



A Commonwealth Government Initiative

CRC S: SUCCESS THROUGH INNOVATION

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JOINING FORCES WITH INDUSTRY

The CRC for Welded Structures has been particularly successful in engaging companies of various sizes in collaborative research. Its CEO, Dr Colin Chipperfield, explains.

For several years, the CRC for Welded Structures (CRC-WS) has operated a very successful Pipeline programme which has involved 15 sponsor companies ranging in size from one-person companies to major pipeline companies such as AGL and Epic Energy.

These 15 companies have been comfortable with the strategy of accepting variable sponsor contributions, depending on the size of the company, and pooling such funds into a group of research projects aimed at solving common problems.

The \$1 million per year Pipeline research programme assists the industry in reducing the construction costs for major pipeline infrastructure as well reducing the operating costs for existing pipelines. The group of sponsors meet quarterly to hear about technical and research progress against milestones and to assist in the direction of the project portfolio.

This is a key success story in the evolution of the research management strategy of the CRC-WS. Sponsoring companies, both large and small, gain from the opportunity to share best practice and issues between themselves and also seek to gain from input from the technical experts involved in the programme.

The template for R&D project portfolio sponsorship and management has been translated to a number of other industry sectors by the CRC-WS, including the power generation and mining industries, focussed on solving problems common to the industry participants.

The CRC-WS has attracted the interest of SMEs in joining the Mining programme at a reduced sponsorship rate. The SMEs gain from early exposure to new maintenance and welding procedures and will assist in the smooth introduction of any new technology which is developed within the sponsorship programme.



INTRODUCTION

from the Minister for Science



I am delighted to introduce the first issue of the Cooperative Research Centres (CRC) Programme newsletter, highlighting how CRCs are turning ideas into products making a difference to how we live our lives.

Science and innovation are an integral part of Australia's wealth creation. Much of our finest R&D is being undertaken by our CRCs. There'll be 71 of them this year, which is a record number and signifies a huge boost to Australian innovation, resulting in practical technologies and services that are so valuable to a wide range of industry sectors.

Much of the research and many of the products being created by CRCs are inspiring.

This newsletter will help strengthen the CRCs' links with the commercial sector, by showcasing how industry, including small and medium sized enterprises, can participate in CRCs at different stages of the research and development cycle.

Of course it will also keep CRCs informed of research and commercialisation developments within their own community.

Peter McGauran MP
Minister for Science



KNOWLEDGE BROKERS

The CRC for Freshwater Ecology (CRCFE) uses 'Knowledge Brokers' to tailor responses to their research users' questions.

Its CEO, Professor Gary Jones, explains.

The challenge for CRCs, especially those with a strong 'public good' focus, is to share new knowledge with the right audience in a user-friendly format.

CRCs bring together groups in disparate organisations to cooperate for a common goal - to produce knowledge for particular audiences and purposes. Research groups in the various partner organisations generate additions to knowledge, but often these additions are only part of the overall progress towards the goal. The target audience needs the various parts combined to suit its needs.

This is where 'knowledge brokers' come in. In CRCFE, knowledge brokers, with postgraduate scientific research training and communications experience, first interact with CRC stakeholders to really understand their needs. Then they analyse and assemble the required knowledge from a number of research projects to satisfy the stakeholder needs. In these two ways, our knowledge brokers have a somewhat different role and professional background than science communicators in many research organisations.

Knowledge brokers at the CRCFE provide advice on a range of issues on request. They manage consultancies, being the contact point for both the stakeholders who want a problem solved and the researchers who can solve it. Knowing the needs of stakeholders, they can advise researchers who are formulating and choosing the scope of relevant research projects.

Knowledge brokers run workshops for problem solving, expert panels and for training; and they produce communication projects that synthesise knowledge for various audiences. Apart from the workshops, typical knowledge-exchange products are talks, face to face briefings, reports, brochures, booklets and articles in appropriate print media.

The knowledge broking concept arose because it has been observed that professionals such as managers prefer to seek information from people they know and trust. They prefer face-to-face exchange; often only want to find out answers to particular problems; and want accurate integrated information. Knowledge brokers satisfy these needs.





CRC SNAPSHOTS

Drought resistance and superior quality are just two of the traits being rapidly transferred to Australia's next generation of cereal crops through the use of molecular markers.

To put Australia into the world lead for malt quality, the **CRC for Molecular Plant Breeding (CRCPMB)** in partnership with ABB Grains has developed new lines of barley which have just completed their first field trials.

"With traditional plant breeding it takes 12-14 years to develop a new wheat or barley cultivar. Using molecular techniques we've been able to cut that time in half," says CRCPMB chief executive Dr Bryan Whan.

"Like DNA fingerprinting of humans, this powerful technology enables us to pick out the cereal strains which have the precise genes for the characteristics we're looking at, then breed them conventionally."

Working with germplasm from the International Wheat and Maize Centre, the CRC team has also been selecting wheat varieties with genes for longer roots and other drought-tolerance features to help Australian farmers better withstand future dry years.

Researchers at the **CRC for Bioproducts** are using the natural ability of plants to produce anti-cancer drugs, using a technique known as plant cell culture.

Because some cancer treatments are based on substances from rare or endangered plants, the CRC team decided to use plant cell culture — the growing of plant cells in a nutrient medium — as a low-cost way to convert plant compounds into valuable pharmaceuticals.

"Our research has demonstrated there is a significant potential for using this technology as an alternative for making pharmaceuticals on a large scale," says Chief Executive of the Bioproducts CRC, Dr Doug Hawley.

Australian technology is poised to revolutionise coal mining world wide, with the introduction of a system that boosts dragline productivity by more than 25 per cent.

Three of the world's largest coal miners have expressed interest in fitting a number of their draglines with the Universal Dig & Dump (UDD) system developed by the **CRC for Mining Technology & Equipment (CMTE)**. This follows a successful full-scale trial at BHP Billiton Mitsubishi Alliance's Peak Downs mine in Queensland.

Conventional draglines use antiquated rigging that limits where they can dig and dump. On a UDD dragline, the new rigging configuration and the control system give the operator precise control over the angle of the dragline's bucket, and hence the ability to dig and dump anywhere under the boom. This improves cycle time. A UDD dragline also uses less rigging, so it can lift more payload without imposing extra stress on its components.

"There are 400 large electric draglines worldwide which could be retrofitted with this technology - and we're hoping to fit up to half of them over the next 10 years. This could yield a benefit to Australia of more than \$200m," CMTE CEO Dr Michael Hood says.

"This technology is also going to revolutionise the design of coal mines for efficient operation - so it will also position Australia as the primary global source of mine planning advice."

Employees, managers and customers moving around a large workplace need never be out of touch, thanks to technology developed by the **Australian Telecommunications CRC**.

The system uses low-cost Bluetooth radio technology to link devices like mobile phones, laptops, personal digital assistants, digital cameras and other roaming equipment to the central information and communications hub.

Typical uses range from helping shoppers to find a particular store or item, being in constant touch when roving the building, downloading the budget on the spot, or searching for information on the net — without a desktop PC.

"The advantage to Australian industry is that this is an exceptionally low-cost technology to install and use — user devices like phones, PDAs and laptops already exist, so it's just a case of installing the Bluetooth network and controllers," says CEO Dr Leith Campbell.





Investors large and small will be able to select the best broker anywhere in the world based on performance, using a revolutionary rating service developed by the **Capital Markets CRC (CMCRC)**.

Combining the capacity to analyse vast amounts of market data from around the world with advanced mathematical modelling, the CRC is poised to release a new broker rating service informing investors on how well their chosen broker is performing compared with others in research, sales and trading. Brokers are assessed stock-by-stock and the ratings can be updated monthly.

“It’s a quantum leap in sophistication over the present annual, labour-intensive survey system. It offers institutional investors a real opportunity to make sounder decisions and reduce their transaction costs,” says CMCRC Chief Executive Professor Mike Airken.

“At the same time it is cheap enough to help the mums and dads investors, and will help reduce the cost of capital to Australia overall.

“The broker rating service is one of a series of advances in financial tools and technologies, ranging from investment advice to market surveillance and scam detection, that are positioning Australia to be a leader in the supply of intelligent technology to world capital markets within three to five years.”

The **CRC for Construction Innovation** has tasked its researchers to explore large building designs that anticipate a crisis, according to principal investigator Professor Alan Jeary.

The CRC is working with leading building designers and surveyors on ways to make large buildings, such as tower blocks and shopping centres, safer.

The issues include: vulnerability of buildings to progressive collapse, fire protection, means of escape, general security, security of building services like power and water, safety of cladding and glazing, and prevention of unauthorised entry.

“We live in a world where there are people who would attempt to disrupt our way of life through terrorism, our aim is to make our security greater through innovative design and retrofitting of existing facilities.

“In this way the effects of a terrorist attack — or a natural disaster — are less likely to prejudice the safety of the public and the integrity of our public buildings,” Prof. Jeary says.

An international advance in the treatment of cancer has been achieved by a team from the **CRC for Cellular Growth Factors**, which has won a global race to determine the structure of a key molecule on the surface of cancer cells.

Known as the EGF (epidermal growth factor) receptor, the molecule is seen by medical researchers as an ideal binding-site for an entirely new class of anti-cancer drug.

“These drugs will bind the receptor and inhibit the cancer cell’s growth by preventing the effects of several of the EGF family of growth factors known to be important in causing cancers to grow,” says CRC Director John Flack. “It’s a landmark discovery, made amid strong international competition.”

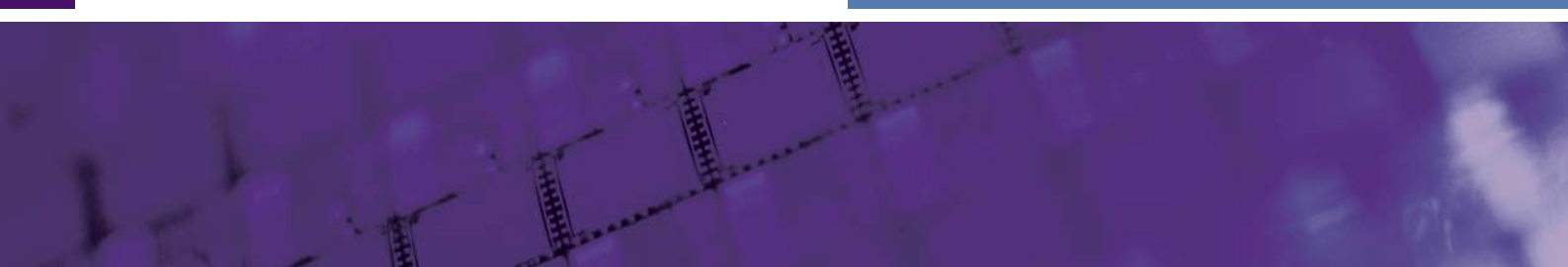
Electronics are poised to transform the sheep industry, enabling graziers to move from manual, whole-flock to precision management at the level of the individual sheep.

The result will be sharp increases in flock productivity — more wool, meat and fewer parasite and disease problems per sheep, says Professor James Rowe, CEO of the **CRC for the Australian Sheep Industry**.

“Starting with radio ear tags, and linking them with race-side diagnostics, a central flock database and automated drafting, we’ve got the sheep management system of the future under development right now,” he says.

The diagnostics could range from simple measures such as bodyweight, to on-the-spot fleece tests and parasite counts. Individual sheep can then be classified and drafted as required. Beyond the farm, the new data gives the grazier the ability to sell forward over the internet based on detailed information about his stock, their genetic background and individual histories.

“Productivity gain in the sheep industry is currently less than 0.5 per cent, compared with 2.2 for cattle and 3.5 for broadacre agriculture. Electronics can unlock precision sheep production,” Professor Rowe says.



EVENTS

CRC Association Conference

The CRC Association annual conference will be held at the National Convention Centre in Canberra between May 27 and 29. The theme of the conference is "CRCs Connecting Communities: Meeting National Research Priorities"

The conference will explore the bridging role of CRCs in linking with a range of communities in the course of their activities. In doing this, the conference will look at how CRC research contributes to meeting the National Research Priorities which were identified for the first time by the Australian Government and released by the Minister for Science in December 2002.

Anyone interested in learning more about the CRC Programme is encouraged to attend.

For more information on the CRC Association conference, visit their website at <http://www.crca.asn.au/>

Programme Update

CRC Programme Evaluation

The Department of Education, Science and Training is currently evaluating the CRC Programme to help ensure that the Programme's objectives and design are kept up to date so that it is well positioned to continue to deliver beneficial outcomes. The consulting firm of Howard Partners Pty Ltd has been selected to undertake the evaluation. The consultants will be obtaining input from a broad range of people, organisations and institutions with experience and interest in the CRC Programme. The evaluation is scheduled to be completed by the middle of the year. If you would like to find out more about the evaluation visit <http://www.crc.gov.au>. Comments or queries can be provided directly to the Evaluation Team by e-mailing crc@howardpartners.com.au or phoning Howard Partners in Canberra on (02) 6273 5222.

CRC Snapshots were written by Julian Cribb as part of DEST's and the CRC Association's communication programme.

If you have any comments, would like further information, or if you would like to receive this newsletter regularly, please e-mail crc.program@dest.gov.au or phone the CRC Programme information line on 02 6240 5011.

The CRC Programme website address is <http://www.crc.gov.au>.

