



## **Introduction**

Ninti One welcomes the opportunity to provide comments on the consultation paper *Vision For a Science Nation*. Our response concentrates on issues relevant to remote Australia and the need to develop a complementary framework to roll out the STEM strategy across remote Australia, with appropriate and targeted strategies and programs. For this strategy to be truly national it is imperative to recognise that the contexts and needs for economic and educational participation in remote Australia are not the same as for urban Australia. The 'one solution fits all' approach to policy implementation for remote Australia does not work.

Ninti One, with our partnerships and collective expertise, is well placed to contribute to the development of this activity.

## **About Ninti One**

Ninti One is a not-for-profit, national company that builds opportunities for people in remote Australia through research, innovation and community development. Ninti One manages the Cooperative Research Centre for Remote Economic Participation (CRC-REP) and is focused on delivering solutions to the economic challenges that affect remote Australia. Through our research, we provide practical responses to the complex issues that can restrict full economic participation. We are a partnership organisation of more than fifty stakeholders located mostly in remote Australia, including the Australian Government, state and territory governments, numerous small-to-medium enterprises, universities and other research providers and industries including mining, pastoralism and tourism.

Thirty percent of our partners are from Aboriginal and Torres Strait Islander organisations and communities.

This submission suggests which of the proposals in the consultation paper could incorporate the needs of remote Australia with additional programs and activities, and which proposals will enable the expertise of Ninti One to contribute to Australia's national STEM performance.

### **1. Australian Competitiveness**

#### ***Establish an Australian Innovation Board to draw together existing Australian programmes and target research and innovation effort***

We recommend that in creating the Australian Innovation Board and defining its responsibilities, consideration should be given to appointing a representative with expertise in remote Australia. This would ensure that remote Australia's interests, industries and constituents are not left out when the priorities for innovation are identified that complement the Science and Research Priorities and the industry knowledge priorities.

### ***Accelerate the integration of STEM experts into industry, business and public sectors***

Innovation is critical to the development of a sustainable future for many SMEs and key industries operating in remote Australia. Successful models for collaboration between business and research in remote Australia should be examined to develop or adjust existing programs aimed at driving further engagement between businesses and researchers to increase competitiveness in remote Australia. One example from Ninti One is the collaboration between pastoral businesses and researchers in the Cooperative Research Centre for Remote Economic Participation (CRC-REP). The project, Precision Pastoral Management Tools, is developing technology that will make the pastoral industry in remote Australia more competitive. Indeed, the CRC program is a successful model of collaboration between industry and research, with many examples of benefits to remote Australia in STEM.

### ***Five Growth Centres will be established by the end of 2015***

The five Growth Centres to be established by the end of 2015 should also be inclusive of remote businesses and research organisations with expertise in remote Australia to ensure the needs of industries in remote Australia are understood and addressed to increase their competitiveness. For example, in food and agribusiness, the CRC-REP project Plant Business is bringing together experts in molecular biology with Traditional Owners and small businesses to improve the bush food industry; this will increase the access of Aboriginal and Torres Strait Islander entrepreneurs to markets for their produce.

### ***IP Australia is also expanding its range of services***

Ninti One's projects recognise, manage and protect the intellectual property rights of Aboriginal and Torres Strait Islander people's traditional knowledge. This has been captured in the Aboriginal Knowledge and Intellectual Property Protocol: [Community Guide](#) and [Protocol for Aboriginal and Torres Strait Islander Knowledge and Intellectual Property](#). This consideration is important to any research project or market developments for remote Australia. The move to modernise Australia's IP system is an opportunity to include in any datasets the particular IP associated with the commercialisation of bush foods and medicines.

### ***Integrating STEM experts across industry, business and public sectors***

Any teacher surveys or mapping of STEM-qualified people should include representation from remote Australia. Any expansion of the Entrepreneurs' Infrastructure Programme should consider targeting activities in remote Australia. Examination of successful models of collaboration between business and research should also include activities from remote Australia that could be included in existing programmes, or could operate separately.

### ***Building an entrepreneurial culture using STEM***

Role models are extremely important for building participation in education and economic activity in remote Australia. People working in roles relevant to the local contexts, industries and opportunities – such as Indigenous Rangers, pastoralists, ecologists and engineers – should serve as valuable role models who can inspire the younger generation to become STEM experts.

## **2. Education and Training**

### ***Inspirational teaching and inspired learning***

There is a critical need to better engage with remote Aboriginal and Torres Strait Islander remote communities to develop students' capacities in STEM. This includes through activities and programs both in and out of school. This is evidenced by research findings from our CRC-REP Remote Education Systems project, which show that successful educational outcomes are greatly influenced by an engaged community and local-based STEM curriculum. This goes with the need for specific teachers' training for teaching STEM in remote schools.

### ***Connecting schools with STEM professionals***

Support for SMEs with STEM professionals working in remote Australia to collaborate and partner with schools would provide real inspiration and motivation for young people and would help secure the pipeline of STEM professionals and local employment opportunities. There is currently no national STEM community engagement strategy or activity that encourages this approach to establish connections between education activities from the early years through to local employment opportunities in remote communities. Through our substantial networks, research and community engagement in this field, Ninti One can contribute to improving Australia's STEM performance in this area.

### ***Better community engagement with STEM***

Our CRC-REP Remote Education Systems<sup>1</sup> research work recommends that increasing community participation will increase attainment levels in remote schools. The Government's expansion of the number of regional hubs across Australia to increase participation in National Science Week and year-round science engagement activities is welcome. However, there is a need for hubs to be located in remote Australia, with specific activities tailored to the local needs to build capacity in remote Australia.

Initiatives such as the Desert Science Network (DSN) should be encouraged and supported. DSN was one of the key recommendations from the Australian Government's Inspiring Australia report *Inspiration from the Desert*<sup>2</sup>. A working group was established to advance the DSN that included Ninti One, Centre for Appropriate Technology, CSIRO, Arid Lands Environment Centre and Desert Knowledge Australia. The objective of DSN is to establish greater understanding of desert science and realise a scientifically engaged society. DSN is facilitating collective science learning, skills development and inspiration through connecting innovation and science communication across the arid lands.

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<sup>1</sup> <http://crc-rep.com/remote-education-systems>

<sup>2</sup>

<http://www.industry.gov.au/science/InspiringAustralia/ExpertWorkingGroup/Pages/EWGroupDesertRegions.aspx>

The development of STEM-focused exhibitions that tour regional and remote Australia is a good suggestion. However, we believe that for such exhibitions to be successful in remote communities, they would need to be developed with local content to ensure relevance and maximal engagement.

***Support research careers***

In the context of remote Australia, consideration should be given to reforming researcher recognition systems so that collaboration with SMEs and industries is valued as well as, for instance, academic publications. This will encourage researchers to respond to remote issues identified by remote business and industry.

In conclusion, this submission recommends that a dedicated representative from the research sector of remote Australia, representing science and education, be appointed to the new Australian Innovation Board. This person would contribute the experience of successful models of collaboration across science and education that are already common in remote areas, as well as represent the interests of remote Australians in the development of this strategy.