultation and desktop research of reports on research and industry collaboration.

The use cases identified the following types of stakeholders who play a significant role in connecting research and industry.

- **Facilitators:** Facilitate partnerships between research and industry, driving innovation and expanding professional networks.
- **Programmers:** Engage in the development of new software tools and applications, addressing complex challenges and fostering technical advancements.
- **Research Academics:** Enhance knowledge and expertise by applying research to real-world industry problems, expanding the potential impact of their work.
- **Research Institutes:** Strengthen reputation, attract funding, and foster partnerships leading to ground breaking discoveries and technology transfer.
- **Universities:** Benefit from enhanced reputation, increased funding, and collaborative partnerships that yield innovative breakthroughs and knowledge exchange.
- **Businesses:** Access cutting-edge research and expertise to accelerate product development, improve processes, and increase competitiveness.
- **Government:** Promotes research-industry collaboration to drive economic growth, create jobs, and maintain national competitiveness in the global innovation landscape.

The project created four personas based on the use cases, focusing on the project scope that is to provide a shared research capability information platform that boost success of research, industry and government collaborations.

The four persons represent the need of each stakeholder for identifying or connecting to the other partners. The four personas are:

- As a policy maker, research funder or national program initiative, I would like **to know national research capability in biodiversity, as well as the impact of past relevant funding programs**, so we can direct our funding effectively and efficiently; or organise a virtual national collaboration research network to address the biodiversity threat to the nation.

- As a business eligible for the Government R&D tax incentive, can you **recommend a facilitator** who can *help us to assess which government funds are of value to my business and is able to* guide us through this Government R&D grant application (or a collaboration end-to-end)?
- As a research group, we have researched this nanodisk, our clinical research shows nanodisk can stick to the surface of a tumor longer than other shaped disks and thus provide efficient transfer to therapeutic drugs to the tumor. I want to find out **who are the top five manufacturers in Australia** with whom we can discuss future production opportunities.
- As a facilitator, I would like to know **who are the top five researchers from my state in this research area** of internet of things, who can help a farming tech company to optimise sensor network to monitor soil, water, crops, pastures and animals, etc; so that we can make better decision in improving farming productivity.

Information Gaps Identified (What is Required)

The use cases have also captured the following information requirements that would help stakeholders to identify and connect to potential partners:

- **Research capabilities:** Access to information about up-to-date data on current research capabilities
- **Technical expertise:** Access to information about technical expertise
- **Business collaboration interests:** Access to information about businesses with keen interest in research collaboration
- **Experienced industry collaborators:** Access to information about experienced industry collaborators
- **Partnership funding:** Access to information about funding support for partnerships
- **Non-university funding:** Access to information about funding that can go to non-university institute
- **Facilitators/ Brokers directory:** Access to a broker directory with the information about their capabilities
- **Research facilities:** Access to information about research facilities

- **Potential partners:** Access to information about potential partners (academic or business)
- **Successful partnerships:** Access to information about successful business and academic partnerships

The scores in the table show the interest of different stakeholder groups in the functional requirements for the Research Link Australia platform. The table is based on consultation reports and notes from related meetings, and the corresponding cells in the table are marked with a dependency score, where (3) represents the highest level of functional dependency and (1) represents the lowest level of connection between the requirement and the stakeholder interest in the provided information. The information collected in this table suggests that access to up-to-date information about current research capabilities has the highest functional impact on RLA stakeholders.

	Facilitator	Programmers	Academics	Research Institutes	Universities	Business	Government	Total
Research capabilities	3	3	1	2	3	3	3	18
Partnership funding	1	2	3	1	2	3	1	13
Business collaboration interests	1	1	3	2	3	1	1	12
Successful partnerships	2	2	1	1	2	1	3	12
Research facilities	2	2	1	1	1	2	2	11
Potential partners	1	1	1	3	3	3	1	13
Experienced industry collaborators	1	1	3	1	2	1	1	10
Non-university funding	1	2	1	3	1	1	2	11
Technical expertise	1	1	1	1	1	3	1	9
Facilitators/ Brokers directory	1	1	1	1	1	3	1	9

The following table indicates the available information sources (columns) that could provide the required information (rows), for example, research capabilities can be represented by researcher profile through their identifier, research output (publication, research data, IP and patent), and received funding (e.g. ARC/NHMRC grants, other Gov. and Philanthropy funding), information through OrgID about a stakeholder that are of some research capabilities, Research facilities and services owned by an institution, business R&D activity.

	Researcher Identifier	Publication	ARC/NHMRC Grants	Gov. Funding	Philanthropy Funding	Org ID (Academic, Business, Gov)	Research Data	IP and Patent	Research Facilities and Services	Contract Research	Business Activities	Brokers Info.
Research capabilities	Required	Required	Required	Optional	Optional	Required	Required	Optional	Optional	Optional		
Partnership funding			Required	Required	Required	Required						
Business collaboration interests								Required		Required	Required	
Successful partnerships	Optional		Required	Optional	Optional	Required		Optional		Optional		
Research facilities						Required			Required			
Potential partners	Optional	Required	Required	Optional	Optional	Required	Required	Optional	Optional	Optional	Optional	
Experienced industry collaborators			Optional	Optional		Required				Required		
Non-university funding				Required	Required	Required						
Technical expertise	Required	Required				Required		Required	Optional			
Facilitators/ Brokers directory						Required						Required

The above tables both indicate the requirement for Research Capability information from both research and business/industry sectors.

Consultations have indicated there are also two other important information requirements that determine a successful connection or collaboration, they are:

Culture Fit: If a researcher knows business culture, language and priority and how to work with business partners, and vice versa; **Capacity** - if research organisations are available for a collaboration even if they are capable. Information about culture fit can be evidenced by Successful Partnerships that could be inferred by past collaboration history, for example, through ARC linkage grants or CRC grants. However,

there is no indicator for many researchers or SMEs (small to medium enterprises) who haven't yet had such collaboration.

Capacity: Capacity is often indicated by the available workload and the interest of the participating collaborators. While some of this information could be obtained from university systems, there is also a need to collect voluntary declarations by the research collaborators themselves.

Information Availability, Challenge & Benefit Analysis

The project team conducted an environment scan of available information sources, as well as their accessibility, information quality, and linkage information that can connect a grant to its recipients and recipients' organisation (either from research or industry sector), output generated via the grant etc. Note that this linkage information is important to infer research capability of a person, a facility or an organisation/company, and a research or application area.

To indicate the complexity or challenge of data acquisition and the impact of each data source on satisfying use cases and personas, a score between 1 and 10 is given to each data source, with score 1 represents readily available information, while a rating of 10 signifies substantial technical, legal, or procedural barriers to accessing the data. The table below shows the complexity level for data acquisition for each data source.

Metadata Type	Complexity
Business (R&D) Activities	10
Philanthropy Funding	8
Contract Research	8
IP and Patent	5
Facilitators/ Brokers Info.	5
Org ID (Academic, Business, Gov)	4
Research Facilities and Services	4
Gov. Funding	3
Publication	2
Research Data	2
Research Identifier	1
ARC/ NHMRC Grants	1

It is important to acknowledge that the complexity involved in obtaining and analysing various data sources can be quite diverse. For instance, data regarding government-funded research projects is generally easily accessible and well-structured. In contrast, information related to business activities and interests tends to be more complex, disconnected, and access is significantly affected by privacy concerns.

The project team undertook an environmental scan of existing platforms and their capability to understand if existing systems/products would serve the needs of RLA. Having assessed products ranging both globally and locally including commercially available products, no suitable product could be found to serve the needs of RLA.

Prioritisation of Content Roadmap

The prioritisation of acquiring RLA content is aligned up with the project development stage. The project will source those data (as indicated in the diagram below) with low complexity but are essential to demonstrate the potential for research-industry collaboration. The project will start with the initial data (indicated under the Demonstrator column below), and next will augment and enrich information holdings by progressing additional data and data sources (indicated under the MVP column below, towards the Minimal Viable Product), and include more data types as the product evolves (indicated below under the Product Evolution column).

