COOPERATIVE RESEARCH CENTRES

ASSOCIATION

Submission to the 2014 CRC Programme Review

November 2014

The Cooperative Research Centres Association represents all Australian Cooperative Research Centres (CRCs). In addition, the Association has universities, companies and research groups as Affiliate and Associate Members.

Membership of the Association is optional for CRCs. The Association promotes best practice in research and translation; student supervision and contract management.

Acknowledgments:

The CRC Association has consulted widely in developing this submission and thanks the many people that have provided examples, input and comment. In particular, Duncan Buckeridge of Monash University provided detailed input on improving the CRC Impact Tool. Jason Watson, partner at FAL Lawyers provided detailed advice on the changes recommended in relation to the legal issues. Their input was invaluable.

For further inquiries contact:

Dr. Tony Peacock

Chief Executive Officer

CRC Association

1/10 Bourke Street BARTON ACT 2600

02 6273 0624
www.crca.asn.au

CONTENTS

Executive Summary:

The Cooperative Research Centres programme is an Australian success story. The outcomes for the nation are out of all proportion to the size of the programme. While representing less than 1.6% of the Commonwealth innovation budget, the CRC programme drives a further $4 for each programme dollar (Figure 3). Moreover, that expenditure is squarely aimed at what is now recognised as vitally important to Australia's future—creating research impact.

CRCs concentrate on research translation, commercialisation, industry transformation and creating industry-ready postgraduates. In 2014 there is widespread national concern that these issues are critical. However, that consensus is relatively recent. CRCs have almost 25 years of history in our concentration on research impact. It is no coincidence that CRCs are highly prominent in any measure of impact, because they have been designed to create impact and over time they have become better at doing so.

The CRC Association represents all CRCs and a number of Associate and Affiliate members. The Association is extremely supportive of the drive for greater translation and commercialisation of research evident in the current CRC Review as well as in general Australian Government directions. We believe the current consensus amongst government, business, universities and the community in general represents a unique opportunity to further improve the CRC programme. We note the current review is consistent with many other government initiatives.

The CRC Association propose a number of changes to the CRC programme which aim to:

- Improve the "industry-friendliness" of the programme;
- Increase the emphasis on performance over compliance within the programme; and
- Embed industry leadership and excellence as the major drivers for a Cooperative Research Centre.

Our proposed changes are set out in the accompanying recommendations and detailed reasoning set out in our submission.

If adopted, the CRC Association believes our recommendations will attract even greater industry participation and lead to further vital research impact for Australians, our economy and our environment.

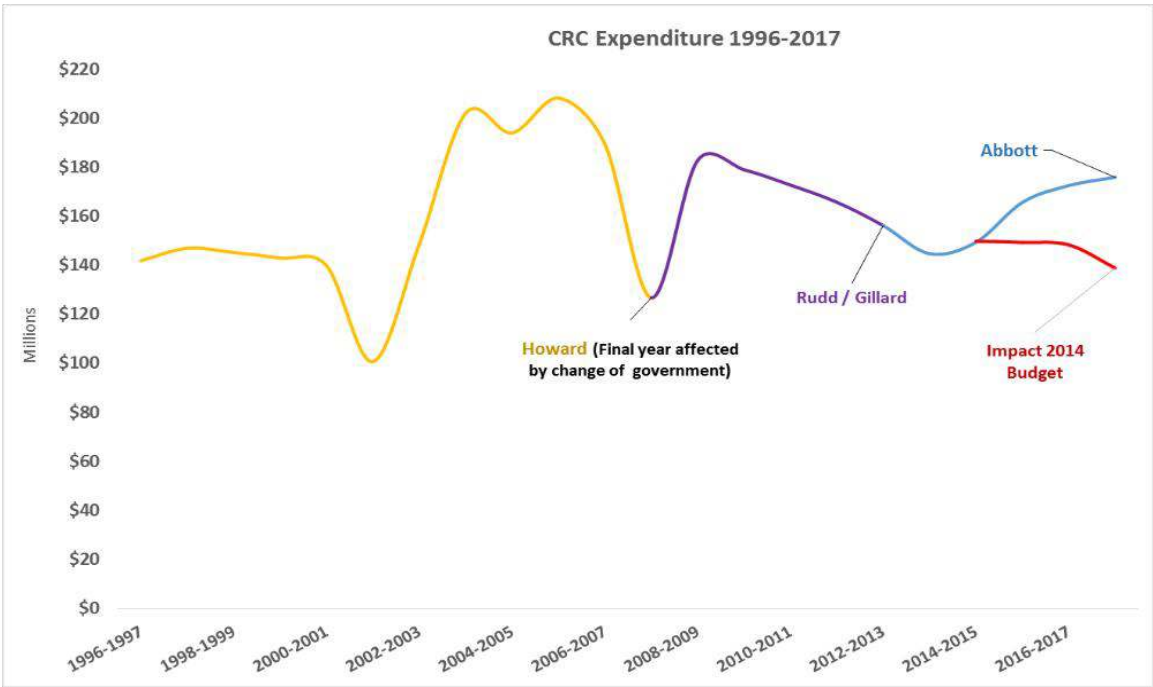


Figure 1: While real resources to the CRC programme have dropped, research impact has been maintained as show by studies in 2003, 2005, 2012. The decreasing resources have had a major effect on the number of CRCs in Australia and the 2014 Budget (shown in red) will further erode long-term collaborative research conducted through CRCs.

Recommendations and Anticipated Outcomes:

RECOMMENDATION	OUTCOME
Introduce a "concept paper" first phase of bidding, that may only be presented by end-users.	Increase the level of interest and decrease initial cost to end-users. The CRC Committee will be able to give more feedback that can be incorporated into a bid. End-users will feel greater ownership.
Priorities for Government investment continue but flow from the Commonwealth Science Council.	The CRC programme will address an overall strategic investment plan for the nation.
That an annual investment cycle be retained.	Maintain industry momentum and interest in bids
Selection of CRCs should be based on merit and the government's published priorities. Age of the CRC should be removed as a selection criteria.	Only the best CRCs would be funded, increasing the overall output of the CRC Programme.
The CRC programme provide a maximum of 50% , 40%, 30% and 20% of total resources to any CRC in its 1st,2nd, 3rd, 4th or subsequent terms.	End-users take over financial responsibility for "their" CRC over time. The Commonwealth funds will be utilised to build long-term collaboration.
Empower the CRC Committee to negotiate exit from the programme with individual CRCs.	The legacy of a CRC will be better consolidated.
Government departments other than the Department of Industry should be encouraged to shape, drive and fund CRCs. The CRC programme should be used to drive collaboration to meet government agendas.	Major government policy initiatives will be improved in their delivery and efficiency if supported by a CRC. Funding support already happens in the case of DMTC and others, this will ensure greater "ownership" of CRC outcomes across government.
The CRC Committee should have the power to put a CRC under "special attention" if it is not performing.	CRCs that are not performing at a high level will be exited from the programme.
Funds should be reserved within the CRC programme to support the inclusion of SMEs specifically to commercialise outstanding CRC discoveries and developments.	SME involvement in the CRC programme will be boosted, in line with SMEs capacity to participate and be supported appropriately.

Terms of Reference A: Is the CRC programme the right vehicle for achieving the Government's priorities for applied science and research? If not, what sort of programme would be more effective?

Question 1.0: Does the CRC programme effectively encourage and facilitate industry and the research sector to work together?

The Cooperative Research Centres programme represents approximately 1.5% (See Figure 2) of the Commonwealth's spending on innovation (2014 Budget papers), down from over 3% in the past (Mercer and Stocker, 1998).

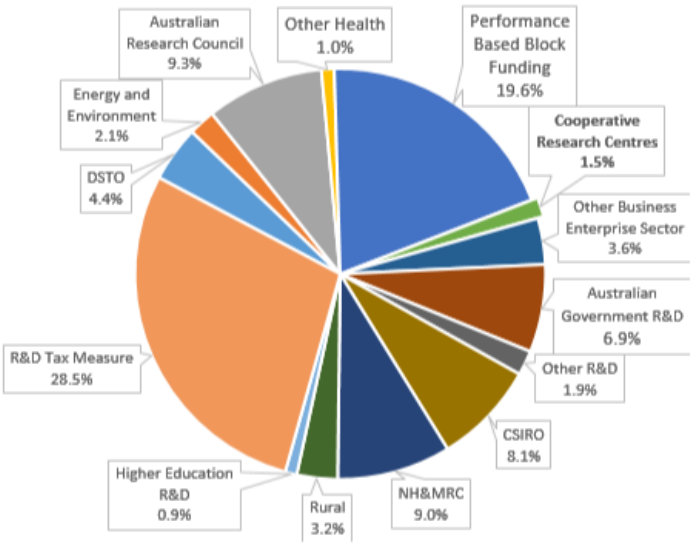


Figure 2: Commonwealth's spending on Innovation. The CRC Programme represents less than 2% of the total spend on innovation.

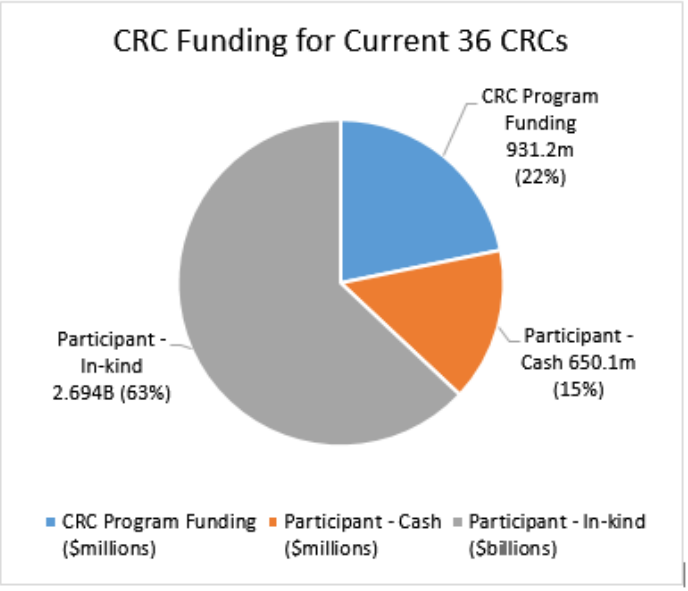


Figure 3: For each dollar the CRC programme invests, about $4 in participant cash and in-kind is invested. Note: these figures exclude DMTC.

The Cooperative Research Centres Association (CRC Association) submits that the CRC programme should be seen as one of a suite of programmes addressing the Government's priorities for applied science and research.

Seen in this light, the CRC programme is clearly performing an outstanding job in achieving the Government's priorities, which will be demonstrated throughout this paper.

The extent to which the CRC programme encourages industry and the research sector to work together is shown in Figure 3. Each CRC programme dollar drives a further four dollars.

Based on current figures from the CRC Directory and the Department of Industry, the CRC programme investment of $931.2 million attracts a further $659.1 million in participant cash and $2694.0 million in participant in-kind investment.

The Commonwealth CRC programme therefore comprises 21.5% of the $4275.3 million in total investment in current CRCs. This is an extremely high leverage of the Commonwealth's investment and an exceptionally effective way to focus national resources from business, State governments and other sources on major national challenges. It provides excellent evidence that the CRC programme does indeed facilitate industry and the research sector to work together.

There are two points worthy of note in relation to the investment of participant cash and in-kind into CRCs. Firstly, the level of this investment has grown steadily in the almost 25-year life of the CRC programme; and, secondly, it is a very real and meaningful type of investment. (A discussion is included at Appendix A)

“In-kind” contributions are often discounted or dismissed. However, in the CRC programme the in-kind contribution can be far more valuable than cash. It provides access to human capital, knowledge and expensive infrastructure which would otherwise be inaccessible. In-kind contributions are audited and reported upon.

It is the experience of many CRCs that they access extraordinary levels of infrastructure and people via relatively small cash investments.

For example the CRC for Advanced Composite Structures (CRC-ACS) relies heavily on its in-kind contribution. Of the total $65m CRC, $40m is in-kind ($25.5m staff in-kind and $13.8 non-staff), and $24.6m is cash ($10.6m in cash participants and $14m from Commonwealth funding). This has given CRC-ACS access to research equipment and facilities that would otherwise be out of the range of the CRC.

Developing major new engineering and manufacturing in the aerospace industry would be well beyond the capacity of any Australian institution without a deep cooperative partnership with major aerospace players.

NASA and the CRC-ACS recently collaborated on a helicopter crash test. NASA and CRC-ACS developed and installed three energy absorbing composite material concepts under the passenger floor. This is on the back of research the CRC-ACS conducted into Design Capability for Crashworthy Helicopters.

We submit that if Australia seeks to be involved in major international industrial collaborations of this type, the CRC programme is the ideal way to do so.

CRCs should be enhanced to make this powerful collaborative approach to R&D even more fit for purpose for Australia.

We should keep CRCs servicing whole of government programmes, covering industry, environment and social outcomes for Australia—the impact is a way of focusing the economic dimension.

The lesson evident from experience around the world is that policy consistency achieves results. The German Fraunhofer and US. Industry/ University Cooperative Research Centres (CRCs) have higher leveraging rates than other programmes (except the Australian CRCs, which fall between the two). These three programmes are the longest running with four, three and two decades of experience respectively. Trust and confidence are major factors in encouraging both public and private industries to collaborate on R&D. The Improvement in industry participation in CRCs from 14% in the first round (O’Kane, 2008) to well over *double* that in recent rounds.

Changes to policy tend to make industry cautious about participation. For example, the UK Catapult Centres merely *hope* to reach industry participation levels of the Australian CRCs after a decade of operation—they are currently running at less than half the rate, making them relatively much more expensive for government than the CRC programme.

Large scale industry focused multi-party collaboration is better managed through CRCs than other funding grants, which are often smaller and bilateral.

A discussion paper comparing a number of innovation schemes from around the world with the CRC programme is available at appendix A.

Question 1.1: Solving problems for business.

Case Study: CRC Mining.

Draglines are the workhorse of open-cut mines, moving 13 million cubic scrunch metres of dirt a year, uncovering $75 million worth of coal. The conventional rigging system limits the flexibility of the dragline operation and makes bucket control difficult – it had not changed design in 100 years.

CRC Mining's forerunner (the CMTE) worked with BHP Billiton Mitsubishi Alliance (BMA) to replace the conventional system with a novel rigging and control system, Universal Dragline and Dump (UDD), which significantly increased dragline payloads and productivity.

The UDD system was one of 25 key technologies that were identified in the 2005 Allen Consulting Group's report, *"The Economic Impact of Cooperative Research Centres in Australia"* (Allen Consulting Group, 2005). Each of these technologies passed four stringent criteria for inclusion, viz:-

- The benefit was clearly *attributable* to a CRC;
- Would *not have occurred* without the CRC;
- Benefits were fully *realised* or had commenced realisation prior to 2010; and
- The benefits were *quantified* and *verified.*

The Allen Study showed that the UDD system was realising net benefits of $8 million per annum. Together the 25 technologies were delivering a benefit whereby for every $1 of Commonwealth Government expenditure on the CRC programme, GDP is cumulatively $0.60 higher than it would have been had that $1 instead been allocated to general Government expenditure.

The 2005 Allen Study, which was commissioned by the Cooperative Research Centres Association in 2004, shows a serious commitment to evaluating the impact of the CRC programme. Taken together with the 2006 and 2012 impact studies (these funded by the CRC programme), it is clear that the Cooperative Research Centres have been measuring research impact long before it has become a "mainstream" research issue in Australia.

"The CRC provides the ideal mechanism for addressing some of the critical gaps in delivery of novel technology to drive the carbon footprint of the Australian built environment," Bob Scott, Building and Construction Applications Manager, BlueScope, Participant in the CRC for Low Carbon Living.

Question 1.2: Help industries adapt to change.

The transformative power of CRCs is particularly apparent in the environmental sector. Environmental work is often characterised by fragmentation and sometimes by conflict. Over the years, many CRCs have been able to change the culture of an environmental area to vastly improve focus, productivity and progress. By way of example these changes can be seen in relation to water management, bushfire management and that of invasive animals.

In each of these fundamental areas for the environment, CRCs have brought together fragmented groups to make sustainable progress. Often State governments have a research responsibility in areas such as water, bushfire and invasive animals but are simply too small to achieve the necessary critical mass. CRCs have made outstanding contributions in this manner.

It is worth noting that in each of these three example areas, Australia cannot rely on the rest of the world to undertake research that we can simply adopt here. The unique nature of our environment demands that Australia establishes and maintains expertise. Indeed, in each of the three examples cited in this section, the CRCs themselves have become world-leading organisations in their respective fields.

The profound changes of the past several decades in the use of Australia's scarce water resources have been well supported, and in some cases instigated, by a number of CRCs.

The CRC model has served Australia exceptionally well in this regard. The end-users involved in a CRC can have very different or even competing interests. Through involvement in a CRC, the focus of attention can shift from competing interests to making genuine progress in the sector. For example, water regulations and water users were both involved in eWater CRC and its predecessors.

Changes in the governance and management of water in the Murray-Darling Basin initiated by the Howard Government were highly supported, in particular, by Professor Peter Cullen's CRC for Fresh Water Ecology.

CRCs are end-user led organisations. But the end-users may have different goals and objectives. The "broad church" nature of a CRC can significantly shift the focus in a sector from *conflict* to *resolution*.

For example, at first thought, RSPCA may not seem an obvious participant for the Pork CRC. However, with the changing consumer sentiment in relations to animal welfare, the RSPCA has a very real "end-user" role. As the Industry makes a major transition away from dry sow stalls by 2017, the involvement of the RSPCA has helped facilitate the change. The CRC for Contamination Assessment and Remediation of the Environment (CRC CARE) allows a forum in which State environmental protection agencies can come together with business seeking solutions to environmental contamination.

The idea of being a "Cooperative" Research Centre was quite intentional in the origin for the programme by Professor Ralph Slatyer. In a "cooperative" arrangement, all participants achieve some of their goals through their participation. It is this factor that has encouraged research organisations to put their own resources into CRCs. It is important to maintain end-user leadership but not total control, in the view of the CRC Association, to extract the best outcomes.

Question 1.3: Improve the Economic Outcomes of the Nation?

The 2012 Allen Consulting Group study of the CRC programme found that it has generated a benefit to the community that exceeds its cost (Commonwealth investment) by a factor of 3:1. The programme has generated net economic benefits of $7.5 billion—a contribution of approximately 0.03 percentage points or $278m per annum—to GDP. The CRC programme has also had significant environmental and social impacts.

The economic benefits to Australia of the CRC programme are indisputable, having being the subject of three major impact studies. The Allen Consulting Group (2003), Insight Economics (2006) and the Allen Consulting Group again (2012) have each demonstrated the positive impact of the programme.

It is important to note that the methodology of these three studies has been very conservative. The CRC Association initiated the first of three studies, seeking advice from the very highest levels of the Treasury Department on credible methodology. The Department of Industry took over management of the subsequent two studies and ensured that the central agencies of Finance and Treasury were involved in the oversight of the studies.

The CRC Association wishes to point out the level of rigour of impact studies of the CRC programme. Each has used the Monash University model of the economy to test the programme's impact on the whole economy—we know of no other programme tested in this way.

Question 2.0: How should the objectives of the programme be articulated so as to best convey the Government's priorities for applied science and research?

The CRC Association is supportive of Government priorities for research. The Association believes that the best step forward in improving the articulation of priorities is for the Government to adopt the proposals of Australia's Chief Scientist, Professor Ian Chubb AC, and have a whole-of-government set of science and research priorities.

Ideally, the mix of CRCs existing at any one time would be developed from both "bottom up" demand from industry and "top down" national priorities.

The process for developing and implementing priorities for the CRC programme is very important to get right. If poorly implemented, the priority setting process risks disenfranchising industries or researchers that believe they are correctly addressing the competitive selection criteria for a CRC.

"Being a PhD student in the Photonics CRC gave me the opportunity to see how engagement with industry could shape research directions. The CRC created the critical mass of top quality researchers needed to establish recognised international leadership in the field of photonics even at a time of accelerating global investment. This experience shaped my research career by showing me how to use challenging industry problems as the basis for inspiring bold fundamental research with a pathway to outcomes.

My research team's current involvement in the Deep Exploration Technology CRC shows me the CRC programme is still ensuring Australian industry can compete through leading edge technology,"
Professor Tanya Monro FAA FTSE ARC Georgina Sweet Laureate.

The CRC Association suggests the following principles for setting priorities for the CRC programme:-

(1) The Priorities should be developed wherever possible as whole-of-government priorities and considered by the Commonwealth Science Council.
(2) As much time as possible should be provided for sectors to respond to priorities, in the order of 12 - 24 months.
(3) The Government should encourage and facilitate government departments to become fully involved in a priority CRC proposal. The CRC should not be considered as simply an Industry Department initiative, with the National Science Technology and Research Council ensuring coordination between programmes.
(4) The CRC Committee should be responsible for sourcing and recommending a priority CRC in line with its normal processes.
(5) Additional funding resources should be provided when priorities are named.

Further, the CRC Association recommends that if these principles are adopted by government, the current "public good priority" stream within the CRC programme be dropped. All CRCs comprise a significant amount of "public good" if only through their PhD programs. The priority public good system has created different classes of CRCs which the CRC Association regards as unwise. It risks the perception that "public good" CRCs have a lower standard for approval and could put at risk the credibility of these CRCs.

The CRC Association believes the need for the "priority public good" stream arose because of the 2008 imposition of a 15-year limit on the life of a CRC. As we will argue elsewhere in this submission, we believe the programme should return to selecting CRCs on their merit, not on their age.

CRCs should continue to address economic, social and environmental objectives. The principal objective of a CRC should be to create significant research impact. It is *our* view that environmental and social CRCs have massive economic impact in their own right—look at the cost of disaster mitigation or youth suicide as examples. Attempts to have CRC-like structures replace or replicate these CRCs (such as CERF or CRN programmes) have resulted in very poor outcomes for Australia.

All types of outcome-driven research benefit from the structure and emphasis on performance of a CRC. It would be a much better outcome for the nation for the CRC programme to be strengthened and enhanced by involvement of more government departments than to be split across functionalities.

The CRC Association also wishes to argue that if priorities are articulated for the CRC programme, then the CRC Committee should be tasked with ensuring that those priorities are addressed within the CRCs it recommends to the Minister for funding.

In the past, it has been common practice that priorities set by the Minister have not been addressed by the CRCs eventually approved in the funding round. This occurs when:

(1) The priorities are too vague;
(2) No CRC applications are received addressing a particular priority;
(3) No application is deemed to be of sufficient quality for the CRC Committee to recommend it; or
(4) Insufficient funds are available in the funding round.

It is the view of the CRC Association that the CRC Committee should be empowered to encourage and negotiate with bidders to ensure quality proposals for addressing the priorities are available for the Minister to approve. Industry research bodies like AMIRA or the Rural R&D Corporation have become adept at this practice. It is an important cultural shift that has been made by other organisations. It is a theme of this submission that the CRC Committee be given greater autonomy to achieve results. Performance of the programme is more important than the process—so we favour the CRC Committee having the power to *develop* the best possible CRCs to meet priorities, rather than simply approve the best available applications.

Question 3.0: Are there other domestic or international approaches to driving growth and competitiveness through applied science and research that might be more appropriate in today's economy?

The review discussion paper includes a range of schemes with similar or related objectives to the Cooperative Research Centres programme.

There are no stand-out programmes internationally with similar objectives to the CRC programme that are obviously superior to the CRC programme. Most programs with similar objectives tend to favour either the academic or industrial aspect. This is understandable in that the issues confronting Australia in regards to the industry-academic interface are particular to this nation. We note that the CRC programme is highly effective in delivering outcomes in both the commercial and non-commercial spaces. During the period 2003-2008 the commercial outcomes were particularly emphasized, whereas post-2008 "public good" CRCs were once more allowed.

It is our observation that CRCs can work equally as well, regardless of whether their objectives are primarily economic, social or environmental. The important factor is that their goals are well defined and their board, management, researchers and stakeholders agree on those goals and work towards them.

To our knowledge, none of the national or international programmes with similar objective are achieving the CRC programme's results with such a low rate of programme funds (22% see earlier and Appendix A).

The USA's Industry/University Cooperative Research Centres programme, administered by the National Science Foundation (NSF), does have a better leveraging rate and a high number of I/U CRCs "graduate" to become "self-sustaining". However, the I/U CRCs are small and primarily work through post graduate involvement, it seems. The "self-sustaining" income does not come from commercialisation returns (these go to host universities but mainly from "other NSF" funds). I/U CRCs are only in the engineering sphere.

Terms of Reference B: How can the government's investment in the CRC programme better deliver outcomes for industry?

Question 1.0: Do the governance, IP and other commercialisation-related practices of CRCs inhibit applications of CRC-driven research? How can this be addressed?

The governance of CRCs has evolved over the 25 years of the programme; the CRC Committee has rightly given a great deal of attention to governance issues. Ministers and governments have taken differing views on the relative value of joint venture or incorporated models as well as other aspects of governance.

It is the view of the CRC Association that governance of a CRC is a critical success factor. We favour a strong governance model with control of the CRC strongly vested in the Board of the CRC. We believe that smaller (5-9 person), skills-based Boards in an incorporated structure best serve the governance needs of a CRC.

The CRC Association does not take a particular view on whether a company limited by guarantee or a company limited by shares perform differently. We note that the vast majority of CRCs are companies limited by guarantee.

Membership of a company limited by guarantee does represent an issue for some organisations, which may be limited via legislation, constitution, or their own perception of risk.

The CRC Association believes the incorporated model for a CRC is sufficiently tried and tested that the Review should recommend that the guidelines revert to making it a mandatory position for a CRC (the guidelines following the 2003 Review made incorporation mandatory for new CRCs; following the 2008 review the option of joint ventures was restored).

It is the experience of many CRC Association members that significant cost and angst is added to the development of a CRC proposal and almost no value added, when there is the option of an incorporated or non-incorporated structure available. There are many instances of CSIRO, for example, taking a view that a particular CRC should be a joint venture, in opposition to a large majority of other participants.

Business is generally comfortable with participating in companies limited by guarantee. Small businesses, in particular, can be "put off" participating in CRCs when they observe the joint venture vs incorporated debate going on for months.

On balance, the CRC Association believes mandating a single model of governance for new CRCs would increase certainty for participants and remove a source of expense and confusion. It is our belief that the best model for a CRC is a company limited by guarantee with a small skills-based Board.

Question 2.0: To what extent does the programme address the needs of small and medium enterprises?

A large number of small and medium enterprises (SMEs) directly participate in CRCs. However, CRCs have a much larger multiplying impact indirectly to SMEs in their sector. This impact is achieved in several ways:

- Most of Australia's agricultural enterprises are SMEs and by acting together in a CRC, they can develop and access world class research that can boost their international competitiveness. For example, through the Dairy Futures CRC, Australia's 6,500 farmers have had access to genomic-based breeding values from 2011. Genomic breeding values are a breakthrough technology that enable farmers to assess the breeding merit of a young bull even before it has sired any calves, allowing the Australian industry to use this global technology in a way that suits their businesses. It gives a better result than competitor technology from overseas (which typically makes an error in predicting 30% of cattle as it was formed in foreign farming environments). This development has had a tremendous impact on the industry in a very short time: by April 2014, 59 of the top 100 bulls

were young genomic sires and 22 per cent of bull semen sold during 2012-13 was from young genomic sires. This example shows how a CRC can fundamentally change the outlook for an industry.

- Through industry associations for example, the Australian Pipeline Association. There are more than 33,000km of high-pressure steel pipelines in Australia, more than 25,000km of which are used for natural gas transmission transporting 1386 petajoules[1] of gas yearly worth approximately $7-9 billion. Natural gas is the third most important energy commodity in Australia, providing 23.6 per cent of Australia's energy requirements and this figure is set to double over the next two decades.

  This critical infrastructure is owned, operated and supported by a large number of companies ranging from large multinationals down to Small and Medium Enterprises (SMEs). Through their direct involvement with the CRC Programme, SMEs play a direct role in the research and development of outcomes which have led to Australia's continuing record of no catastrophic pipeline disasters leading to the loss of human life. This opportunity to directly feed the research outcomes back into industry practices can be considered a direct impact of engagement with the CRC programme at all levels.

  The Australian Pipeline Industry Association Research and Standards Committees (RSC) is the Energy Pipelines CRC's sole industry partner. The group of roughly 50 companies has an active interest in maintaining the cutting edge of research on which the Australian Pipeline Industry has developed its reputation.

Question 3.0: To what extent are the research activities driven by industry (as opposed to research organisations)?

CRCs are governed by Boards that, under the government requirements, cannot be dominated by research organisations. In recent years, it has become more common for CRCs to have skills-based Boards, which in some cases are made up of entirely independent Directors.

The CRC Association believes the drive and culture of CRCs is fundamentally important to their success. We passionately believe that all the governance arrangements should be focussed on delivering outcomes for the industry involved.

However the situation is far more nuanced than thinking of industry as outcome-focussed and research organisations as input or self-focussed. The reality is that many researchers are highly attuned to the needs of industry and many business people are motivated to develop industry-wide capabilities. It is the mix of viewpoints in pursuit of common goals that results in great outcomes.

The legacy of industry leadership of a CRC lasts beyond the life of the CRC itself. The most obvious impact being the PhD graduates from a CRC. CRCs fund 5-6% of all PhDs in Australia and have instigated many of the once "novel" training programs that are now promoted as best practice. This very high level of leadership by CRCs is due to their early recognition that the needs of each industry varies and requires specific training.

After several decades of enhanced PhD training through CRCs, there is good evidence that industry values that training. Many postgraduates from CRCs now occupy leadership roles in industry and academia.

Remembering the relatively small size of the CRC Programme, it is having an important impact in industry.

[1] BREE 2014 Australian Energy Statistics Table 2

Question 4.0: Do "priority areas" assist in meeting the needs of industry?

In the opinion of the CRC Association, naming priority areas has had a minimal impact in meeting the needs of industry to date. It is our view that prioritisation is a valid approach and can improve the outcomes from the CRC programme. However, prior to the implementation of the Priority Public Good stream (discussed later), the priorities set for CRCs were too late in the funding round to be truly effective.

The CRC Association believes priorities for the CRC programme should be developed according to the principles set out earlier in this submission.

We believe the government can provide more influence on CRC bids by naming priorities earlier than is currently the case and by implementing the two-step bidding process recommended in Terms of Reference D: Question2. Bidders will more readily adjust an application in response to priorities and feedback when only a concept paper has been provided. The current bidding process is less conducive to change between the first and second phase because of the level of detail required in phase one.

Terms of Reference C: How can the government's investment in the CRC programme drive more frequent and more effective collaboration between industry and the research sector?

Question 1.0: Does the CRC programme encourage industry and the research sector to work together in new ways or engage new players?

The Australian Federal Police are participants in the new Data to Decisions CRC. Through the CRC they are directly interacting with the world's largest data company, SAS, but also with an award-winning Australian small business, Genix Ventures. This unique grouping increases the ability of a company like Genix to develop products of direct benefit to Australia's national security as well as becoming part of the global chain in the burgeoning "big data" space.

It is hard to image Canberra-based EOS space Systems Pty Ltd (essential participant in the CRC for Space Environment Management) being able to develop a satellite and space debris tracking and management system through any other program than the CRC Programme. Australia is in a unique position to offer users of space a service that is almost unimaginable in its scope. If successful, it could generate hundreds of millions in revenue from an "industry" that does not currently exist.

The Young and Well CRC (YAWCRC) and the CRC for Living with Autism Spectrum Disorders are great examples of how new players are becoming involved in research in new ways. In both cases, these CRCs are involving end-users in the design and delivery of their research. Besides the obvious health and social benefits associated with reduction in youth suicide or reduction of the impact of autism spectrum disorders, there are enormous economic impacts for the nation.

For example, governments are funding more mental health services. A traditional psychological examination under the current systems costs around $600. By using technology in development by the YAWCRC, this figure may be dramatically reduced – to as little as $5! And the technology solutions may take away the disadvantage of rural patients in sourcing services.

Many other CRCs are finding ways of involving new players that might not normally become involved in research. The proposed Innovative Manufacturing CRC has two "portal" organisations through the Australian Industry (Ai) Group and the Australian Manufacturing Technology Institute Ltd (AMTIL). Together, these organisations give a conduit to thousands of manufacturers. In turn these manufacturers have access to international research organisations like the Fraunhofer Institute or the opportunity to participate in global supply chains through large international companies.

The CRC programme has developed new industries—the many spinoff companies of the Photonics CRC have paid far more tax than the government ever provided in grants.

Question 2.0: Does the CRC programme encourage universities to make a cultural change from focusing on publishing to focussing on collaboration and commercialisation?

In 2013, a review of Melbourne University's involvement in the CRC programme concluded "there is good evidence that for those researchers involved in the CRC Program and for their Departments, the CRC experience has been a valuable one for strengthening partnerships, in broadening the educational experience for staff and students and for impacting positively on the research culture of key disciplines" (Larkins, Reeder & Skrezenek, 2003).

It is the view of the CRC Association that the role of the CRC programme in focusing university researchers on collaboration, commercialisation and impact creation in general has likely increased since 2002.

The Excellence in Research for Australia (ERA) exercises from 2010 have greatly influenced researcher behaviour in Australia's university campuses. ERA aims to identify and promote excellence across the spectrum of research

activity. Although quality measures do tend to be well correlated with impact measures, there is no doubt that ERA has greatly increased the pressure on university researchers to publish. Numbers matter. This is evident simply through the large lift in publication numbers between the first and second ERA exercises.

The CRC Association is supportive of ERA. We support the suggestion of ATSE to improve the usefulness of the measure by including several impact and engagement measures, albeit indirect.

The response to ERA from Australia's academics demonstrates how important journal publication is to them.

We do not believe the CRC programme has resulted in a cultural "shift" away from publication. Indeed many industry participants in CRCs urge higher publication rates by researchers. However, we would argue that the CRC programme raises awareness and the ability for university researchers to engage more strongly with industry.

Many CRCs require industry participation in every project before making any investment. Any university researcher involved must therefore become engaged with industry (note that the Association does not wish to give the impression that researchers are forced into collaboration – researchers generally grab any opportunity to do so as noted elsewhere in this submission).

The CRC Association believes that the CRC programme is disadvantaged by its "Category 4" designation in the Higher Education Block Grant Scheme. If the CRCs were in "Category 1", as are similar schemes like the Rural R&D Corporations, then more university researchers would be encouraged more often to engage with industry through CRCs.

Similarly, CRCs should not be excluded from participating in other industry-academic programmes. For example, small business could join in CRC projects through ARC the Linkage programme or the new Entrepreneurial Infrastructure programme, from which CRCs are excluded. In a country as thinly-spread as Australia, government programmes should allow as much "clumping" as possible. Instead, an over concern about so called double-dipping (which can easily be managed in other ways) leads to "splitting" effort across programmes.

Question 3.0: Is the education and outreach element of the CRCs addressing the workforce needs of industry and the research sector?

The PhD education requirement for CRCs is actually the only common thread that has been a Commonwealth requirement for every one of the 209 CRCs since 1991. It has, without question, been an outstanding success.

If the CRC programme was a university granting degrees, it would rank 9th in the country in the number of PhDs it graduates (Palmer, 2008). The programme significantly lifts the completion rate of PhDs in non-Go8 universities to the level of the Go8.

The Education Department recently published "Initiatives to enhance the professional development of research students (Department of Education, 2014). Of the 15 Case studies, 6 came from CRC activities, indicating CRCs are the leading initiator of training of PhD students outside of their core thesis work. The CRC Association is the first Australian licenser of Vitae's Researcher Development Framework, developed by the British Research Council to enhance professional development of researchers.

CRCs have the ability to develop training outside of research degrees. The Remote Economic Participation CRC have developed a national network of researchers and evaluators, including trained Aboriginal Community Researchers (ACRs) who can bring local knowledge, community acceptance and deep cultural understanding to monitoring and evaluation activities. The Lowitja Institute (Aboriginal and Torres Strait Islander Health CRC) has even used dadirri (deep listening) as a research methodology. Deep Exploration Technologies CRC offers practical drilling training for its sector whilst the impact of the Vision CRC optometrist training is extraordinary. CRCs train people according to their sector needs.

Terms of Reference D: How would contractual and administrative requirements of the CRC programme be streamlined?

Question 1.0: Are there elements of the CRC programme guidelines that limit the ability for industry to effectively engage with researchers.

We recommend three actions to improve engagement of industry with researchers through CRCs:-

1. Simplify the Impact Tool. The CRC Association is very supportive of the Impact Tool, but in its current form it is not a planning tool that any business would use. It therefore colours business views about the CRC programme early in the engagement period. At Appendix B, we set out how to improve the effectiveness of the tool.
2. Simplify legal agreements. The legal arrangements for CRCs need an overhaul. They can be too onerous for small business, in particular, to cope with. Publicly-funded participants can sometimes use in-house lawyers to argue trivial issues *ad infinitum*. At Appendix C, we included details on simplifying agreements provide by FAL Partner, Jason Watson.
3. Encourage interactions with other programmes. As discussed earlier, CRC should be able to access other programmes rather than being excluded. It is nonsensical to argue that a CRC accessing the Entrepreneurs Infrastructure programme is double dipping but for CSIRO or the publicly funded universities to access the same programme is not.

The best way of encouraging industry is to have policy stability in innovation programmes. Programmes that are successful in this area worldwide are long running. Evolution of the programmes rather than revolution favours industry participation.

Question 2.0: Is the current selection process excessively onerous on participants?

Management of the bidding and review process for CRCs has evolved over several decades under the direction of the Minister and the CRC Committee to place more emphasis on industry leadership, creating impact and ensuring the Board of the CRC takes responsibility for performance. The CRC Association recommends to the Review that the evolution be taken even further.

We propose the early stages of the bid could be easily modified to require only a five-page "concept paper" that sets out the (1) challenge for the CRC; (2) proposed research approaches (3) education and workforce initiatives and (4) indicative budget.

The CRC Association further proposes that concept papers only be accepted from groups of end-users. This would be a dramatic step that firmly entrenches the current government determination to maximise the impact from its innovation programmes.

A simplified first state concept paper would also:

1. Allow much more meaningful feedback from the CRC Committee which could much more simply be take on board by bidders (i.e. bidders would be less likely to be "wedded" to a particular approach to a challenge);
2. Dramatically lower the cost of early participation thereby encouraging greater involvement of SMEs;
3. Speed up the ability of industry to respond to changes in the business physical or social environment as well as to government priorities.

Figure A: Current Bidding Process

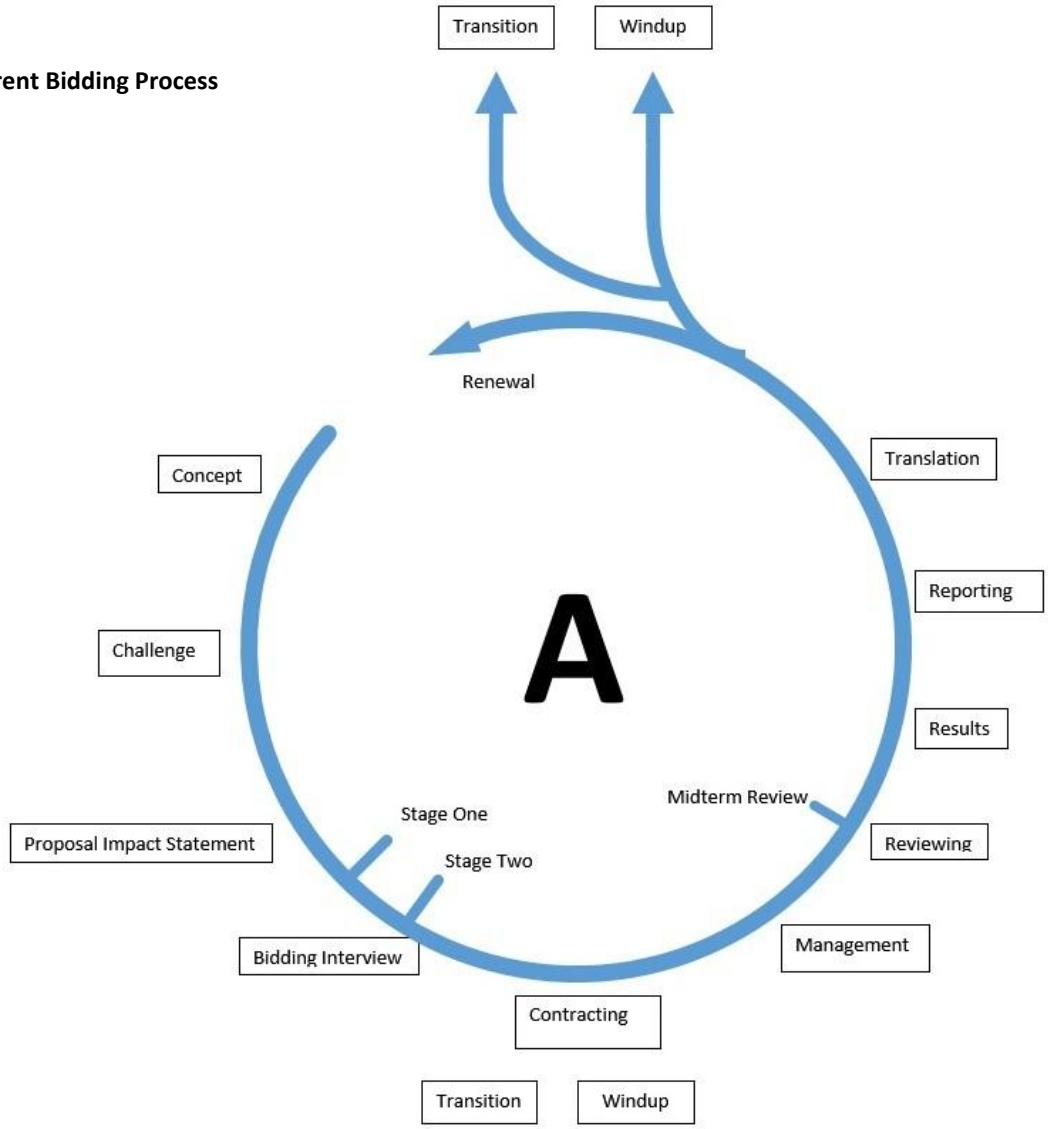
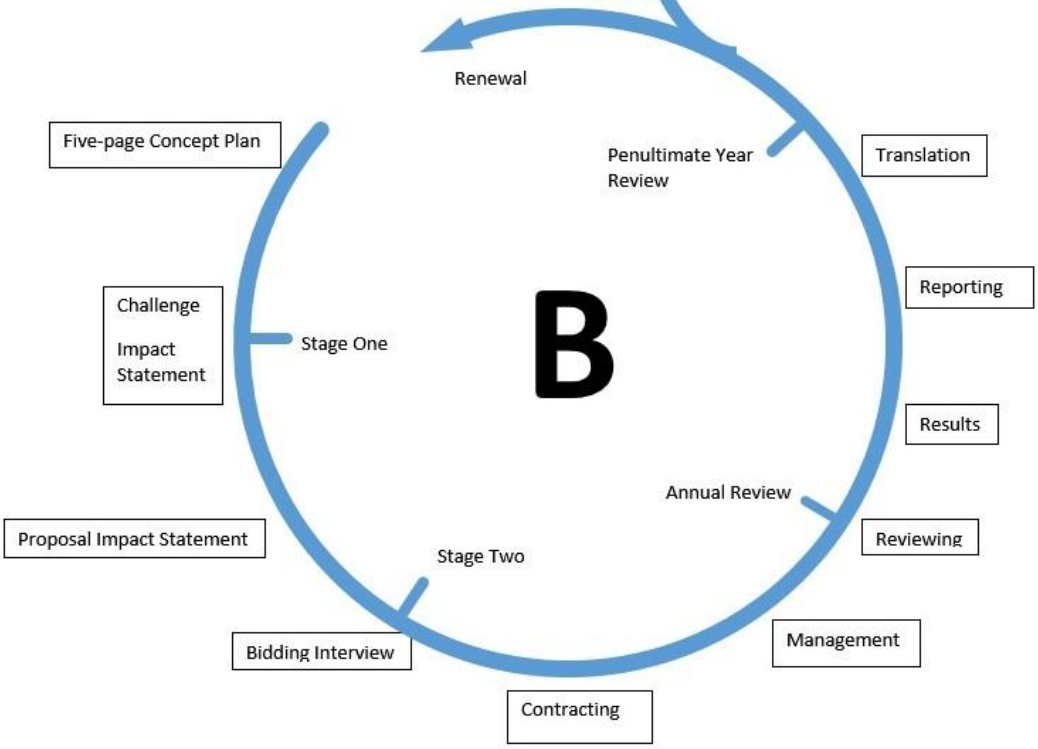


Figure B: Proposed Bidding Process



Question 3.0 Do the current reporting requirements appropriately balance the need for the Government to be accountable to taxpayers and the need to allow participants to focus on research, development and commercialisation?

The Current Annual Report and Management Data Questionnaire (MDQ) should be combined into one exercise. The Annual Report should then be the basis for an annual Benchmarking report across CRCs (which is currently undertaken separately again by the CRC Association).

"Liaison Officers" should become "Evaluators" as per the US National Science Foundation System. CRC programme staff have strong experience that could be better utilised. The CRC programme should adopt a more performance focussed management style than the current compliance focus.

Terms of Reference E: Is there sufficient demand within the research sector and industry for a programme that builds collaborative structures that facilitate end-user driven research.

Question 1.0: What is the pattern of demand for the programme from within industry and university/other research organisations over the past 10 years?

The CRC Association believes very strong demand exists for the CRC programme, from both research organisations and industry. Indeed, we believe interest in the programme is now much more widespread than in the past. Our Association constantly fields enquires about the programme and our CEO, Tony Peacock, is frequently asked as a guest speaker at industry events to discuss the programme. Our fortnightly e-newsletter is distributed to almost 10,000 email address, which likely makes it the most read science-industry specialist publication in Australia.

Question 2.0: If there are changes to demand, why have they occurred and how could they be addressed?

The CRC Association believes the annual funding rounds, applied from 2008 favour industry participation and should be maintained. We doubt the ability of smaller, industry-led bids to maintain their momentum for two years between bids. In recent years the CRC for Autism and the CRC for Alertness Safety and Productivity, for example, were each successful on their second attempt. It is unlikely either of these groups would have had the wherewithal to maintain a bid group for two years. Indeed, if there is any change to the timing of applications, we advocate for either more frequent or a consistently open call. The nature of business and innovation is nowadays so rapid that many programmes worldwide are trying to cater to the pace of innovation and accept application at any time.

Question 3.0: Are there specific industries of significance to the Australian economy or specific types of enterprise that have not engaged in the CRC programme, and if so, why?

The CRC programme, like many programmes, can have difficulty in ensuring good participation by small business. CRCs are most successful at involving small business when those businesses are alike and organised or relatively accessible. This is often the case in the agriculture and medical fields. However, in manufacturing and some service industries, the businesses in the sector can vary greatly, sometimes limiting a CRC's ability to engage with large numbers of businesses.

CRCs are finding the most effective ways of engaging with business in these areas. These include "clumping" them into a bigger unit (e.g. 43pl in the CRC for Spatial Information, which has grown to over 100 companies involved) or using industry associations, e.g. the Australian Pipeline Industry Association in the case of the Energy Pipelines CRC or the Ai Group and AMTIL in the case of the proposed Innovative Manufacturing CRC.

The nature of a CRC can lead to a "closed shop" situation. The bid process and legal structure can make it difficult for new participants to enter (or indeed exit) a CRC. The CRC Association advocates that low barriers to both entry and exit are desirable because they maintain the pressure for a CRC to perform and remain relevant.

The programme should have systems that encourage participation at the bidding stage but do not preclude later involvement (without leveraging companies take a "wait and see" attitude).

Question 4.0: What are the factors that influence business and industry to initiate engagement with the CRC programme?

Bids are usually initiated by the person or group with a burning passion in the area, along with a general gap in the sector. Generally, people perceive an opportunity for significant progress to be made by a combined body of work in the area. In the experience of the CRC Association, the focus is always on a specific area or sector, not on particular projects or experiments—those issues follow.

In the last funding round, we would judge that two of the three new CRCs were "championed" by an industry person rallying researchers, and one the other way around. Of the two existing CRCs renewed in the round, the CRCs themselves drove the process but obviously can only do so with the support of their industry.

Industry is well are aware of the magnitude of a CRC bid and do not undertake them lightly. Thus the number of bids is not necessarily reflective of interest. Research organisations have a noticeably more strategic approach to CRCs, seeking only to be involved where it is in their strategic interest. In the early days of the programme, organisations tended to participate at every possible opportunity because of the money available. That is no longer the case.

Appendices

Appendix A

The role of innovation centres in translating research to outcomes.

It is very common across the world in public policy to move to a balance of project-based research funding to programme or centre-based funding when the aim shifts from discovery of new knowledge to translating that new knowledge into tangible outcomes. Most national innovation systems offer a suite of programmes, as no single programme ever suits all situations.

In Australia, the Rural R&D Corporations rapidly moved to a higher level of thematic programmes, and away from investigator-led projects following instigation of the Primary Industries and energy R&D Act (1989). The CRCs followed in 1991. More recently, the Australian Research Council and the National Health and Medical Research Council have increased their emphasis on centre-based research funding in their areas that are closer to market.

The reason for centre-based funding to produce outcomes is quite simple. Centres confer the ability to pursue outcomes in a flexible way, addressing more aspects of the "D" in R&D when required. New knowledge by itself does not confer any actual benefit on society. It is the translation of that knowledge to a product, service or policy that confers benefit. Both knowledge generation and knowledge translation are needed for society to benefit from its R&D investments.

A number of public programmes that support innovation centres are outlines in the table below. Important design features include the relative emphasis on knowledge generation versus knowledge use; the cultural drivers of the various schemes; the governance, terms and levels of funding.

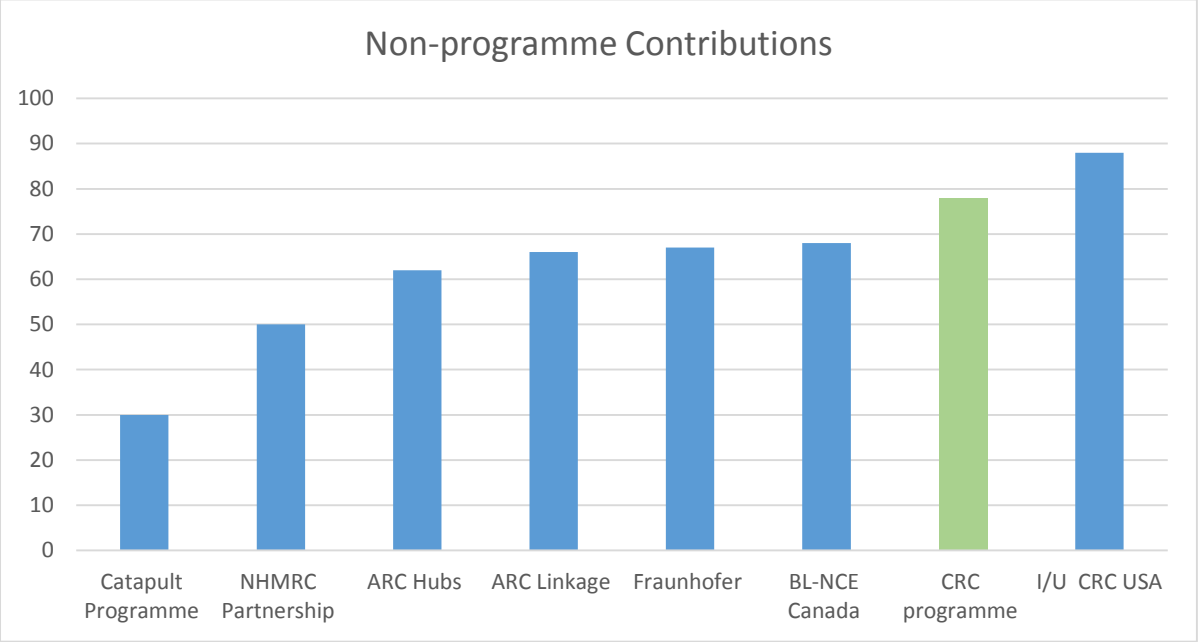
Comparative performance data for schemes across the world is not available. The Australian Cooperative Research Centres programme is undoubtedly the most reviewed and has significantly more performance data available than other schemes, with only the National Science Foundation of the USA publishing long-running performance data on its Industry and University Cooperative Research Centers programme.

There is no evidence that any other scheme worldwide produces better performance than the CRC programme. Indeed, the 25-year evolution of the CRC programme is reflected in parallel developments in other countries to a degree. For example, the Canadians have significantly shifted from academically-led centres of excellence to business-led centres. It is notable that the most successful schemes worldwide are also the longest-running schemes. The Fraunhofer Institutes in Germany have 40 years of history, the USA's Industry and University CRCs have 30 and Australia's CRCs almost 25 years. Every programme worldwide notes that academic-industry trust takes years to develop.

The Fraunhofer is much more akin to CSIRO in the Australian context than to the CRC programme. It is more of a service organisation for industry and it only undertakes work when industry puts money on the table – CRCs

are required to find industry funds before the government makes any commitment. It is important to note that "industry" in the German system refers to both public and private organisations.

The USA's Industry and University CRCs have very interesting features that may give guidance to the Australian situation. More US I/U CRC "graduate" to become self-sustaining than do Australian CRCs, an issue raised in the CRC programme review discussion paper. Why? This is at least partially driven because the I?U CRC fund are principally for postgraduates and therefore more readily replaced



Programme	Country	Number of Centres	% paid by Programme	Nature of collaboration or points of difference to CRCs	Objectives/Features
Cooperative Research Centres	Australia	39[2]	22		
Collaborative Research Networks	Australia	15	NA	The Collaborative Research Networks (CRN) program was intended to effect structural adjustment in the research and research training capacity of smaller, regional and less research intensive universities in the higher education system. The CRN program was announced in the 2009-2010 Budget. In May 2011, $61.5 million was announced by the Australian government to establish twelve CRN projects. An additional $19.6 million for three more projects was announced in July 2012, bringing the total funding to $81.1 million for fifteen CRN projects. The CRN programme is an example of poor policy planning and execution that provides a number of important lessons. It was designed around a "big brother" approach of teaming small, low research-intensive universities with larger, high-intensity research universities. It was far too short-term and a terminating programme that set up a whole new administrative structure. The aim of the CRN programme could have been fulfilled much more effectively, at much lower cost by having them administered through the ARC or CRC programme – the government could simply have asked the CRC Committee to favourably weight applications from regional centres, for example. As it turns out, there is very little to show for this $80m funding "blip".	
ARC Linkage	Australia	A total of 402 grants comprising $547m in 2013-2014. ARC pays about 34% of the costs of Linkage Projects and 38% for Industrial Hubs. Note that the amount awarded annually can vary significantly (eg $130m in 2012-2013)		ARC Linkage is made up of a range of schemes: • ARC Centres of Excellence (12 award commencing funding in 2013-2014) • Industrial Transformation Research Hubs (10) • Industrial Transformation Training Centres (7) • Linkage Infrastructure, Equipment and Facilities (63) • Linkage Learned Academies Special Projects (2) • Linkage Projects (306) • Special Research Initiatives (2). The Linkage programme aims to support Australia's highest quality research conducted in higher education institutions and other eligible organisations in partnership with end-user organisations. In 2013–14 the ARC amended the application form asking researchers to provide a statement indicating the contribution that their research could make to the Australian economy, society, culture, national security, public policy or services, health, the environment, or quality of life to better convey the benefits of publicly funded research. (Australian Research Council, 2014).	

[2] Includes DMTC, which receives funding from the Defence Department and Australian Seafood CRC, CRC Mining and Smart Services CRCs, which have finished their terms as funded CRCs but continue on using the name.

Programme	Country	Number of Centres	% paid by Programme	Nature of collaboration or points of difference to CRCs	Objectives/Features
NH&MRC Partnership Centres	Australia	3	50%	The NHMRC Partnership Centres are a new programme, with three Centres funded to date. The broad objectives for each Partnership Centre are to: support the implementation of research-informed changes in health and health care systems; synthesise and disseminate research relevant to improving health and health care system performance; undertake collaborative research, and Build capacity, both within the research community to undertake applied research, and within the system to use research as part of change management. The NHMRC provides up to $2.5m per centre per year for five years, with partners in the Centre required to at least match that level of investment.	
Catapult Centres	United Kingdom	7 established, Further 2 named	Moving to 70%	The Catapult scheme is in its third year, with seven Catapults established and another two named. They are centres of excellence where UK businesses, scientists and engineers work together on late-stage research and development. Catapults are significantly different from CRCs in several respects: They are not business-led entities from the start. They have a secured line of funding from the UK government and then go out to service industry, which pays (at least partially for that service); They are significantly larger than CRCs, with each Catapult receiving in the range of 3 to 5 times the government investment in a CRC (public information on Catapults budgets is very limited) The Catapults' origins date back to a report produced for the previous Labour government by computer industry pioneer Hermann Hauser, and lean heavily on the German Fraunhofer model. Hauser noted that the real impact of the Catapult centres won't be known for another decade or two	
Fraunhofer-Gesellschaft Institutes	Germany	67	30%	The Fraunhofer-Gesellschaft is Europe's largest applied research organisation. It has 23,000 staff and a total budget in excess of €2b, 70% of which is raised from both public and private industry. The Fraunhofer's core government investment is matched to the amounts raised from the private sector, unlike the Catapults which receive a predetermined grant. This funding arrangement has more similarities to CRCs than the Catapult model.	
Networks of Centres of Excellence	Canada	11	NA	The Networks of Centres of Excellence have been in existence since 1989 with inconsistent funding rounds. They are specifically academically-led networks of excellence.	

Programme	Country	Number of Centres	% paid by Programme	Nature of collaboration or points of difference to CRCs	Objectives/Features
				Grant size varies from CAN$19-113m and Centres are generally funded for five years. Thus, per annum budgets from government are approximately 120% that of a CRC.	
Business-Led Networks of Centres of Excellence (BL-NCE)	Canada	5	32	The BL-NCE programme is new, with only two Centres funded prior to the current five Centres named in 2014. Governance appears to be developing, with what appear to be large, representative Boards (average of 15 for those where information is available). The BL-NCE programme drive an average of three dollars of investment for every programme dollar (cf 1 to 4 for the CRC programme).	
Centres of Excellence for Commercialization and Research	Canada	23	Matched	A CECR is a not-for-profit corporation created by a university, college, not-for-profit research organization, firm or other interested non-government party that matches clusters of research expertise with the business community. Each Centre shares knowledge, expertise and resources to bring new technologies to market faster. These cost-shared centres stimulate new commercialization activities that would likely have never taken place without the CECR program. Government funding tends to be around CAN$1.5m per annum.	
Industry/University Cooperative Research Centers	USA	67	12%	Each center is established to conduct research that is of interest to both the industry and the university with which it is involved, with the provision that the industry must provide major support to the center at all times. The centers rely primarily on the involvement of graduate students in their research projects, thus developing students who are knowledgeable in industrially relevant research. Approximately 40 i/UCRCs that have “graduated’ from the programme remain operating true to form.	

Appendix B

Simplifying the impact tool to make it more effective.

The following is from Duncan Buckeridge of Monash University who authored the original Impact Tool when at Allen Consulting Group. It is Duncan's belief that nowadays the benefit of the Impact Tool is diluted by the inclusion of too much detail and guesswork. The true benefit comes from the interaction of researchers and industry to examine the pathways and scale of impact. The current complexity means the Impact Tool is often outsourced to consultants, losing its main benefits and adding costs.

Overview Tab, Input Tab, Activities Tab, Outputs Tab, Risk Analysis Tab and Additional Info Tabs are all fine as they are.

- The Benefit/Cost Calculation Tab should be totally deleted.

The Usage Tab and Impact Tabs need to be changed as follows:

- In all the boxes asking for probabilities, instead of a percentage, should only ask for a high/medium/low rating.
- The annualised 'timelines for key usage/impact' section should be removed and replaced with a single text box asking for a brief statement on overall expected usage/impact timeframes for each program.
- The annualised 'estimate of $ costs of usage'/'estimate of $ value of impacts' sections should be removed.
- The amount of space available in the 'description of different usages...' and the 'description of type, scale and recipients of monetary impacts...' boxes should be doubled.

These changes would, I believe, slash the time and costs associated with completion of the tool and remove the need to pay consultants to complete it. It would do this without reducing in any way the rigour of the tool in terms of requiring bidders to really think through (and articulate to the selection committee) the logic of their proposed CRC right the way from inputs through to impact. It is the $ values in the tool that are the least useful part of it because they will always be at best informed guesses and at worst will be simply made up to present the bid in a good light.

Given the removal of the numbers/calculations and the annualised milestone boxes from the tool, another key benefit would be that instead of being an excel based tool (which is a bugger to use for lots of text) it could be converted into a word based tool that is much more user friendly to complete.

These changes would bring the Impact Tool much closer to what was originally envisioned before the demand came to include $ figures.

Appendix C

CRC Legal Structure

It is important to recognise that the structure and approach and a large proportion of the content in the Participants Agreements actually flows from the Commonwealth Agreement.

As such any analysis of legal structures associated with CRC needs to start with the Commonwealth Agreement.

1. <u>Commonwealth Agreement Conditions</u>

The Commonwealth Agreement is a somewhat confused document in that it tries to have a 'bob each way' by contracting with the Recipient (that is, the CRC Company) yet flowing a significant level of obligations through to all Participants. This is problematic given the broad range of Participants and causes significant legal expenses during the negotiation of the Participants Agreement.

Key challenges in the Participants Agreement are therefore that:

- **Participants**: Anyone contributing to the CRC is treated as a Participant; and
- **Onerous Obligations:** All Participants, irrespective of who they are, are subject to the same onerous obligations (such as Australian approved insurance for non-Australian entities).

To address each of these:

- Participants

The Commonwealth Agreement defines "Participants" as:

- Persons, bodies or organisations, who are Essential Participants or Other Participants who have agreed to support the Activities and provide Contributions to the CRC, and are signatories to the Participants Agreement.

Whilst there are two categories, Essential and Other, all Participants are generally treated the same and to the same high threshold. The Commonwealth Agreement does not recognise that within this mix there will be many different types of entities such as:

- Universities
- Commonwealth Departments
- State Departments
- Australian Listed Companies
- Australian SMEs
- Multinational Companies
- Foreign Companies
- Foreign Government Departments

Irrespective of this broad mix, all of these types of Participants are generally held to the same standard and the same form of documentation. This does not allow the CRC to customise the documentation for the needs of particular entities (eg, US Government Department Participants which are very different from the needs of, say, an Australian SME). This lack of flexibility in the documentation contributions significant angst and cost to the negotiation process.

- **Onerous Obligations**

Historically the Department has contracted with each individual Participant through the Commonwealth Agreement, however this has now (logically) been replaced with the Department contracting with the one 'Recipient' (that is, the entity managing the CRC).

This historical situation seems to have impacted upon provisions of the Commonwealth Agreement which still require very high levels of compliance from Participants.

To provide a contrast between the requirements upon all 'Participants' in CRCs versus a 'Partner Organisation' in some of the ARC's commercial programs:

(i) The ARC's Linkage Program Funding Agreement contains a single clause (clause 11) dealing with "Partner Organisation Agreements: http://www.arc.gov.au/ncgp/lp/lp_fundingagreement.htm

(ii) The ARC's Industrial Transformation Research Hubs Funding Agreement contains a single clause (clause 11) dealing with "Partner Organisation Agreements": http://www.arc.gov.au/ncgp/itrp/hubs_fundingagreement.htm

The ARC Agreement clauses referenced above run for approximately 1.5 pages and do not require the Partner Organisation to comply with any other clauses.

Whereas the Commonwealth Agreement contains a Part 3 (clause 31) which also only runs for approximately 1.5 pages**, however**, this requires the Participant to comply with approximately 16 other provisions from the Commonwealth Agreement.

By the time these 16 provisions have been copies into the Participants Agreements (both Essential and Other), this equates to 8 – 9 pages of Commonwealth clauses in the Participants Agreement. Many of these clauses cause significant negotiation difficulties.

To provide some examples, the nature and difficulties surrounding these clauses include requirements for all Participants:

(i) To conduct their activities: "To the same good governance standards that apply to incorporated bodies under Australian law" (cl 31(a)(i)(B)).

Questions relating to this that have arisen in the past are:

A. What exactly are these "good governance standards"?
B. If I'm a Commonwealth Department, why should I comply with these?
C. I'm a multi-national company or USA Department, why should I comply with these?

(ii) To hold the same level of Australian approved in insurance as the Recipient is required to hold pursuant to the Commonwealth Agreement (cl 31(g).

Relevant questions:

A. If the Participant isn't in a direct relationship with the Commonwealth, then why is the Participant required to hold such insurance?
B. The high levels of insurance required can dissuade the participation of SMEs.
C. Why would the Commonwealth require CRC Participants to hold such insurance when it doesn't require ARC Partner Organisations to do the same?

(iii) Clause 31(h) of the Commonwealth Agreement requires each Participant to comply with a whole host of laws, reporting and audit obligations which, as far as we know, have never been exercised by the Department.

Relevant questions:

A. Why would these obligations apply to CRCs and not to ARC Partner Organisations?
B. Why should a foreign entity or government be compelled to comply with Australian legislation with which it is not at all familiar and which does not even apply to it, such as the *Crimes Act 1914* (Cth) (clauses 31(h) and 30.17);
C. Why would the Department want audit and access rights to the books and records of a foreign entity which may have a limited participation in the CRC (clauses 31(h), 24 and 25).

The above are only a few of the examples of onerous obligations that the Commonwealth requires the Recipient to flow through to the Participants. Effectively it appears that the Commonwealth has taken a 'throw everything in approach' rather than assessing what provisions are truly required in the situation.

Proposals:

Proposals to amend the above and therefore simplify the ability of the Recipient to enter into agreement/s with Participants include the following:

A. **Redundancy**: Remove the flow through of obligations to Participants except for the bare minimum (eg, contrast with ARC Partner Organisations).
B. **Threshold**: Consider creating a threshold at which different obligations would apply. For example, there might be an 'SME threshold' based on dollar contributions per year below which a Participant might not be required to sign up to the formal Participants Agreement.
C. **Participant Declaration**: Consider introducing a brief standard Participant declaration which must be signed by all Participants (and which is made available prior to the CRC bid submission).

2. Participants Agreement Standardisation

A 'one-size fits' all approach may be difficult in practice. If such an approach were to be adopted then it needs to flow from the Commonwealth Agreement.

Certainly there is already a high level of standardisation based on funding requirements and accepted practice including factors such as the use of a company limited by guarantee and skills based boards.

The challenge with trying to move towards a higher level of standardisation is that there is a lot of money involved from different Participants and potentially competing interests. Trying to take away the 'say' of a Participant in relation to the Participants Agreement may in fact be counterproductive as it may push some Participants away from the CRC program.

- For example, a potentially large commercial Participant might not want to provide funding if they don't have an option to commercially (exclusively) access CRC IP, whereas for a University Participant this might not be a concern but publication rights might be. There is no possible 'one size fits all' model with the range of Participants and potential IP scenarios.

One of the challenges in submitting a funding application of course is that, as a hefty document, it is simply not practical for potential Participants undertaking the time and expense to review the Participants Agreement when they do not know if the CRC bid will be successful. At this stage however, a **brief** 'core principles' document derived from the Commonwealth Agreement that every potential Participant is required to accept could be useful.

A standardised model to provide flexibility for SME engagement might also prove useful. This however would have to be derived from the Commonwealth Agreement and the obligations upon Participants, beginning with a recognition that SMEs won't necessarily want to engage for the whole life of the CRC. As such 'Participant' status in the CRC should perhaps be seen as an evolving membership base, rather than a set club.

Due to the Commonwealth Agreement approach, SMEs have had to engage with CRCs through a separate 'conduit' such as another company established for engaging SMEs (such as CRCSI's use of 43pl). Whether having a separate entity for SMEs is the most efficient use of resources could be considered. However, this also needs to be considered in the context of the benefit Essential Participants receive, versus Other Participants and potentially also SMEs. It is important of course that the CRC can demonstrate to Essential Participants that they are receiving a higher level of benefits.

References:

The Allen Consulting Group, (2012). Economic, Social and Environmental Impacts of the Cooperative Research Centres Program. Prepared for the Cooperative Research Centres Association.

The Allen Consulting Group, (2005). The Economic Impact of Cooperative Research Centres in Australia: Delivering benefits for Australia. Prepared for the Cooperative Research Centres Association.

Australian Research Council, (2013). 2013/14 Annual Report Part 2. Retrieved 9 November 2014, from http://www.arc.gov.au/pdf/Annual%20Report%2013-14/ARC_AR_2013_14_Part2.pdf

Department of Education, (2014). Initiatives to enhance the professional development of research students. Retrieved 9 November 2014, from http://docs.education.gov.au/documents/initiatives-enhance-professional-development-research-students

Howard Partners, (2003). *Evaluation of the Cooperative Research Centres Programme*. Department of Education, Science and Training. Department of Education, Science and Training.

Insight Economics. (2006). *Economic Impact Study of the CRC Programme*. Prepared for the Department of Education and Training.

Larkins, F., Reeder, L., & Skrezenke, F. (2014). *A Review of the University of Melbourne Participation in the Cooperative Research Centre Program 1990-2002*. The University of Melbourne.

Mercer, D. and Stocker, J. (1998). *Review of Greater Commercialisation and Self-Funding in the Cooperative Research Centres Programme*. Department of Industry, Science and Tourism.

Myers, R. (1995). Cooperative Research Centres Program Evaluation: Changing Research Culture Australia – 1995. Department of Industry, Science and Technology.

O'Kane, M. (2008). *Collaborating to a Purpose: Review of the Cooperative Research Centres Program*.

Palmer, N. (2013). The CRC Contribution to Research Training: Report of a Scoping Study for the Cooperative Research Centres Association. Retrieved 9 November 2014, from http://crca.asn.au/wp-content/uploads/2012/12/The_CRC_Contribution_to_RT_Final_Report.pdf