CAUL
COUNCIL OF AUSTRALIAN UNIVERSITY LIBRARIANS

Innovation and Science Australia's 2030 Strategic Plan

Response to the Issues paper
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Introduction

The Council of Australian University Librarians (CAUL) is the peak leadership organisation for university libraries in Australia. CAUL's vision is that society is transformed through the power of research, teaching and learning. University libraries are essential knowledge and information infrastructures that enable student achievement and research excellence.

CAUL makes a significant contribution to higher education strategy, policy and outcomes through a commitment to a shared purpose:

> **To transform how people experience knowledge – how it can be discovered, used and shared.**

CAUL members are the University Librarians or equivalent of the 39 institutions that have representation on Universities Australia. University libraries are diverse institutions, which intersect core university business.

This includes responsibilities for aspects of knowledge creation (research), knowledge dissemination (learning and teaching), knowledge application (engagement) and making knowledge accessible. This makes university libraries an important part Australia's knowledge infrastructure, a concept that underpins the innovation, science and research systems.

CAUL greatly appreciates the opportunity to provide input in to the development of Innovation and Science Australia's (ISA's) 2030 strategic plan ("the plan") for the innovation, science and research system.

This response provides feedback on the plan, and offers the following four recommendations:

> **Recommendation 1:** that once a review of existing work has been undertaken (as proposed in the issues paper) and a draft plan prepared a second round of consultation should occur. This would allow ISA to ask stakeholders focused questions about the plans priorities that build on existing work.

> **Recommendation 2:** that an environmental scan of risks to the proposed challenges would inform the possibility of challenges being addressed over the next decade, and help prioritise them using the "waves of change" conceptual framework.

> **Recommendation 3:** that challenges and aspirations be contextualised and clearly linked to the conceptual framework in the plan. The time frame in which challenges and aspirations are addressed should be clearly identified.

> **Recommendation 4:** that a critical 2030 challenge for ISA must be to address transformation in knowledge infrastructures, lead the design of new infrastructures, and to refashion old ones. By 2030 Australia should aspire to be a world leader in the knowledge infrastructure which underpins the innovation, science and research systems.

Overview

The Innovation and Science Australia's (ISA's) 2030 Strategic Plan issues paper[1] states that the purpose of the plan is to 'help guide its investment in the [innovation, science and research system (the System)] as well as to facilitate conversations between other players in the System such as business, investors, researchers and other levels of government' (p. 3).

The ISA (2016) also said that 'the Plan will describe what the ISR System should look like in 2030 and determine how Australia can get there. It will identify priority investment, infrastructure and environmental factors for consideration by government and outline how progress can be evaluated over time' (p. 123).

To facilitate discussion, the issues paper starts by proposing that strategic options can be thought of in the context of three horizons or "waves of change" which form a conceptual framework.

- 1-5 years improving the current system (horizon 1),
- 5-10 years adding new capability (horizon 2), and
- 10+ years realise transformative options (horizon 3).

The issues paper also introduces six challenges which include a range of aspirations imagined for the System by 2030.

- Challenge 1: Moving more firms, in more sectors, closer to the innovation frontier
- Challenge 2: Moving, and keeping, Government closer to the innovation frontier
- Challenge 3: Delivering high-quality and relevant education and skills development for Australians throughout their lives
- Challenge 4: Maximising the engagement of our world class research system with end users
- Challenge 5: Maximising advantage from international knowledge, talent and capital
- Challenge 6: Bold, high-impact initiatives

Feedback on the 2030 strategic plan

The following sections provide general feedback about the issues paper and 2030 strategic plan.

Preventing overlap with related work

The absence of a review of related work as part of the issues paper is a missed opportunity. Many of the questions posed in the issues paper are addressed to varying degrees by other reviews, enquiries or evaluations.

For example both challenges 3 and 4 pose questions about Australia's education and training systems.

Challenge 3 asks 'How do we create a cohesive education and training system that is integrated into to the innovation and research system?' (p. 8) and challenge 4 asks the question 'How do we create a comprehensive research training system that is connected to the needs of end users?' (p. 9).

The first question is likely to be addressed by a 2016-17 inquiry by the Parliament of Australia Standing Committee on Employment, Education and Training titled 'Innovation and Creativity:

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[1] https://consult.industry.gov.au/office-of-innovation-and-science-australia/2030-strategic-plan-for-the-australian-innovation/supporting_documents/2030%20Strategic%20Plan%20Issues%20Paper.pdf, viewed 7/6/2017

Workforce for the New Economy'. Answers to the second question can be found in the review of Australia's Research Training System 2015 conducted by the Australian Council of Learned Academies (ACOLA).

Our recommendation [1] is that once a review of existing work has been undertaken (as proposed in the issues paper) and a draft plan prepared a second round of consultation should occur. This would allow ISA to ask stakeholders focused questions about the plans priorities that build on existing work.

Identifying risks

The six challenges presented are set in an environment currently undergoing significant transformation and uncertainty. This environment gives rise to many risks that will impede the ISA's ability to address certain challenges or meet aspirations by 2030.

For example changes to migration policy both abroad and in Australia present a potential risk to certain challenges being addressed by 2030. Already during this consultation period changes to 457 visas in Australia[2] have been announced. Such policy changes will impact the ability of Australia to position itself as a great place to study, work, live and invest (an aspiration under challenge 5).

Another question posed under challenge 5 clearly identifies protectionism as a risk to mobility - 'what happens if the current protectionist mood in some major countries becomes a major trend and international mobility of knowledge, talent and capital reverses its recent trend of growth'?

Our recommendation [2] is that an environmental scan of risks to the proposed challenges would inform the potential for challenges to be addressed over the next decade, and help prioritise them using the "waves of change" conceptual framework.

Contextualising the challenges and aspirations

The six challenges and aspirations presented do not clearly fit within the "waves of change" conceptual framework. For example the aspirations listed under challenge 5 are that by 2030, the ISA imagines that a highly innovative Australia would have:

- Enhanced its global engagement.
- Positioned itself as a great place to study, work, live and invest.
- Built on its strengths and addressed capability gaps through international engagement.
- A leading role in international knowledge sharing.

These aspirations do not describe the current state of global or international engagement by Australia or what role Australia plays in international knowledge sharing. Without more contextual information it is not possible to say which "wave of change" an aspiration fits into, or whether they are potentially unrealistic for the ISA to pursue over the next decade.

It is hard to imagine a time when engagement or knowledge sharing globally or internationally will not be important, so a better question to ask might be what level of engagement is required for these aspirations to be addressed? What does that look like?

Our recommendation [3] is that challenges and aspirations need to be contextualised and clearly linked to the conceptual framework in the plan. The time frame in which challenges and aspirations are addressed should be clearly identified.

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[2] https://www.border.gov.au/Trav/Work/457-abolition-replacement, viewed 29/5/2017

Knowledge not only innovation to underpin the system

While ISA (2016) prefers to think of the innovation, science and research systems as a single system bound by innovation, these systems have not traditionally been aligned to serve that purpose.

Integrating the innovation, science and research systems is an important piece of work and challenge for ISA. A holistic focus will help facilitate engagement with end users of those systems products and outputs. It will also prevent overlap between initiatives and make investment more effective.

ISA (2016) describes the System in terms of innovation activities (knowledge creation, transfer and application) linked to innovation outputs, and outcomes (such as well-being or economic growth). Innovation activities are enabled by policy, money, infrastructure, skills, networks, and culture.

Another conceptualisation centred on knowledge, known as Knowledge Infrastructure, can also be used to holistically describe the system. The concept has been used by the Business Council of Australia (BCA, 2014) to describe Australian's innovation system, in the context of setting priorities for that system. The BCA described Knowledge Infrastructure as:

> *'Including providing support for institutions and organisations which create and renew knowledge, and ensuring that knowledge is disseminated so that it can be leveraged, translated and practically applied'[3].*

The concept was originally introduced by Edwards (2010), who defines knowledge infrastructures as *'robust networks of people, artefacts, and institutions that generate, share, and maintain specific knowledge about the human and natural worlds' (Edwards 2010, p.17).*

Edwards uses the example of scientific knowledge to explain the concept.

> *If you want to create and maintain scientific knowledge, you are also going to need at least the following:*
>
> - *Enduring communities with shared standards, norms and values*
>
> - *Enduring organisations and institutions, such as libraries, academic departments, national science foundations and publishers*
>
> - *Mathematics*
>
> - *Specialised vocabularies*
>
> - *Conventions and laws regarding intellectual property*
>
> - *Theories, frameworks and models*
>
> - *Physical facilities such as classrooms, laboratories, and offices*
>
> - *"Support" staff: computer operators, technicians, secretaries*

Knowledge Infrastructures relate to systems that create, share and distribute knowledge. The concept is applicable to the innovation, science and research system which is unified by activities centred on knowledge.

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[3] http://www.bca.com.au/publications/building-australias-innovation-system, viewed 30/5/2017

A report by Edwards et al. (2013, p. 3) identifies a range of major changes in social and institutional knowledge infrastructure, that 'profoundly challenge our understanding of the basic processes by which knowledge is created, debated, and spread' (ibid, p .3).

The challenges listed include:

- **Education:** the rise of for-profit and online universities; open courseware; massively open online courses; a generalized crisis of traditional pedagogies

- **Libraries:** changing structures, services, and physical spaces

- **The publishing industry:** e-books vs. paper; prohibitive pricing of scientific journals; the collapse of university presses

- **Intellectual property:** distortions of copyright and patent law; creative commons practices; stark and growing differences between legal frameworks and actual use practices

- **Global flows:** increasingly rapid and supple transborder movement of researchers, students, professional expertise, and knowledge-based industries

- **Knowledge politics:** the "filter bubble"; counter-expertise; challenges to expert knowledge organizations [also alternate facts and fake news]

To provide a relevant example, the changing nature of the scholarly record is an issue pertinent to challenge 5: maximising advantage from international knowledge, talent and capital will be impacted by a range of current issues and initiatives.

Challenge 5 talks about maximising the advantage from international knowledge and for Australia to play a leading role in international knowledge sharing. The changing nature of the scholarly record requires effective stewardship for the capture, collection, description, discovery and preservation of the traditional print and digital content (whether it be format shifted or born digital). A move towards open access scholarly records is making the copyright environment increasingly complex as funding agencies and publishers adopt open access principles.

Services and tools have been widely adopted by institutions (such as university libraries) to manage open access compliance issues. Many institutions provide links through their research publication repositories to SHERPA/RoMEO, a service that provides summary of 'permissions that are normally given as part of each publisher's copyright transfer agreement [with researchers/authors]'[4] on a journal-by-journal basis. With funder open access deposit mandates coming into play, other services such as SHERPA/FACT (Funders' and Authors' Compliance Tool) or SHERPA/Juliet (a database of funders' policies and open access requirements) are now also important.

These services allow researchers to quickly and reliably determine whether the journal they wish to publish in will support compliance with the mandates of relevant funding agencies. With moves afoot to put these services on a more sustainable financial basis, Australia will need to find a way to take full advantage of these services. By either buying in to existing approaches or finding another way to ensure that its funding agencies' and publishers' requirements are included in a single international database.

These kinds of transformations are already having an impact on the ability of researchers in Australia to create, share, distribute and apply knowledge. They will also impact the ability of end-users to access and apply knowledge for the purpose of innovation, science and research.

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[4] http://www.sherpa.ac.uk/romeo/about.php, viewed 6/6/2017

Our recommendation [4] is that a critical 2030 challenge for ISA must be to address transformation in knowledge infrastructures, lead the design of new infrastructures, and to refashion old ones. By 2030 Australia should aspire to be a world leader in the knowledge infrastructure which underpins the innovation, science and research systems.

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