

A satellite in space with solar panels and Earth in the background. The satellite is positioned in the lower right, with its solar panels extending towards the upper left. The Earth is visible on the left side, showing a mix of brown and green landmasses and blue oceans. The background is a dark, star-filled space.

# **COOPERATIVE RESEARCH CENTRE (CRC) FOR INNOVATIVE SPACE SOLUTIONS**

**INVITATION TO PARTICIPATE**

Australia's dependency on space technologies across defence, security, agriculture, environmental and financial sectors is well publicised and generally understood by governments at State and Federal level. The Australian space sector currently produces annual revenues of 3-4 billion, and employs between 9,500 and 11,500 people, from its 0.8% share<sup>1</sup> of the global space economy.

Space has historically been perceived in terms of large scale projects with big costs, high risk, multi-year commitment and the need for international cooperation. To this end, Australia has traditionally supported its space allies, in particular the USA, whilst at the same time sat outside of the major space agencies and not taken a leadership role.

## OPPORTUNITY

The rapid development in small satellite technologies and the cheaper and easier access to launching satellites into orbit – albeit outside of Australia - have revolutionised the global space sector. Further, 'New Space' startups and cubesat development projects have placed Australia in an upward trajectory.

The spectrum of possible civil applications of space related innovations is larger than ever with space-related products and services currently used in virtually every sector of the economy. This has seen a prediction that global space economy will grow to AU\$1 trillion over the next 20 years<sup>2</sup>.

Capitalising on the application of upstream technology innovations on downstream satellite-based services will stimulate the growth in current and future Australian space industries who will define new markets for space enabled services. The application of these would impact a number of priority sectors for Australia, including agriculture, mining, defence, and transport, amongst others.

Leveraging the strong engagement with industry, and with a track record in the development of industry-led collaborative research, Nova Systems and the University of South Australia are leading the development of a CRC for Innovative Space Solutions.

## AIM

This new CRC will have a profound impact on the Australian Space industry and ensure a competitive and world class capability. This CRC would aim to:

- Grow the Australian Space Economy
- Foster an innovative and competitive space industry
- Focus on solving real problems important to Australia and the World
- Bring together distributed organisations to achieve significant breakthroughs
- Identify technologies and high impact application areas that build on existing strengths
- Provide enabling technology solutions for interconnectivity of space platforms
- Develop a skilled workforce that is equipped to deal with the engineering, commercial, legal

and programmatic challenges associated with an advanced space industry, and

- Promote STEM in the Australia community by organising dedicated initiatives.

## ACTIVITIES

The CRC will look to address key industry challenges with a strong component focused on transitioning new technology solutions into commercial reality. This purpose will be achieved through the research, innovation, demonstration, knowledge transfer, and training activities of the CRC. The CRC's technology research themes, which will be finalised in consultation with the organisations that form part of the CRC proposal, may encompass:

- Development of an open system for satellite connectivity
- Demonstration of modular components in a space environment

- Collection, storage and analytics of sensor data within a coherent framework
- Application to a pressing safety/security issue of national significance, and
- Space related regulation and policy.

A unique capability of this CRC is proposed as a large-scale technology demonstration program that will be aimed at advancing new technology from the laboratory, or prototype phase, to test and validate it in realistic settings. With the objective of de-risking new innovations so that a successfully demonstrated technology may be fast tracked into product specific applications, tested and certified in a fully operational environment. The program will provide a step change for the Australian Industry, particularly for SMEs, in supporting the path to adoption and market acceptance for their innovations.

<sup>1</sup> Review of Australia's Space Industry Capability: Issues Paper - August 2017

<sup>2</sup> <https://theconversation.com/lets-talk-about-the-space-industry-in-australias-election-campaign-61567>

# FAQS

## What is a CRC?

The Australian Government's Cooperative Research Centres (CRC) Programme supports industry-led collaborations between industry, researchers and the community. It's a proven model for linking researchers with industry to focus on research and development towards use and commercialisation.

It aims to:

- improve the competitiveness, productivity and sustainability of Australian industries, especially where Australia has a competitive strength
- deliver outcomes in line with government priorities
- encourage and enable small and medium enterprise (SME) participation in collaborative research
- foster high quality research to help solve industry specific problems through collaborative research partnerships between industry entities and research organisations.

CRC's are typically funded for between 7 and 10 years to catalyse collaboration between industry research and community sectors to develop important new technologies, products and services.

## Why do companies join a CRC?

Companies join a CRC to get facilitated engagement with research organisations, solve complex technical problems, gain access to training and postgraduate researchers, develop and de-risk new technologies and products, and undertake cost effective research and development.

CRCs are experts in facilitating engagement between industry and research by:

- finding research partners for specific industry challenges
- facilitating project formation
- steering industry research collaborations to successful conclusions
- building networks between organisations and industry
- helping small and medium enterprise (SME) engage in collaborative research.

## How is a CRC formed?

The formation process for CRCs requires a consortium of organisations to submit a bid to the federal government for funding under the CRC program, and for that bid to be accepted by the government in line with their published guidelines and in competition with other bids. To be successful a bid must offer the government a value proposition that is compelling, benefits the nation (economic and social), is cost effective and plausible.

## How does CRC funding work?

CRC's operate from a combination of participant cash, participant in-kind contributions and government funding. There are no strict rules about how large each component should be; it is up to each bid to develop its own proposition to the government. Historically successful bids have attracted federal funding of similar magnitude to the amount of cash the consortium is willing to commit. Once submitted in the bid process the amounts are frozen. The funding from the government cannot be increased at a later date, and the consortium is obliged to procure the contributions that were committed in the bid.

In the bid process each Participant organisation commits to contribute an amount that is proportionate to the amount of research they wish to conduct over the ten year life of the CRC. Participants usually pay their contributions to the CRC at regular intervals (e.g. annually or quarterly).

The CRC typically holds participant funds in trust and expends them only on projects in which the contributing participant is engaged, as described in individual project agreements. The cash funding ratio for research projects is typically industry – 50%; Commonwealth – 25%; Research Entity – 25% however the actual amounts depend heavily on the funding proposal built into the bid document.

## How is a CRC run?

The appropriate governance structure for the CRC will be discussed with Partners during the bid development process. Interim positions of the Independent Chair and potential Non-Executive Directors, CEO, Research Director and Program Leaders will be called for. Importantly, the CRC Guidelines state that:

- all CRCs must be established and be governed by an incorporated company, limited by guarantee (the CRC Entity);
- CRC Boards must include a Chairperson who is independent of the Participants with the necessary skills and experience required to lead an organisation with diverse Participant needs and outcomes; and
- the composition of the CRC Board should include senior figures with general industry experience (not necessarily from the specific industry of the CRC) and reflect skills, experience and expertise relevant to managing the CRC. The majority of Board members should be independent.

The CRC company usually has a small administration team who is responsible for overall management of the research program, and for the legal, financial, communications, networking and educational aspects of the CRC.

## Who decides what research will be done?

The industry participants drive the research agenda. The overall research program is described in the bid document, which become milestones in the Commonwealth funding agreement. These are then used by the CRC to demonstrate delivery of its commitment. The CRC administration team invites industry participants to propose individual projects and it prioritises those project proposals according to the contribution they will make to delivery of outstanding Commonwealth milestones and more generally to the objectives of the CRC.

## How are CRC projects initiated?

CRCs are industry led and research projects address the specific needs of the participant companies in the CRC. It is expected that the industry participants will identify and articulate the challenge that they want to address. The research administration will assist to bring together the relevant parties, to negotiate a project scope and to provide a project agreement framework.

## How is IP managed?

The emphasis of the CRC program is on getting project outputs to be utilised. The IP arrangements are made at the project level on a case-by-case basis to encourage this. These arrangements must be established at the time of project formation.

Default IP arrangements vary between CRCs, and are agreed by participants, and specific project arrangements are typically negotiated with the project parties. Any party in the project can own IP, but the overall arrangement must adhere to the principle of maximising utilisation of project outputs and fair treatment of all parties who invested in the project.

## How do I find out more about CRCs?

Visit the Commonwealth Department of Industry, Innovation and Science CRC Programme pages ([www.business.gov.au/assistance/cooperative-research-centres-programme](http://www.business.gov.au/assistance/cooperative-research-centres-programme)) or the CRC Association website ([www.crca.asn.au](http://www.crca.asn.au)). Both of these include case studies and information about the outcomes of existing and previous CRCs.

## CONSULTATION

The bid is planned for submission as part of round 20 of the CRC Programme which is expected to be in July 2018. The first stage of the bid development process is to identify interested parties and an extensive round of consultation is planned for the latter part of 2017.

To date, a number of productive and positive discussions have been held with key organisations and government agencies.

CRC participation is not an insignificant investment, and the application process is highly competitive. A bid will require dedicated resources over the next 12 months to develop and submit a high-quality bid with a good chance of success. Involvement in the initial bid development process is obligation free and non-binding.

## THE BID TEAM

The CRC bid is being prepared in partnership by Nova Systems and the University of South Australia. The team has significant knowledge and experience leading research bids and delivering outcomes for industry. Contact the bid team to arrange a detailed discussion regarding the bid opportunity, benefits to your organisation and research themes.

## KEY CONTACTS FOR MORE INFORMATION

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