Submission to the University Research Commercialisation consultation paper
National Committee for Brain and Mind

The National Committee for Brain and Mind welcomes the opportunity to comment on the University Research Commercialisation Consultation paper. I would be happy to discuss any issues rained in this submission. Please contact the Australian Academy of Science via the National Committees for Science office (nc@science.org.au).

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1. Mission-driven research

a) Are Missions the appropriate priority-setting mechanism? Should they be accompanied by smaller, targeted Challenges?

Targeted missions can be a productive mechanism, provided they do not detract from other areas of research. Australia's current low level of funding as a proportion of GDP relative to other OECD countries means that diversion of funds to targeted missions is likely to starve other areas of research that could also be productive and are already of world standard (according to ERA rankings). One clear lesson from the history of science is that major breakthroughs often come as unexpected outcomes from curiosity driven research activities. It is important to maintain that possibility by supporting high-quality basic research.

An overarching mission, such as the seeding of a neurotechnology industry in Australia, requires targeted steps to ensure the background infrastructure is in place to achieve a successful outcome. This background infrastructure must include human capital, research infrastructure, a solid basic or fundamental research base for the initiative, and industry engagement. One of the crucial steps would be to include support funding to allow Australians to engage in international initiatives to build mission momentum. For example, the Australian Brain Alliance (ABA) initiative aims to provide a coordinated effort in the Brain and Mind sciences to facilitate the seeding of a neurotechnology industry. The ABA is also a founding member of the International Brain Initiative designed to foster collaboration between the separate nation-based initiatives. This collaboration can expedite research missions but depends on government support to maintain a seat at the table.

b) What criteria should be used to select Missions?

Missions must build on local capability. A broader mission may include the acquisition of human capital as a sub-goal. It should be driven by societal needs (e.g. stable energy or water supply), both medium and long-term (where long-term is 30-50 years), but the best of Australia's research and innovation resources must be recruited to the task.

The choice of missions should arise from a collaborative conversation between researchers, industry, government, and community.

c) Is Australian research sufficiently linked to demand? Where are the opportunities to link supply to demand?

Australian research must meet current demands, in addition to meeting a quality criterion, to be funded. The question is, what demands? Australian research faces multiple conflicting demands: individual, institutional, national and international. Australian researchers need to prioritise which are most achievable. The diversity of efforts allows for appropriate contributions covering the range from fundamental research to mission-driven targeted projects to translation in the diverse range of applied settings. The international standards define research excellence and set quality levels that academics must meet to ensure continued employment and retention of their expertise in the research and innovation system. Criteria that deviate from these expectations need to provide support mechanisms that will ensure a productive career for the researchers and the desired mission goals to retain their contribution to the efforts.

d) How can university researchers identify this demand?

University researchers already respond to important research questions, consumer engagement and industry needs. However, researchers find it extremely difficult to obtain the funding to investigate these questions. This is particularly the case for early and mid-career researchers who are expected to provide the expertise that takes many years to obtain while being employed on very short-term casual contracts. A more predictable funding base, either within universities and/or industry would allow investigation of significant longer-term projects.

2. Stage-gated Scheme design

a) Is a stage-gated model suited for the purpose of the Scheme?

This can be a viable scheme, provided stages 1 and 2 do not impose a very restrictive bottleneck. Many ideas are worthy of investigation and viable if initial support is available, so a restrictive selection is likely to be counterproductive at these early stages. Australia currently has many patented ideas that have no funding to progress them but have the potential to generate income that could quickly repay the initial support to bring them to market.

b) What is the appetite from industry and private investors to participate in such a Scheme?

Personal experiences within the committee have shown that private investors are usually looking for more specific investment returns than it is often possible to guarantee at early R&D stages. This means government support is needed, but one method of seeding such a pool of funds could be an industry R&D scheme that must be contributed to by any industry that wishes to claim a research-based tax. It also used to be that Universities had access to small ARC grant funds, or internal research block grant funds, that could seed initial stages of research more speculatively. The current drawdown of university (and ARC) funding means that these avenues of support no longer exist even though they allowed people who were already employed to initiative larger-scale research programmes on a regular basis.

c) How should any stage-gating process be defined to ensure any additional incentive is maximised?

To be attractive, the likelihood of successful access to funding support must be high in the early stages. That should also be the case for projects that show initial promise. The means to progress through the stages should be limited by results more than by the limited availability of supporting funds.

d) How should projects be selected?

The initial selection could be based on expert peer-review deciding the project is viable. Selection for later stages requires a different process as outlined in answer to the next question.

e) How should the success of projects be measured?

This depends on the stage. One method is to require a Patent, or a successful contribution to policy in addition to a demonstration of viability, to progress from stage 1 to stage 2. These criteria would be too restrictive alone, but the intent is to demonstrate viability with some external recognition to proceed to the next stage of support. Progression to stage 3 would require identifying an industry partner or a prospect of a very high return on investment so that a spin-off company could become the industry partner.

3. Incentives for Participation

a. What broader incentives influencing the business and university sectors may influence their participation in a Scheme?

A viable path to research commercialisation is already of interest to many researchers. It doesn't happen as often as we would like because wide-ranging industry support for such innovation does not exist in this country. One way to incentivise this would be to tax industry on turnover to provide a pool of funds to support R&D and commercialisation. Industry could draw on those funds to the extent that they engage in local research endeavours with universities.

One complication for such a combined pool of support funding is the decision by some universities/researchers to avoid funding from some industries on ethical grounds, and this would require further discussion.

It is important not to provide perverse incentives that could detract from the university sector's international reputation, which is necessary to support the internationally-driven higher education market universities currently depend. An active culture of research collaboration and commercialisation could offset this dependence.

b. What would motivate businesses, universities or private investors to invest in this Scheme?

Both sectors would be motivated by a return on successful investment.

c. Aside from co-funding, should universities or businesses have any additional requirements for participation?

If this is to be a national initiative, it seems reasonable to expect business to support the scheme financially. They may benefit from those supporting funds by engaging in appropriate research. Universities already try to find partners for such research and do not require any additional incentive. The problem for universities is a lack of partners rather than a lack of willingness to participate.

4. Industry-university collaboration

a) How may the Scheme incentivise or support better industry-university collaboration?

A pool of funding for such collaborations may be sufficient to initiate the process.

b) Would an Industry PhD program help improve collaboration outcomes?

Yes. In the past, cadetships in industry used to be a standard part of the higher education training system. They provided industry-ready graduates with advanced and current training. This element is missing from the current higher education system, and both universities and industry are poorer for its absence.

PhD scholarships are one stage at which this could be remedied, but cadetships at earlier levels and opportunities for researchers to embed within industry, even if temporarily, would also be beneficial.

c) Are there skills gaps in academia or business that inhibit collaboration or commercialisation?

The primary gap seems to be willing industry partners and funding to support such partnerships.

d) How can we increase collaboration between university researchers and industry, particularly amongst SMEs?

Workloads in universities are very high, and industry is under great duress post COVID. Some means of providing support for the time required to make such schemes viable is necessary to improve the current situation.

5. Governance arrangements

a) What stakeholders should be involved, and where, in the governance arrangement?

Both Universities and Industry should be involved in selecting projects to support. These should advise the government on viable larger missions, and in partnership, targeted missions could be chosen. However, the best return will flow by not being too restrictive at the early stages of the process.

b) What type of Governance arrangement is best suited for the Scheme?

Several models could work but they must be transparent, place an emphasis on longer term goals and not be subject to the decision of one individual.

c) How should projects be selected and managed?

See next answer.

d) How can the Governance arrangement minimise administrative burden whilst also minimising risk?

The pathway to commercialisation is a high-risk pathway. Trying to minimise risks early in the process will inevitably mean that some good ideas are not developed, which should be avoided. At this initial stage, assessment should be light touch, only excluding projects that appear to be unviable. Peer review can determine this.

Risk assessment and stringent selection should come at the second stage when the viability of ideas has been demonstrated, and a sensible business case can be developed. At that point, an assessment of the quality of the business case is an appropriate method for determining which projects to support.