A LEGACY OF ACHIEVEMENT

LEADING, CONNECTING AND TRANSFORMING THE USE OF SPATIAL DATA

crc•si

Cooperative Research Centre for Spatial Information

REFINED AND IMPROVED REMOTE MONITORING OF UTILITY ASSETS

$1.07
BILLION
TOTAL ESTIMATED BENEFIT 2010–24

80
PHD AND MASTERS COMPLETIONS

120
PARTNERS FROM GOVERNMENT AGENCIES AND DEPARTMENTS, INSTITUTES, UNIVERSITIES AND THE PRIVATE SECTOR

900
PUBLICATIONS

PREVENTATIVE HEALTH AND EARLY DISEASE DETECTION TOOLS

SUSTAINABLE URBAN DEVELOPMENT SOFTWARE TO INCREASE PLANNING EFFICIENCY AND LIVEABILITY

BETTER LICENSING REGIMES FOR DATA SUPPLY CHAINS

4
COMPANIES CREATED

IMPROVED MAPPING METHODOLOGIES AND IMPLEMENTED QUALITY ASSURANCE SOFTWARE

A MORE COORDINATED AND LARGER SPATIAL INDUSTRY

MORE COLLABORATIVE GOVERNMENT, UNIVERSITY AND INDUSTRY INTERACTIONS

ENRICHED GOVERNMENT DATA MANAGEMENT AND SERVICES

FOR EVERY DOLLAR INVESTED IN THE CRCSI, THERE WILL BE A
$3.13 RETURN
TO THE AUSTRALIAN AND NEW ZEALAND ECONOMIES BY 2024

MULTIPLE AWARDS WITH PARTNERS
NATIONALLY AND INTERNATIONALLY

500
INDIVIDUALS ACROSS 100 ORGANISATIONS COLLABORATING ANNUALLY

PROGRESSED VISION OF PRECISE GNSS POSITIONING TO NON-EXPERTS ANYTIME, ANYWHERE

200
PROJECTS

> *The vital part CRCSI played in the National Positioning Infrastructure program created a lasting impact for the Australian public across a range of sectors including agriculture, autonomous vehicles and precision navigation. Their fundamental contribution will directly support an estimated $70b of economic activity in sunrise industries.*
>
> **DR HEATHER SMITH**
> PSM SECRETARY, DEPARTMENT OF INDUSTRY, INNOVATION AND SCIENCE

A LEGACY OF ACHIEVEMENT

LEADING, CONNECTING AND TRANSFORMING THE USE OF SPATIAL DATA

AN IMPROVED DATA FUTURE

The Australia and New Zealand Cooperative Research Centre for Spatial Information (CRCSI) transformed the industrial, economic and social landscape of Australia and New Zealand through its leadership in the delivery and use of spatial information and data.

Through its partners, CRCSI changed the way data was acquired, managed and made accessible, which has led to improvements in the operations of many facets of society and the economy, from transport and energy infrastructure to health services, environmental management systems and much more. In effect, CRCSI put Australia and New Zealand at the forefront of many of the technologies that are laying the foundations of the 21st century.

Leadership and collaboration

The focus of the CRCSI was to develop a collaborative research environment that could build the teams and access the expertise needed to tackle the big, cross-sectoral spatial research challenges that underpin infrastructure development in today and tomorrow's digital economies. The CRCSI built effective collaborations among some 500 specialists drawn from over 120 partnering organisations.

The CRCSI delivered around $1.07 billion in benefits arising directly from its research and development (R&D) outputs. This represents a direct benefits ratio of 3.13 to 1 on data independently assessed by the CRC Program guidelines administered by the Australian Government. The CRCSI completed 200 projects, a small selection of which are summarised here to illustrate some significant achievements.

A notable measure of the CRCSI's innovation impact in Australia and New Zealand is that at the end of its CRC cycle on 30 June 2018, its work has continued through the creation of a not-for-profit company, FrontierSI, to maintain the delivery of major benefits to governments, industry and the community through its expertise in spatial mapping, infrastructures, technical standards, positioning, analytics and geodesy.

CASE STUDIES

PRECISE POSITIONING

Robust, reliable and precise positioning has never been more important as automation becomes an integral component of many modern industries and services. The CRCSI's Positioning Program delivered applied research for over a decade in support of the National Positioning Infrastructure (NPI). Research addressed and resolved major technical challenges, resulting in the delivery of two- to five-centimetre 3D positioning in real time anywhere outdoors using the six global and regional navigation satellite systems (GPS, GLONASS, Beidou, Galileo, QZSS, NAVIC).

Several world firsts were achieved by our research teams including using an Australian-generated, QZSS-delivered correction message to guide Australia's first fully autonomous robotic tractor in real time. We also developed a novel approach to PPP-RTK (Precise-Point-Positioning and Real-Time-Kinematic), reducing dependence on expensive ground infrastructure.

The CRCSI and its partners first conceived the idea of a nationwide integrated precise positioning framework back in 2008. This subsequently became known as the NPI and its implementation has been led by Geoscience Australia.

The CRCSI built capacity in the university sector by training researchers, who then collaborated with the government sector to make several significant technological advances. The results of this collaborative research will be utilised through the NPI. In particular, it will allow global technologies that are position-ready to be readily deployable in Australia.

The Positioning Program's principal outcome is the Analysis Centre Software (ACS), which provides the computational heart of the NPI and delivers the outputs needed to support real-time, quality-assured positioning to users nationwide.

The NPI and ACS together will drive innovation and deliver broad cross-sectoral benefits to a range of industries, including the emerging autonomous vehicle sector, which is showing signs of rapid development over the coming decade in industries such as agriculture and horticulture, and in the public transport sector. Already it has been estimated the NPI has delivered benefits to Australia worth at least $7.8 billion.

CANCER ATLAS

The CRCSI's Health Program asked the question: "does location affect my health?" The answer was and is "yes".

The Atlas of Cancer in Queensland, produced by the Cancer Council Queensland, with technical input from the CRCSI and researchers from Queensland University of Technology, emphatically proved this. Findings from the research resulted in substantial policy reform, including a landmark doubling of Queensland's Patient Travel Subsidy Scheme in 2013, allowing people in regional areas more ready access to diagnostic and treatment services.

Connecting people at risk of cancer with the right treatment at the right time is critical to improving survival outcomes.

The Queensland Cancer Atlas work led to the establishment of a new project, the Australian Cancer Atlas, with support from Cancer Councils across Australia as well as the Australian Institute of Health and Welfare. The tools in the atlas will continue to focus on people-centred questions to improve decision support, business intelligence and resource management for the health sector. Work on the atlas will potentially save many lives across Australia.

The Australian Cancer Atlas shows national patterns in cancer incidence and survival rates based on where people live for 20 of the most common cancers in Australia, such as lung, breast and bowel cancer.

The atlas combines spatial analysis tools, geostatistics and small area estimate modelling to create a powerful tool for presenting and analysing cancer patterns in Australia. Having a spatial comparison and analysis of cancer patterns helps inform decision-making at local, state and federal levels.

The research team developed a robust, accessible and easy-to-use tool that presents a spatial view of cancer indicators and provides a model for exploratory data analysis. The online atlas enables unique insights into the location-based patterns of cancer outcomes across Australia and will build momentum in the research efforts to understand why variations exist, potentially leading to earlier interventions to reduce the observed inequalities.

The atlas assists health agencies, policy makers and researchers digest complex data to understand and see previously indistinguishable patterns, which will in turn provide a better understanding of geographic disparities and health requirements. There are many further flow-on benefits from being able to visualise data on a map, including identifying avenues for new research and providing evidence for future policy decisions.

> ***The Australian Cancer Atlas was developed over several years by a multidisciplinary team of cancer epidemiologists, statisticians, visualisation experts, information technology experts, web designers data custodians and clinicians, across multiple organisations. In addition to providing co-funding for this project, CRCSI was the coordinating body from the very start, utilising their extensive networks across the spatial continuum to facilitate collaborative partnerships between content experts and the research team that were central to the successful completion of this innovative project.***
>
> **PROFESSOR JOANNE AITKEN**
> GENERAL MANAGER, RESEARCH,
> CANCER COUNCIL QUEENSLAND

AUSTRALIAN AND PACIFIC DIGITAL ELEVATION MODELS

Under a COAG (Council of Australian Governments) mandate, the Australian Department of Environment selected the CRCSI to develop a high-resolution (15cm vertical accuracy) Digital Elevation Model (DEM) along Australia's urbanised coastline, covering some 200,000 square kilometres.

The aim was to improve Australia's preparedness and resilience in the face of climate change and rising sea levels.

The Urban Data Elevation Model project has increased awareness across all levels of government, business and the community of the potential impacts of climate change, and the ability for high quality elevation data and derived products to improve planning and management of climate change impacts.

First, a science case was built, which was validated independently through a public review, coordinated by the Australian Academy of Science. This case articulated the solution to the technical challenges faced by the creation of a seamless DEM.

More than 200 organisations participated in the program and much of the resultant data is now publicly available and administered by Geoscience Australia. Derived maps have been downloaded more than 300,000 times and the coastal risk portal has had over 130,000 users to date.

The work also spawned follow-on acquisition training and education programs in five Pacific Island countries: Tonga, Samoa, Papua New Guinea, Vanuatu and Solomon Islands. It has won several awards including the 2015 UN Lighthouse Award at the Paris Conference of Parties and two JK Barrie prizes, for innovation in elevation data standards, data acquisition, data fusion, distribution and public use. It has had widespread impact nationally and internationally.

An important outcome has been the Elevation Information System (ELVIS) hosted at Geoscience Australia, which provides access to the data sets for government and public users, and delivers over $100 million of benefit per annum.

CREATIVE COMMONS

The CRCSI's collaborative demonstration of Creative Commons licensing helped spawn the significant open data movement that exists in Australia today. A wealth of federal, state and local governments, universities and private companies have used this licensing to make their data accessible and usable across Australia. This work led to the establishment of Queensland's Information Licensing Framework and Government Information Service, and the Western Australian Shared Land Information Platform. The project was jointly led by Queensland University of Technology and Queensland Treasury in conjunction with the Australian Bureau of Statistics.

This work has influenced government licensing and public data access policies throughout Australia and New Zealand. The Creative Commons model is now used across government and has been widely adopted in Australia and New Zealand.

THE 2026 SPATIAL INDUSTRY TRANSFORMATION AND GROWTH AGENDA

In 2016, the spatial industry in Australia faced a rapidly changing technological and operating environment. This created unprecedented global opportunities for the spatial sector to generate additional value. However, 95 per cent of the leaders within the spatial sector in Australia felt that the industry was not growing or not reaching its growth potential.

To address this, CRCSI and SIBAIGITA collaborated to lead the conception, development and delivery of the 2026 Spatial Industry Transformation and Growth Agenda.

The agenda brought together most of the traditional spatial stakeholders with leaders from priority growth sectors, such as energy, agriculture, intelligent transport and health, to lay out a roadmap for accelerating the uptake and impact of spatial information, analytics and technologies.

The 2026Agenda came into existence to unify the spatial sector so its participants could speak with one voice. The CRCSI used its place as a trusted industry leader to conduct a six-month consultation with over 500 people who work with and benefit from spatial technologies. Since the 2017 release of the 2026Agenda: Action Plan, there has been a significant and positive change in the funding, infrastructure provisioning and culture of innovation across Australia's spatial landscape. Government agencies traversing the country have aligned their long-term strategies to the action plan. And the private sector has begun to pivot and accelerate, realising much of the growth potential first identified through consultations in 2016.

ROAMES – POWERLINE ASSET MAPPING

What began as a CRCSI-led exploratory project between Queensland University of Technology and Ergon Energy, the Remote Observation Automated Modelling Economic Simulation (ROAMES) system is now a globally available technology for monitoring and managing powerlines. Research to develop and validate an optimised flight path planning and control system has delivered reduced fuel costs and increased pilot safety and has enabled significant supply chain efficiencies.

The ROAMES system was developed to allow safe, accurate and efficient capture of imagery and light detection and ranging data over 150,000 kilometres of Ergon Energy's electricity network every year. The technology provides high quality visualisation and analytical intelligence to unlock vital information about the condition of critical powerline infrastructure. This information has, for example, reduced vegetation management costs for Ergon by around $40 million per year. In 2015, Ergon Energy was awarded the Edison Electric Institute's International Edison Award for its leadership of the ROAMES project. A private company was spun out from Ergon to market and further develop the ROAMES capability across Australia and internationally.

MILLMAPPER

CRCSI researchers at Curtin University built the world's first mill condition monitoring technology using 3D laser scanners to see, in fine detail, the inside of mills used for ore and mineral extraction.

The technology, called MillMapper, was proven in Australia and then sold to Finnish company, Outotec.

Now, the company Scanalyse is the industry standard in mill liner condition monitoring and modelling, operating in more than 20 countries.

The technology improves safety (technicians no longer have to take measurements from inside the mill), minimises inspection shutdown times, captures wear data on the entire mill, optimises liner designs (it can compare the wear over time of different minerals going through the mill), defines metallurgical parameters and improves the identification of liner abnormalities, significantly reducing unforeseen liner failures.

MillMapper allows mill operators to extend the life of their internal liners by 10 per cent, increase productivity (less downtime changing liners) saving at least $50,000 per hour per mill.

NRM SPATIAL HUB

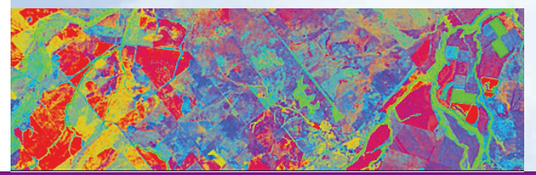
The NRM Spatial Hub allows graziers and land managers to map, plan, analyse and monitor farm infrastructure, pasture condition and groundcover to improve land and natural resource management.

This can occur at paddock scale or across an entire property and uses the most recent satellite imagery as well as 30 years of historical satellite imagery records. Data is processed online and imagery is delivered, using low bandwidth communications, to a farmer within 30 seconds of a request.

A survey of property managers currently using the hub identified the following benefits:

- Improves productivity, profitability and sustainability (95% of respondents)
- Saves 10–30 labour days a year (50%)
- Increases safe carrying capacity of livestock (75%)
- Enhances business viability and sustainability (72%)

In 2017, the hub began operating as a separate business. It currently has more than 500 subscribers, representing 60 million hectares of grazing property across Australia.



INDJI WATCH

Indji Watch was another world-first achievement for the CRCSI – developed for energy utility operators to predict and monitor severe weather events that impact on the operation of power networks.

Today, Indji Watch is a commercial, web-based situational awareness tool used by utility companies worldwide. The system provides real-time analysis of risks and threats and automates what would otherwise be labour-intensive manual processing. It collects third party information into a single interface to help companies manage natural hazard impacts.

Since its commercialisation, the tool has been expanded and tailored to further meet industry needs, including those of renewable energy farms. It now operates across most of the power grid of eastern Australia. The Indji Watch project was the first use of web services for the Bureau of Meteorology, a landmark step towards what is now a routine service.

> ***The CRCSI played an important role in bringing a diverse range of stakeholders together from across the nation.***
>
> ***As an Australian business now exporting to a global market, we appreciate the early support provided by the CRCSI. We would not be where we are today without that early support.***
>
> **MARK CARNIELLO**
> VICE PRESIDENT,
> INDJI SYSTEMS

43PL, THE CRCSI'S INDUSTRY CLUSTER

Unique in the 27-year history of the Australian Government's CRC Program, 43pl was a proprietary limited company and trust, structured to enable small to medium enterprises (SMEs) to partner with large government agencies and universities in collaborative and complex R&D projects. Since inception, 43pl involved more than 100 companies who received over $20 million in direct funding from the CRCSI and participated in some 100 projects.

Even more significantly, 43pl companies comprised some of the leading players in a spatial industry that now contributes $12 billion per annum to Australia's GDP, and has rapidly growing global markets.

43pl was established in 2003 to facilitate corporate participation in the spatial industry and to foster innovation in spatial technologies by bringing companies, government and researchers together. Uniquely, this consortium structure allowed SMEs to collaborate with government departments and agencies and with universities through the CRCSI at low cost and low risk.

43pl comprises SMEs and several multinationals and has facilitated the development of several companies from small into large Australian players.

Industry interaction was central to the success of the CRCSI, and 43pl companies were embedded in all aspects of the CRCSI activities including strategic planning, governance, research, and commercialisation activities.

Surveys of 43pl members consistently reported strong support for the engagement model, citing, as a key benefit, the ease with which companies were able to network with collaborators across all sectors. Members also regularly cited the value of the CRCSI annual conference as an opportunity to learn about cutting-edge technology and new developments in a trusted and non-competitive environment. 43pl and the CRCSI were awarded the 2007 STAR Award from the CRC Program for Small Business Engagement.

PhD AND TRAINING IMPACTS

The CRCSI directly supported more than 80 PhD and Masters students. While these candidates have come from many different countries, 90 per cent have chosen to find employment in Australia or New Zealand, making a lasting contribution to these two nations and the spatial industry.

One of the most enduring and valuable legacies of the CRCSI will undoubtedly be the ongoing contribution made by those exceptional individuals who passed through our PhD program.

Many of them already fill influential positions in and beyond the spatial industry. They are acknowledged for their technical expertise, their problem-solving skills and their work-readiness.

As Research Director, it has been a pleasure and a privilege to be involved in their research training and professional development.

PHIL COLLIER
RESEARCH DIRECTOR,
CRCSI

Being a student researcher backed by the CRCSI encouraged me to push my boundaries. Creating a 30-second video to explain my research to a non-scientific audience was outside my comfort zone but proved to be one of my most memorable experiences of the program. The uniqueness of the project helped me to bridge the gap between industry and academia, providing a stepping stone to my current role at Water NSW.

The connections made with CRCSI staff and fellow researchers are life long and continue to open doors. Most of all, I worked in the breathtaking Kimberley region of Western Australia, which few people have the chance to do in their lifetime.

CHARITY MUNDAVA
SPATIAL SCIENTIST,
WATER NSW

BETTER PLANNING TOOLS

In cities across Australia and New Zealand, housing affordability has become a major issue. The Greening the Greyfields projects created an online urban planning toolkit to address this issue and combat urban sprawl and sub-optimal land developments.

The toolkit brings landowners, developers and planners together to design more sustainable, liveable and economically viable cities. It is an out-of-the-box solution, meaning it can be used with minimal preparation or training, and in a fraction of the time of existing tools. One of the new tools, ENVISION, uses a combination of open and proprietary data sets to assist planning experts identify areas of high redevelopment potential at both a municipality and an individual property level. The tool can then rapidly explore different development possibilities.

In addition to providing new technical tools, the project has worked on different levels – from state policy down to the landowner's kitchen table – to create a planning process and framework that achieves better financial, community and environmental outcomes. This process has been recognised within local council planning in Melbourne, Christchurch, Perth and Sydney. At a state level, the Greyfields development approach has been included as the only alternative to "business as usual" development in the Plan Melbourne metropolitan planning strategy for future housing development in Melbourne.

NATURAL DISASTER IMPACT AND MENTAL HEALTH

CRCSI PhD student Daniel Hogg studied how location – for example, where people live – affects how they respond and recover mentally after a natural disaster. Working with his supervisors at the University of Canterbury and the Canterbury District Health Board (CDHB), Daniel demonstrated correlations between spatial factors and mental health outcomes after a major natural disaster, in this case the Christchurch earthquake which killed 185 people and destroyed 70 per cent of Christchurch's CBD and many thousands of homes.

This was the first such study in the world, linking relocation after a natural disaster with mood and anxiety symptom treatment. The work generated considerable interest among researchers and health agencies, particularly in New Zealand, where the CDHB modified its governance policy of how it would provide post-disaster support services in the future. The research analysed data from the 2010–11 Canterbury earthquakes and papers were published exploring how mental illness and location at both the time of disaster and after the disaster are connected.

SENSING CITIES

> ***The CRCSI was a key facilitator of a complex, multinational, multidisciplinary project, which pushed the boundaries of geospatial health research. The most surprising impact of the research is the importance of better understanding the role of geospatial technology as both a progressive and a simultaneously disruptive influence on the healthcare sector and patients.***
>
> **DR MALCOLM CAMPBELL**
> SENIOR LECTURER,
> UNIVERSITY OF CANTERBURY

In another world-first study, conducted with the University of Canterbury's Geohealth Lab and Sweden's Future Position X, the CRCSI coupled sensor technology and citizen science to measure and monitor chronic obstructive pulmonary disease (COPD) patient outcomes. COPD is a major cause of disability, hospital admission and premature death. There have been no recent economic studies but in 2008, the financial cost to the Australian economy of COPD was put at $8.8 billion directly, with a further $89.4 billion estimated as the overall wellbeing loss – in that year alone.

Using sensor and geospatial technology with geostatistical intelligence and analytics, the project developed new ways to monitor patients with COPD. Due to the ability to combine real-time environmental and patient health data, predictive modelling to reduce preventable COPD hospitalisations is now a reality. This is an exciting step towards the future of patient-empowered technology and a more sustainable health system.

THE LEGACY

The Cooperative Research Centre for Spatial Information (CRCSI) started its working life in July 2003 with the bold ambition to galvanise an emerging spatial industry and put government, universities and the private sector at the forefront of spatial capabilities in global navigation satellite systems, spatial data infrastructures, data fusion and rapid spatial analytics.

It achieved this, and more. When its tenure ended in July 2018 it had built up such industry and government support, had proved to be so critical to modern infrastructure, that its work is continuing through FrontierSI, a not-for-profit enterprise.

During its 15-year life the CRCSI built up an extraordinary critical mass of research ventures based on industry-science partnerships – in fact some 120 partners who brought into play over $320 million in resources. This comprised a $47 million Commonwealth grant, $87 million of partner cash, and $186 million of in-kind contributions.

The CRCSI's purpose was to facilitate research collaborations between end-users and researchers. Its defining character was its ability to bring together government, universities and the private sector and use its spatial capabilities to address clearly articulated, major challenges.

When the CRCSI was conceived as a recommendation of the 2001 Spatial Information Industry Action Agenda 'Positioning for Growth', few could have foreseen the extent to which it would transform the spatial sector and become fundamental to the development of so many constructs in industry and society that rely on the accurate delivery, and deployment, of spatial data.

In a word, the growth and influence of spatial technologies in everyday society and business has been breathtaking, and the CRCSI's mark and presence in associated industries and services will be indelible.

It has delivered novel research and development across the Australian and New Zealand industry. Just a few examples include new mapping tools, decision support systems, data analysis algorithms, more efficient workflows and more functional licensing and policy frameworks. This is the sort of innovation that has changed the way our partners today provide their services and conduct their business.

> *We are extremely pleased with the decision by most CRCSI partners to continue to collaborate in spatial research and innovation through partnership with FrontierSI.*

In this legacy booklet we provide a snapshot of projects across sectors, jurisdictions and years to illustrate the type of work undertaken and the many technical and professional achievements attained, all of which are destined to have profound long-term impacts.

It is impossible to cover every project the CRCSI completed across Australia and New Zealand, but these examples provide an insight, at least, into the significance of the work achieved and which is contributing strongly to advancing economies and securing healthy natural and built environments.

Naturally we are extremely pleased with the decision by most CRCSI partners to continue to collaborate in spatial research and innovation through partnership with FrontierSI.

We will draw on the experience of our first 15 years connecting and leading industry in acquiring spatial expertise and continue to drive innovation. Through FrontierSI we will collaborate with our partners to solve new challenges and address new opportunities. We will remain a trusted point of connection for our partners and stakeholders seeking to solve the challenges of the digital future. This legacy booklet is dedicated to everyone who has been part of the CRCSI journey, from the research teams in universities, government and industry who have conceived, led, managed and driven the research, to those who have implemented the outcomes, and to those who have served on the board, committees and working groups. Many hardworking people have given their time freely to ensure the quality of research and outcomes would be world class. Our collective efforts have made a difference. We thank you all.

Peter Woodgate, CRCSI CEO for 15 years, retired in December 2017. Graeme Kernich worked alongside Peter in CRCSI and took the reigns to complete the CRCSI term as CEO. He is now CEO of FrontierSI.

EVERYTHING HAPPENS SOMEWHERE.
SOLUTIONS HAPPEN HERE.

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CRCSI PARTNERS 2003–2018

CORE

43pl

Department of Defence

Department of Environment, Land, Water and Planning, VIC

Department of Finance, Services and Innovation, Spatial Services Division, NSW

Department of Natural Resources, Mines and Energy, QLD

Ergon Energy

Geoscience Australia

Landgate, WA

Curtin University

Queensland University of Technology

RMIT University

University of Canterbury

University of New South Wales

The University of Melbourne

The University of New England

Charles Sturt University

SUPPORT

Department of Health, WA

Land Information New Zealand

Department of Agriculture and Food, WA

Department of Environment, Climate Change and Water, NSW

Department of Lands, Planning and the Environment, NT

Energex

ESRI Australia

Intergraph

Murray Darling Basin Authority

Office of Environment and Heritage, NSW

Open Geospatial Consortium

Swinburne University of Technology

Telethon Institute for Child Health Research

Delft University of Technology

University of Canberra

University of Twente

Wuhan University

43pl COMPANIES

AAM Group

Advanced Spatial Technologies

AgLab

Akuna Consulting

Alexander and Symonds

Amristar Solutions

Beveridge Williams

BioMedware

Brazier Motti

Brown and Pluthero

Business Aspect

Carbonlink

Clyde Agriculture

CNG Systems

Costa Group

CR Hutchinson

CR Kennedy and Co

Critchlow Limited

CSBP

CTF Projects

Desktop Mapping Systems

DM Gerloff and Associates

Earthmine Data

Eco Logical Australia

EOMAP

ERDAS

e-Spatial

Fitzroy Basin Association

Fugro LADS

Fugro Satellite Positioning

Fugro Spatial Solutions

Fusion GIS

Gaia Resources

Geodata Australia

Geodata Information Systems

Geogenx

Geoimage

Geomatic Technologies

Geometry

GeoSmart Maps

GHD

Global Scanning Solutions

GPS-Ag

GPSat Systems

Hames Sharley

Howell Spatial Industries

iintegrate Systems

Industrea

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Jacobs

John Douglas Consulting

Land Equity International

Leica Geosystems

Lester Franks Survey and Geographic

Lisasoft

McMullen Nolan and Partners Surveyors

Mercury Project Solutions

Milne Agricultural Group

Nearmap

Navigate

NGIS Australia

Omnilink

Peter W Burns

Photomapping Services

Pitney Bowes Software

Position One Consulting

Position Partners

Precision Agriculture

PSMA Australia

Reeds Consulting

RPS Spatial Services

Scanalyse

Septentrio

SIBIZ

SkyView Solutions

Social Change Online

Spatial Information Technology Enterprises

Spatial Vision Innovations

Spookfish

Sundown Pastoral

Superair

Survey 21

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Business Cooperative Research Centres Programme

Established and supported under the Australian Government's Cooperative Research Centres Programme.