

Submission to the Review of the National Innovation System

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1. Introduction / context

This submission is principally directed to the role of intellectual property (IP) in publicly funded research in Australia. In particular, this submission seeks to highlight that IP considerations are no less important in the areas traditionally identified as 'public good' than in commercial domains.

The innovation process requires a range of skills to be applied to be successful. While excellent science is of course necessary for innovation, it is certainly not sufficient. Australia could derive significantly greater value from its publicly funded research if greater attention was given throughout the NIS to ensuring that legal, IP and, where relevant, commercial, considerations are fully integrated into science planning and technology transfer processes from the earliest stages.

In particular, although it is well understood that promising technology will be unlikely to be adopted unless it meets certain scientific, technical and, where relevant, commercial, requirements for success, it is also a basic requirement for technology to be able to be adopted that there be no legal impediments to adoption. This requirement is often not adequately considered at a sufficiently early stage.

Thus for technology utilisation from publicly funded research to occur effectively, it is essential to ensure that suitable processes are in place to enable, to the extent possible:

- legal impediments to technology utilisation to be identified (such as third party patent rights or IP encumbrances) to facilitate appropriate decision making; and
- appropriate intellectual property protection to be sought when relevant to support technology transfer and to protect core areas of research.

Regardless of the outcome of the proposal to introduce a statutory experimental use exemption to patent infringement in Australia, it will remain essential that appropriate consideration be given to the issue of patent infringement, and the early identification of IP encumbrances, to ensure that ultimate technology utilisation (whether through 'commercialisation' or adoption of 'public good' results) can lawfully take place. In particular, as a steward of public resources, PFRAs must be able to justify their research investment decisions. Part of the justification should involve appropriate assessment of whether the results of the publicly funded research will lawfully be able to be utilised or transferred.

It is important to highlight that fully integrating IP and legal considerations into science planning and technology transfer does not represent an ideological

position to “protect” everything. Rather, IP and IP management processes should form part of a suite of tools available to assist PFRAs to achieve their objectives for the benefit of Australia, as explained in more detail below. In particular, the emphasis is not on IP “protection” per se. Rather, the emphasis is on ensuring that processes are in place to ensure that IP protection is not jeopardised before appropriate decision making processes can take place.

2. The Australian NIS and the global IP system

Because Australia’s research output represents only a small fraction of that of the rest of the world, IP rights can provide an important mechanism for providing Australian entities with leverage in the global innovation system. The manner in which IP can be used as a tool to achieve this purpose is discussed in more detail in section 3 below. This role of IP is becoming increasingly important as the number of patents and patent applications filed globally continues to grow exponentially.

Foreign players in the global innovation system do, and can be expected to continue, to take advantage of patent laws to obtain commercial advantage or to protect their core research areas from encroachment by others. This proposition includes traditional ‘public good’ areas, as attested to by the plethora of patents that already exist in public good domains.

Accordingly, a sensible risk management strategy for the Australian NIS must realistically take into account the impact of the global IP landscape.

The participation of Australian entities in the global IP system is not discretionary. By undertaking activities in the domain of science and technology, Australian entities are necessarily subject to the IP rights of third parties, including the IP rights of foreign entities. The Australian NIS must recognise this reality and ensure that the priorities of Australian PFRAs include an appropriate focus on the need to ensure that science, legal and intellectual property strategies form part of all project planning technology transfer activities from an early stage and are not isolated or ‘after the fact’ activities.

Although Australian entities do not have a choice as to whether to participate in the IP system, they do have control over the nature of their participation. In particular, Australian entities have control over the manner in which they manage their own IP, and particularly on the manner in which early stage identification of inventions and the decision-making processes they adopt to develop selected inventions into valuable IP rights.

One of the critical problems for Australia is to articulate principles that define how Australia’s NIS is to operate effectively within the global innovation system, given that Australia’s research output represents only a small fraction of that of the rest of the world. The creation and maintenance of strategic IP portfolios can provide an important tool that Australian entities can use to obtain appropriate leverage in a global system where Australia is a relatively small player.

3. Use of intellectual property to support objectives of PFRAs for the benefit of Australia

IP can be a key tool in assisting PFRAs to achieve their objectives and thereby deliver benefit to Australia, in at least the following ways.

(a) Facilitate investment in technology development and adoption

IP can provide exclusive rights which can be used to facilitate investment in technology development and adoption.

Practical utilisation of the results of scientific research typically requires a significant level of further investment. Organisations or agencies considering investing in the further development of a technology may undertake significant financial risk and accordingly will generally require some assurance that the technology cannot simply be copied by their competitors. IP (mainly patents) can provide limited protection from competition thereby encouraging investment in technology development and innovation.

While this principle is generally well understood in relation to commercially focused areas, it is also important to note that the role of IP in facilitating investment can be important in traditional ‘public good’ domains also, as elaborated below.

(i) Enabling technologies for public good

Where a public benefit is sought to be derived from broadly disseminating a freely published best practice (for example relating to land or water management), it may be necessary for users to have access to enabling technologies or services. In the absence of an existing market for such enabling technologies or services, the primary technology (eg. the freely published best practice) may not be able to be deployed and thus will fail to be adopted. IP rights may provide a mechanism to encourage investment in, and hence availability of, the required enabling technologies or services.

One example of an enabling technology required to support a public good outcome is the case where a freely published irrigation management practice requires a suitable soil moisture detector to enable the practice to be adopted.

(ii) Science investment in public good projects

Strategic IP portfolios can provide an important contribution to the rationale for undertaking further science investment in an area (including traditional ‘public good’ areas) by providing comfort that:

- there is a basis for encouraging investment in downstream development and adoption of the technology; and
- the likelihood of securing freedom to operate may be enhanced through the defensive aspects of IP protection, namely the potential availability of the IP as currency to trade for access to third party IP (discussed further in the

next section) and the prior art effect of the IP to limit the capacity of third parties to secure blocking IP positions.

The availability of IP as a tool to support an investment strategy in a public good (or any) science project of course needs to be considered together with appropriate assessments of the third party IP landscape and other aspects of science planning. (It is not suggested that IP protection can meaningfully pursued as a strategy in isolation.)

(b) Tool to assist obtaining freedom to operate – Currency for cross-licensing

IP rights can be used by Australian PFRAAs as a currency to trade for access to the IP rights of third parties. This strategy can assist PFRAAs and their partners as part of a coordinated strategy of gaining comfort that they have freedom to operate.

Although IP protection for a technology does not provide a positive right to use the technology, IP portfolios are becoming increasingly important as a currency to trade for access to the IP rights of others through cross-licensing transactions.

In cases where access to the IP rights of others is necessary for technology adoption, those rights may not be available at all in the absence of the bargaining position provided by an IP position, or the necessary rights if available may cost so much as to destroy or diminish the viability of the envisaged technology adoption pathway.

The option of protecting IP for use as currency to assist obtaining freedom to operate is particularly pertinent where breakthrough or platform technologies are created. Such platform technologies will form a basis for further innovation by others, who can then be expected to obtain IP protection for their innovations. Accordingly, there is a real risk that a PFRA (or its technology transfer partners) could be locked out of using (including in research) key aspects of their own platform technologies due to the IP protection of others. This risk may be significantly ameliorated if the PFRA (or its partners) can manage access to the platform technology through their own IP rights.

The need to use IP defensively to assist securing a competitive position in the global research landscape is also necessary to ensure that the best new researchers can be attracted to, and retained in, Australian institutions and corporations.

The defensive deployment of an arsenal of IP rights is emerging as a defining aspect of modern technology development. Australian PFRAAs are well placed to develop strategically positioned IP portfolios because of their proven ability to work at the leading edge of scientific development in diverse areas.

(c) Enhanced attractiveness as science collaborator

IP can enhance a PFRA's attractiveness to collaborators in multiple ways. IP portfolios can enhance attractiveness directly through enabling access to the agency's IP rights and associated know-how.

Demonstrating leading IP management practices and IP management infrastructure can also enhance an agency's attractiveness as a collaborator, particularly where collaborators wish to bring their own IP and confidential information to collaborative ventures.

(d) Selective technology transfer

IP rights can permit PFRAs to selectively address distinct technology transfer pathways. For example, subject to relevant free trade obligations, a licence to Australian entities could be provided on a different basis to that of foreign entities. Different technology transfer approaches can be taken in different fields (including different exclusivity regimes, and different royalty regimes – including royalty-free where appropriate).

(e) Impose conditions on technology transfer for the benefit of Australia

IP rights can permit PFRAs to impose conditions on technology transfer, including to ensure benefit to Australia from a transaction or to lower the agency's risk profile in a transaction.

For example, PFRAs have the option of making access to their IP conditional on a given level of investment in Australia or the establishment of facilities in Australia.

IP can provide a basis for imposing conditions in an open source or open access regime – for example, if the conditions are not complied with, the licence may be withdrawn. An example is a condition that improvements to open source or open access technology be licensed back to the relevant community.

It is important to note in the context of seeking to advance the national interest that if developments are simply published (ie. made freely available without IP protection in place to control usage) then it is more likely that the results will be captured for the benefit of non-Australian industry than Australian industry for the simple reason that there are more of the former than the latter. This result can contribute to the freedom to operate concerns outlined in section 3(b) above.

(f) IP protection does not prevent use of sharing models

Seeking and obtaining IP protection for a development is not inconsistent with using appropriate sharing models, such as the following:

- knowledge diffusion;
- grant of non-exclusive licences;
- transfer of tacit knowledge through collaboration or contract research;
- use of open source or open access protocols.

In each of these examples, the use of appropriate licensing mechanisms allows each of these knowledge sharing models to be adopted where IP protection has been sought or obtained.

It is often not possible to know in advance of a project the most appropriate balance to be struck between knowledge that should be protected through IP and knowledge that should be diffused or transferred through other mechanisms. Whereas obtaining IP protection is not inconsistent with sharing models, release of information through such sharing models prior to assessment of the best mode of achieving adoption will generally preclude IP protection from being obtained.

A critical aspect of the relationship between IP protection and these knowledge sharing models is that IP protection allows an owner to apply significant *selectivity* to the content being shared. For example:

- In the case of open source software protocols, it is generally recognised that this tool is best used to provide free access to the *interfacing* aspects of a technology platform. This freedom can promote adoption of a technology by encouraging others to interface with the platform. This practice in turn promotes innovation using the common interface protocol. The key aspect of deriving value from open source approaches is in being selective concerning the innovations which are kept open and those which are protected for the reasons set out above. IP protection permits a selective approach to be taken to components of an innovation which are to be released as open source and those which are not.
- Knowledge diffusion is not inconsistent with IP protection. As outlined above, in order for a practice or procedure to be adopted, enabling products or services may need to be provided, for which IP protection may be required to encourage investment. Again, the existence of IP protection allows an IP owner to be selective concerning the aspects of the knowledge which are to be freely published and those which are to be kept proprietary for the purpose of developing enabling technology components.
- IP protection is not inconsistent with the grant of non-exclusive licences to permit wide dissemination of information and wide adoption of a technology. IP protection again permits selectivity in the content of the non-exclusive licences. Further, IP protection permits the imposition of conditions which may in principle be tailored to achieve a desired outcome for the national benefit. In the absence of IP protection, there would be no basis to impose such (or any) conditions.

4. Intellectual property and external engagement policy considerations for PFRAs

(a) Preserving capacity to obtain IP protection pending decision-making process

As explained above, the roles for IP as a tool to assist PFRAs do not mandate that IP protection be sought for every development. Rather, the roles for IP recognise the potential value of seeking IP protection

where appropriate. Accordingly, a key issue is to ensure that IP protection is not jeopardised pending conclusion of a suitable decision-making process concerning the disposition of the development or invention, including whether or not to seek IP protection.

In practice this principle requires the adoption of consistent processes for assessing the disposition of new developments, limitations on disclosure and commercial dealing with developments until the disposition decision-making process is complete (to ensure capacity to obtain IP protection is not prematurely jeopardised) and an approach to contracting with external parties consistent with this principle (further discussed below). There may also be cases where it is appropriate for reasons of speed or other overriding considerations for a category of information to be approved for disclosure in advance to ensure that the suggested processes do not impose inappropriate delays.

(b) Approach to external engagements

(i) Background – principled negotiation?

The book ‘Getting to yes’ by Fisher & Ury, from the Harvard Negotiation Project, sets out criteria for a good negotiation:

- It should produce a wise agreement if agreement is possible (ie. ‘an agreement which meets the legitimate interests of each side to the extent possible, resolves conflicting interests fairly, is durable, and takes community interests into account’)
- It should be efficient
- It should improve or at least not damage the relationship between the parties

The book promotes an approach known as ‘principled negotiation’, which is contrasted with ‘positional bargaining’ as follows (from ‘Getting to yes’)

- Positional bargaining rarely produces wise agreements, is rarely efficient and often endangers relationships. Where there are many parties, positional bargaining is even worse.
- ‘Being nice is no answer’: ‘...pursuing a soft and friendly form of positional bargaining makes you vulnerable to someone who plays a hard game of positional bargaining. In positional bargaining, a hard game dominates a soft one. If the hard bargainer insists on concessions and makes threats while the soft bargainer yields in order to avoid confrontation and insists on agreement, the negotiating game is biased in favour of the hard player. The process will produce an agreement, although it may not be a wise one. It will certainly be more favourable to the hard positional bargainer than to the soft one. If your

response to sustained, hard positional bargaining is soft positional bargaining, you will probably lose your shirt.'

- The book summarises four basic elements of principled negotiation as follows:
 - People: separate the people from the problem
 - Interests: focus on interests not positions
 - Options: generate a variety of possibilities before deciding what to do
 - Criteria: insist that the result will be based on some objective standard

(ii) Principled negotiation in IP matters

It is submitted that many of the difficulties which arise in negotiations where IP is cited as an impediment are in fact symptoms of the following real underlying causes:

- Many participants in the NIS do not adequately understand IP, IP management or the role of IP in the NIS. Through lack of understanding they are unable to participate in principled negotiation because they do not adequately understand each party's (including their own) real interests in respect of the IP being negotiated.
- Many government departments exemplify the above point by seeking to adopt positions in IP negotiations (for example in research contracts) that are identical to the positions they take in general procurement contracts. The reality is that the IP position in each transaction typically needs to be assessed on a case by case basis and some difference between transactions is to be expected by the nature of the subject matter. Further, adequate time needs to be allowed to undertake appropriate assessment of the IP landscape including existing IP encumbrances.
- Many participants in the NIS inappropriately assume that once the science or technical component of a transaction has been agreed that IP issues should not be raised to slow down a transaction at the end. This circumstance in reality represents a failure to appreciate the importance of early engagement with relevant professionals as outlined above (wherein early engagement could have addressed relevant issues earlier in the process) and also fails to appreciate the true risk profile represented by engaging in conduct (including research and transactions) without adequate consideration being given to its lawfulness.
- Many of the above challenges need to be addressed through a change of culture or 'mindset', which in turn requires that priority be given to suitable educational programs.

- Notwithstanding the above comments, it will still be useful for agencies to develop suitable precedent agreements to be used as a starting point in common IP structuring arrangements. However, participants will need to recognise that agreements will need to be tailored, in conjunction with appropriate professional advice, to the particular circumstances of each transaction.

In order to tailor agreements to meet the parties' interests, I have found that it is helpful to consider contractually regulating the exercise of IP component rights, rather than focusing solely on IP ownership. In particular, this approach provides a tool for moving beyond positional bargaining in IP negotiations (and particularly for moving beyond IP ownership stalemates). The main categories of IP component rights (or obligations) that I recommend be considered include:

- IP management (including the right to file, prosecution rights and the right to select and appoint patent attorneys)
- Exploitation rights
- Benefit sharing
- IP enforcement / dispute settlement rights
- Patent cost obligations

In external engagements PFRAs need to ensure that they retain appropriate freedom to operate in their research domains. This provides a basis for their ongoing viability and is essential to maintain and develop expertise in chosen fields.

PFRAs need to carefully balance the rights that must be provided to counterparties in external engagements to permit achievement of the objective of the engagement, with the level of rights required to continue to work in the field in the future (including through external engagements with different counterparties or in fields outside that of the engagement in question).

Because broad patent rights may come out of a project that initially had a narrow objective, great care needs to be taken in addressing the scope of rights provided. This issue is particularly relevant where fundamental scientific principles are used to solve particular problems. If the rights are not appropriately allocated, then the PFRA may be inappropriately excluded from using or transferring to others important components of a technology.

I would be pleased to discuss any aspect of this submission with the NIS review panel.