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Issue 5

Arup Australasia
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Construction Innovation

update

PM: science deserves more prominence

The Prime Minister, the Honorable John Howard, opened the Cooperative Research Centre Association (CRCA) conference in Canberra last month with an admission he did not recognise the full scope of talent in Australia prior to becoming Prime Minister.

Addressing a gathering of parliamentarians, prominent scientists, industry professionals and researchers at the CRCA's Gala Dinner in The Great Hall of Parliament House on 27 May 2003, Mr Howard told the 500 strong audience that being Chair of the Prime Minister's Science Innovation and Engineering Council helped him recognise the enormous talent in Australia.

"It helped bring home to me the fact that in different ways it perhaps had not received the prominence that it deserved," Mr Howard said.

Mr Howard was present at the Gala Dinner to present Awards for Excellence in Innovation to the CRC for Cochlear Implant and Hearing Innovation (CRC HEAR), CRC for Sensor Signal and Information Processing (CSSIP), and CRC for Cattle and Beef Quality for their research and commercialisation success stories.

"A major evaluation of the CRC program itself is...underway."

Mr Howard told the audience that, as part of the national research priorities, a major science mapping exercise is currently underway to provide a comprehensive picture of the scientific effort in Australia. In addition, a taskforce has been established which is looking at closer collaboration between universities and the major public-funded research agency.

"And a major evaluation of the CRC program itself is also underway," he told the audience.

The CRC program began in 1990 and has been described as an Australian success story, where through collaboration between science and industry, inventiveness and innovation are combined to produce outcomes and solutions for the benefit of man-kind and/or for commercial success.

The Prime Minister described to the audience how he saw the CRC recipe. "You take the inventiveness of people, you combine it with a commercial commitment and you produce something which is a proper use and a proper utilisation of science," he stated.

Backing their stated commitment to the CRC program, the government pledged \$200 million to the program in their 2003 Budget, an amount allegedly higher than expected by the CRCA Board.

Mr Howard says his government is committed to the program, and will be for a long time to come.

"The commitment we have made to science is not a one-off short-lived one, but is part of a determined effort to elevate the role and the place and the centrality of science in the Australian community to the position that it does very richly deserve," he told the audience.

The Honorable **Paul Lucas MP**, Queensland Minister for Innovation and Information Economy will be addressing the inaugural CRC for **Construction Innovation Research Conference** dinner at the Crown Plaza Hotel, Gold Coast, on 29 July 2003.

CRC for Construction Innovation

invites you to a seminar at Kindler Theatre QUT, Gardens Point, Brisbane, on 19 June, 2-5pm to discuss

EVALUATING RISK IN PROPERTY FEASIBILITY STUDIES

Presented by Professor Terry Boyd (QUT) and his research team, the seminar will cover:

- Structure of forward looking cash flow models
- Quantifying risk
- Scenario studies
- Simulation exercises
- Performance evaluation
- Key market variables

Cost is \$65.00, including GST, and includes afternoon tea. To register your interest, please phone Denise Redfern T: 07 3864 2811 or E: d.redfern@qut.edu.au by 17 June 2003.

New look: Construction Innovation's UPDATE newsletter



Hello, I'm Keith Hampson, CEO of CRC for Construction Innovation.

Our bi-monthly newsletter has been revamped to reflect our fresh innovative approach to all of our activities. I hope you like it, and welcome your feedback.

This issue brings you a snapshot of some of our activities.

Our DISCOVER project is breaking new ground by bringing all stakeholders, including the home owner, together to build a sustainable, intelligent and green development.


A new ICT web-based survey instrument is about to be launched, and already partner organisations are clamouring to use it.

Construction Innovation research by scholarship students is breaking new ground, with one student creating an easy-to-use reference guide to GreenSmart housing.

Our project, Sustainability and the Building Code of Australia is currently wrapping up, and we look at the practical issues raised in that project.

We also introduce you to a new project which aims to develop a way-finding tool. Soon there will be no excuses for not getting to work on a Monday morning!

We currently have some 20 research projects into the property and construction sector, with integrating projects underway. I am constantly amazed at the inventiveness, collaboration and innovation of our industry, research and government partners – they are hitting their straps! – designing, scoping, researching and implementing research that is sure to have a significant and beneficial impact on the Australian and international community.

I hope you enjoy reading about the fruits of our projects, as much as our partners like dreaming them up. Building our future, together – this is the way forward. 



Sustainable future in question

Sustainability is one of the many research issues confronting the Australian Building Codes Board (ABCB).

Mr Brian Ashe, Manager of Research and Fire Safety for ABCB, member of the CRC for Construction Innovation Research Committee, and Project Leader of the Construction Innovation project looking at sustainability and the future Building Code of Australia, says the idea for this project was initially conceived two years ago, through the ABCB's research priority setting process.

The current focus is in determining the possibility of achieving a nationally consistent approach.

"We decided to do a scoping study here and overseas to determine whether there should be sustainability requirements in the Building Code in the future," Mr Ashe said.

Although the project is nearing completion, the current focus is in determining the possibility of achieving a nationally consistent approach.

Workshops have been held in all capital cities earlier this year with the objective of gaining stakeholder feedback in identifying issues and implications associated with regulating sustainability within the built environment.

Mr Ashe says the workshops were very successful. "They raised many issues with respect to sustainability and the BCA," he said.

The outcome of the project will be outlined in a report on current sustainability in the built environment in Australia and internationally. This report will be put before the ABCB Board to determine whether the Board should look at the issue of sustainability in the future.

For the property and construction industry however, there is a more immediate outcome from this project. Brian Ashe and his team are developing a database on sustainability in the construction industry, combining all the research and information they have gathered throughout the duration of the project.

"I think this database is a positive initiative for industry users who want to access a central point for information about sustainability in Australia and overseas," said Mr Ashe.

"This is just the first step." 

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The first CRC for **Construction Innovation Research Conference** is being held 28-30 July 2003 at the Crown Plaza Hotel on the Gold Coast, Queensland. The theme is Collaboration and Innovation and Construction Innovation partner members are encouraged to attend. For more information contact Construction Innovation Events Coordinator,
E: enquiries@construction-innovation.info.

CRC for **Construction Innovation** is currently finalising the **Research Leadership Training course** for Project Leaders which will include facilitators from QUT and Construction Innovation. The training will be held at the Construction Innovation Research Conference, 28-30 July, Gold Coast. For more information contact Peter Scuderi, T: 07 3864 1412, E: p.scuderi@construction-innovation.info.

CONSTRUCTION
INNOVATION
Byte
Sized **NEWS**

Adrian Blumenthal from the UK organisation, **Movement 4 Innovation**, is visiting the CRC for **Construction Innovation** in July 2003. He will be assisting in the development of the Technology Transfer Strategy and project support.

Dr Peter Newton, Program Director for Sustainable Built Assets Program with CRC for **Construction Innovation** will be presenting at a conference entitled **Green Buildings**, being held at The Radisson Plaza Hotel Sydney, 23-25 June 2003. In addition to an overview of Construction Innovation's research projects, Dr Newton will give an update on the progress of his pet project, Environmental Assessment Systems for Commercial Buildings (LCADesign). He will also discuss the future of the Australian Building Code, and put forward a vision for a sustainable built environment.

The CRC for **Construction Innovation** intranet is constantly being updated. Members can check for reports, papers, project reviews and relevant documentation on <https://internal.construction-innovation.info>. Obtain your password for access to the intranet from **Construction Innovation**,
E: enquiries@construction-innovation.info

Students DISCOVER Intelligent Housing

Cut and fill, where the builder digs out the soil, pours a slab and builds a brick veneer suburban home no matter what the climate or land type, is a tradition fast becoming unsuitable to the Australian urban landscape with an increasingly reduced stock of usable land.

However, a competition now underway within the Cooperative Research Centre for **Construction Innovation's DISCOVER** project and Queensland University of Technology (QUT) is helping solve specific problems with urban land shortages, including finding solutions and innovative alternatives to cut and fill on sloping sites.

For the first time students are being asked to combine intelligent features of the home with sustainable outcomes.

The competition for QUT students of design, architectural, and engineering associated disciplines has 2 categories: 1. design a house combining smart and sustainable home design, using intelligent features of the home, and 2. use engineering and construction solutions.

In the current 'Ideas' phase of the **DISCOVER** competition, the students are being groomed by professionals from the property and construction industry to develop their ideas on *Design Integration* such as: how to preserve the natural environment, how to maximise space, what to do with water run-off.

According to QUT's Dr Jay Yang, Project Leader of the **DISCOVER** project, this is one of the unique features of the competition. "For the first time students are being asked to combine intelligent features of the home with sustainable outcomes; it is also a unique attempt at bringing all project stakeholders together to tackle sustainable residential development issues as an important part of the Australian way of life," Dr Yang said.

Dr Keith Hampson, CEO of Construction Innovation agrees the scope of the project is breaking new ground.




"The competition is just one element of Construction Innovation's **DISCOVER** project, which has been specifically designed to reward a change in culture in the property and construction industry, so that all stakeholders learn to think of sustainability as their first choice in design and construction," he said.

Two competition winners will receive \$2000 each, plus their winning designs and/or solutions will be built, after appropriate professional improvement. 'Springfield Land Corporation', as well as donating the prize money, has initially donated two blocks of sloping land to the project, and construction of the students' designs is expected to begin late 2003.

A set of integrated development guidelines will be developed for consultants, builders and homebuyers alike through the monitoring, evaluation and assessment of a series of design, construction and home performance data, collected through the development of smart and sustainable homes.

Overall, the **DISCOVER** project will help solve specific problems as a result of reduced stock of usable land (eg. 40% of available blocks at 'Springfield' are sloping sites), the lack of "worked examples" to educate home buyers for environmentally friendly and intelligent alternatives, the shortage of skilled trades, the need for a computer-based design support, and scarcity of real life examples for university students.

At its completion, the project will assist to develop build quality and training schemes developed in conjunction with 'Construction Training Queensland', and potential legislative and endorsement strategies by the 'Queensland Department of Housing' and the 'Queensland Department of Public Works'.

The **DISCOVER** project will provide a tangible focus for many stakeholders in the Australian residential building industry on the initiation, design, development and implementation of smart and sustainable homes on the basis of a residential housing infrastructure in subdivisions, instead of on an ad-hoc basis for stand-alone applications.   

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Super CRC's redefine model

Super CRC's appear to be the way of the future in the CRCA program.

This was earmarked by the Honorable Peter McGauran MP, Minister for Science, who spoke at the CRCA conference held in Canberra, on 28 May 2003.

Mr McGauran says a good example of CRCs developing 'strategic relationships' is in the establishment of the 'Water Forum', which brings together five CRCs all addressing water issues.


Applicants will be asked to look for collaborative opportunities with CRCs.

"Joint applications from existing CRCs in national research priority areas will also be encouraged," he told the audience.

As of July 2003 there will be a total of 71 CRCs in the CRC program. Each of the CRCs predominantly works independently, although this may change, according to Mr McGauran.

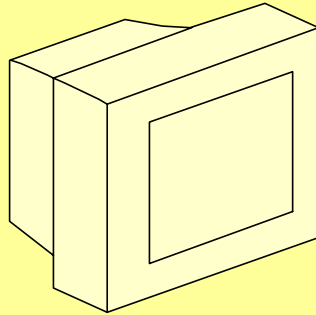
He told the audience that in the next round of CRC applications, they will be looking for collaborations.

"Applicants will be asked to look for collaborative opportunities with CRCs as well as other organisations, and to clearly identify both the quality and benefits of proposed joint ventures," he said.

Mr McGauran announced an additional \$62.5 million in 2006-7 for the Cooperative Research Centre program. 

"When we know what culture is, we know what needs to be changed for culture to change. Only once we appreciate its nature can we understand how it might be changed."

*Lewis and Thornhill 1994;
Sadri and Lees 2001*



Web-based survey instrument: it's a first!

CRC for **Construction Innovation** researchers are getting ready to launch a national web-based survey instrument to examine the up-take and barriers to implementing information and communication technology (ICT) in the architectural, engineering and construction industry (AEC).

Today's AEC is facing huge challenges, culturally, economically and globally. The new instrument, titled 'ICT in Construction-Team Member Perspective', aims to identify and dissect those challenges by examining the human and cultural factors, limitations, barriers, and drivers from across the AEC sector.

Supporting the launch of the survey instrument, the research project has produced a 'State of the Art Report into the use of Internet-based Construction Project Management (ICPM) in the Construction Industry'. This report provides a comprehensive 'snapshot' of current industry practices, culture and research directions in the implementation and application of innovative ICT tools and systems.

The Queensland Department of Main Roads (QDMR) and Public Works (QDPW) are two leading partner organisations involved in and supporting the activities of this **Construction Innovation** research project.

"The use of tools such as e-tendering, e-commerce and e-archiving will soon be commonplace in industry."

Mr Geoff Caldwell, Principal Engineer in the Delivery Systems Improvement Unit, Capability and Delivery Division of QDMR is pleased this research is being undertaken.


"QDMR is expecting to gain an appreciation of current industry practices and research in the use of advanced ICT's, including lessons learnt to achieve their successful implementation," Mr Caldwell said.

In response to current and future ICT developments and their applicability and uptake within the public and private sectors of the construction industry, the QDMR is making best use of ICT systems for works delivery in their operations. Mr Caldwell expects the use of tools such as e-tendering, e-commerce and e-archiving will soon be commonplace in industry, forcing virtually every business sector to shift away from traditional, tried and tested methods of communications, effectively revolutionising the way that companies trade and conduct business.

"Advanced electronic communication will be a significant enabling technology in providing more effective and efficient delivery of roadworks projects", he said.

In an attempt to support overall improvements in AEC communication and construction management processes, the **Construction Innovation** research project is also:

- identifying and examining the potential use and benefits of existing and emerging hand-held technologies and applications - not yet embraced by the AEC industries.
- determining the AEC's current state-of-play concerning e-tendering and e-archiving, by ascertaining the barriers and enablers from both a technological and legislative perspective
- undertaking a number of scoping and evaluation studies to facilitate development of a coherent Construction Innovation R&D agenda
- developing 'best practice' recommendations to assist in the adoption of innovative ICT solutions with AEC industry organizations and project teams.

This **Construction Innovation** research project is further supported by a number of Australian industry, government and university based project partners including: Queensland University of Technology (QUT); CSIRO – Manufacture and Infrastructure Technology, Construction Research Alliance (CRA); and the University of Newcastle. 

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Construction Innovation student grapples with GreenSmart

Springfield Lakes has been selected for a 12-month study into green housing practices, designed to teach the Australian building industry the best ways to design and construct environmentally friendly homes.

The study will focus on Springfield Lakes' GreenSmart Village, which features display homes designed under the Housing Industry Association (HIA) GreenSmart Program – a set of building principles developed to maximise energy efficiency in mainstream housing.

Director of Sustainable Development Strategies Pty Ltd David Luxmoore will conduct the research, which has been made possible by a 12-month scholarship awarded through QUT on behalf of the Cooperative Research Centre for **Construction Innovation** and supported by Delfin Lend Lease.

“To be green doesn't necessarily mean greater costs.”

Dr Keith Hampson, Chief Executive Officer of CRC for **Construction Innovation**, says the scholarship supports their vision for sustainable, innovative and collaborative industry development.

“David's project is analysing ways of changing the mainstream culture of the property and construction industry so that more builders will take on the concept of sustainable building,” Dr Hampson said.

“**Construction Innovation** is undertaking a number of projects in sustainable building and asset management, and recognises there are enormous potential commercial opportunities for those willing to accept this new paradigm,” he said.

“To be green doesn't necessarily mean greater costs, and David's scholarship, by analysing the cost differential for sustainable building, the payback period and how designs and construction techniques can be fine-tuned for greater energy, planning and construction efficiency, is an important research area which will provide invaluable feedback to the industry.”

Mr Luxmoore will evaluate and document the GreenSmart Program, creating an easy-to-use, central point of reference for builders or prospective home buyers wanting to research the specifics of GreenSmart housing.

“Varying amounts of information on GreenSmart homes have been available in the past. But some people want very specific information, for example, on water or energy efficiency. But they didn't know where to look for it,” Mr Luxmoore said.

“By documenting the GreenSmart building process at Springfield Lakes, this information will for the first time, become readily accessible to everyone, and therefore raise the level of expertise and environmental awareness in the building industry.”

Mr Luxmoore will work closely with GreenSmart-accredited builder Civic Steel Homes during the construction of environmentally innovative homes in Springfield Lakes' latest land release The Summit.

Springfield Lakes project manager Marc Wilkinson said Delfin Lend Lease was committed to environmentally sustainable development and proud to support the GreenSmart Program.

“Sustainable housing is of great importance to Delfin Lend Lease, as is our commitment to education, so we're excited at being able to support David Luxmoore in his research of The Summit GreenSmart Village at Springfield Lakes,” he said.

“Delfin Lend Lease is also developing 19 other master-planned communities across Australia, with 250-plus builders working on-site, so this study will have real impact on the construction industry throughout the country”. 

Lost ??

Use a WAY-FINDING tool.

A new CRC for **Construction Innovation** project is researching the development of a tool for the sensory impaired to help them successfully navigate buildings and large public spaces, to be tested at the Commonwealth Games in Melbourne 2006.


The tool will ... assist people who have hearing impairments, print disabilities, illiteracy or English as a second language.

Currently there is limited technology to help the sensory impaired navigate commercial buildings and public spaces. Sporting venues, university campuses and public squares are usually crowded and noisy and can undermine people's capacities to independently and confidently use public resources.

Using GPS and sophisticated software, the research into the hand-held device will position a person's location onto a digital map. This information, including instructions for what direction to go next, can be read, heard, or felt via vibrations.

The way-finding device will provide essential navigational information in a variety of formats for people who are vision impaired to assist them in accessing large public spaces. The tool will also greatly assist people who have hearing impairments, print disabilities, illiteracy or English as a second language.

The project will research the development of the tool for testing and implementation at the 2006 Melbourne Commonwealth Games, assisting people to access this monumental event, perhaps for the first time.

Once developed, the way-finding device could be used by the construction industry to make premises accessible to people with a sensory or print disability. The same technology could also be used at a variety of public access sites, thereby assisting tourists and international visitors, and may be useful as a device for providing early warning and hazard information. 

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Construction overhaul: a VET challenge


CRC for **Construction Innovation** has developed a progressive Education and Training strategy which utilises the VET sector and partnering institutions as well as more traditional methods for proposed training and transfer of knowledge to the property and construction sector.

The strategy enables **Construction Innovation** to meet its obligations in education and training development within the property and construction industry whilst also fulfilling the Commonwealth Government's Cooperative Research Centre objectives.

Several overriding principles guiding the development and implementation of the Construction Innovation Education and Training Program include:


1. to enhance the value to Australia of graduate researchers
2. to enhance the collaborative culture of construction and for the Construction Innovation Education and Training strategy to be recognised as a significant contributor
3. to attract students by the reputation of Construction Innovation education activities, and
4. to partner with organisations to develop educational and professional development courses based on outputs from Construction Innovation research outcomes.

Construction Innovation has identified certain priority elements to be considered in the implementation of the strategy. As research outcomes develop, a priority must be placed on identifying opportunities which allow for continuous professional development of industry and research personnel. Secondly, it must maintain support for graduate students. This is intended to yield more successful collaboration between industry and research. Finally, Construction Innovation must influence curriculum development if its results and discoveries are to reach a national, diverse population of students, academic staff and industry professionals.

The **Construction Innovation** Education and Training strategy, while using the 'typical Cooperative Research Centre approach' to knowledge transfer of 'packing' information into texts, seminars, and conferences, has identified significant downfalls in solely relying on this type of knowledge diffusion. By aligning with the VET sector and partnering with associations such as Construction Training Australia, the new **Construction Innovation** strategy recognises the importance to the construction industry of vocational training. 

Researcher wins medal

Dale Gilbert, a valued member of CRC for **Construction Innovation's** Research Committee, has been awarded the Public Service Medal in the Queen's Birthday Honours for his 'outstanding public service in the field of built environment research'.

Congratulations Mr Gilbert! This heralds a great moment for the research and scientific community of Queensland, and indeed Australia. 

Construction Innovation Diary Dates

- 19 June**
Seminar 'Evaluating Risk in Property Feasibility Studies', Kindler Theatre, QUT, with Professor Terry Boyd and his research team
- 28-30 July**
Research Conference, Crown Plaza Hotel, Gold Coast
- 9 October**
Annual Retreat, Melbourne
- 10 December**
Christmas Function, Brisbane

Australian firms establish Iraq reconstruction alliance

Construction Innovation industry partner and leading Australian construction firm, John Holland is looking to play a role in the reconstruction of Iraq through an Alliance with the Australian based ADEA Power Consulting group, Al Sedan from Kuwait and ZOZIK from Iraq.

John Holland Group Managing Director, Bill Wild, says its long term relationship with ADEA and ADEA's operations across the Middle East and southern Europe, together with the logistics capability of Al Sedan and manpower resources of ZOZIK, mean that the Alliance has a very substantial existing capability in Iraq.

More than 50 local engineers and technicians and a substantial local labour force available immediately will be supported by procurement and logistical support out of Kuwait and technical engineering and construction management from Kuwait and Australia.

'Work being targeted includes the reconstruction and rehabilitation of power supply and transmission and water supply and sanitation infrastructure.

'John Holland is already building and upgrading power transmission systems in other parts of the Middle East; ADEA is a major provider of power systems engineering services across the region; and Al Sedan and ZOZIK have a substantial on-ground logistical and labour capability,' Mr Wild said.

An Alliance office in Baghdad was officially opened on Saturday, 24 May by Neil Mules, Senior Representative of the Australian Government in Iraq in the presence of Alliance representatives, including John Holland executive Bob Sowter. The Alliance will open another office in Kuwait to support its operations in Iraq.



Our Vision

To lead the Australian property and construction industry in collaboration and innovation.

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for something good to read?

Read your stories in CRC for **Construction Innovation's** free **UPDATE** bi-monthly newsletter.

Articles should be 500 words or less. All contributions should be sent to the Editor at the following contact points: T: 07 3864 9295

F: 07 3864 9151 E: k.finlayson@construction-innovation.info



CRC Construction Innovation
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