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WINNING WAYS
INFORMATION AND COMMUNICATION TECHNOLOGY

Pain relief breakthrough

"The technology has potential for a diverse range of medical procedures in pain management"
Sam Bucolo, Research and Development Manager, ACID

An exciting advance in pain management, being developed by the Australasian Cooperative Research Centre for Interaction Design (ACID), entered the second round of clinical trials in March 2006 after an extremely positive initial trial. The technology, which combines diversionary therapy and digital media, is designed to relieve pain and anxiety for young children being treated for burns. The first round of trials indicated that children using the new technology with standard treatment protocols had 50-66% reduction in pain scores.

The Royal Children's Hospital, Brisbane, had approached ACID to ask for help developing a more effective method of pain reduction.

"The treatment of burns, particularly for young children, can be excruciating and drawn-out," says Dr Roy Kimble, Brisbane Royal Children's Unit. In burns treatment, bandages have to be removed from the wound up to three times a week for three or four months.

"Existing pain management methods are heavily reliant on drug intervention. Diversion helps patients relax - which the first round of clinical trials has shown - reduces pulse and respiratory rates, and overall pain levels," he continues.

Diverting attention

Diversionary therapy, in the form of virtual reality goggles, has been used on older children, but this doesn't work on children under seven as they do not have sufficient visual development and some find wearing the headsets scary.

"The Diversionary Therapy technology developed by ACID, in partnership with the Royal Children's Hospital, diverts the child's attention during painful procedures by involving them in a colourful, 3D augmented reality experience with a cartoon-like character 'Hospital Harry'", says Associate Professor Sam Bucolo, Research and Development Manager, ACID.

ACID has developed a handheld 'digital storyboard' for patients aged two to seven, and 3D goggles for older patients.

"Young patients are immersed in Harry's world and can take him through a series of scenarios by moving the digital storyboard, or by moving their head if they are using the goggles. Scenarios include finding hidden flowers, moving through balloons or watching Harry throw a tantrum. The children love watching Harry's tantrum," says Associate Professor Bucolo.

ACID is now developing other characters and is also investigating the commercial possibilities for the device and its content.

The technology may also be useful in other areas, such as emergency medicine, oncology, radiology and dentistry.

Overall the nation is $1.14bn better off, or 60 cents wealthier for every dollar invested by the Australian Government in the CRC Programme.

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Hospital Harry is proving effective

For further information visit the Australasian CRC for Interaction Design (ACID): www.interactiondesign.com.au

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Trail-blazing approach to R&D

"The opportunity to engage with academic and government worlds to advance our research was too good to miss"

Tony Robey, Executive Chairman, Wizard Information Services

Research developed by the Cooperative Research Centre for Smart Internet Technologies (Smart Internet CRC) has helped to realise a business concept for Canberra-based Wizard Information Services and is helping the company improve its product range and services. Wizard Information Services sells software and provides consulting and IT support to government and business.

Wizard joined Smart Internet CRC in 2004 as a member of the Alliance of small-to-medium enterprises (SME).

"As an SME we have plenty of ideas but can't afford to investigate everything that we have an interest in," says Tony Robey, Executive Chairman, Wizard Information Services. "The opportunity to engage with academic and government worlds to advance our research was too good to miss."

"Joining the CRC as a core member can cost upwards of $100,000 which is not feasible for small companies," says Annette Dockerty, Smart Internet's SME Alliance Manager. "Through a consortium approach – where a group of companies cluster to become partners – smaller companies who would not be able to participate can now reap the rewards."

Commercial opportunity

Wizard thought there was a commercial opportunity to apply the design pattern approach to human computer interaction (HCI), but didn't know what was happening in this field worldwide. Smart Internet CRC introduced the company to Dr Frank Vetere and his team at the University of Melbourne who are specialists in the field.

"We gained a comprehensive survey on HCI design pattern activity across the world. This is something we could not have done ourselves under normal circumstances," says Mr Robey.

Wizard discovered there were no defined global standards for capturing HCI design patterns. "Existing guidelines either spoke about high level principles or were too low level. We wanted to establish a middle ground which would communicate user-interface design patterns to both user-interface designers and users, and also allow less experienced people to learn from the world's best designs," says Brenton Lovett, Chief Technical Architect, Wizard Information Services.

As a result of the CRC's research the company developed the Pattern language for the Smart Internet (PLaSI), which allows the essential characteristics of the world's best user interfaces to be captured in a standard way.

"The adoption of a standards-led approach to HCI design is assisting the consulting practice of our Quality Services Division, where we are often required to evaluate third-party software," says Mr Robey.

"The pattern approach helps us communicate clearly to clients and it is also helping us to build better user-interfaces," says Mr Lovett.

"Without the help of the University of Melbourne there is no way we would be enjoying the benefits of this research," says Mr Robey. "Smart Internet's pioneering approach with the Alliance is trail-blazing, making academic research available to smaller companies at costs that are affordable."

Brenton Lovett, Maxine Ewens and Tony Robey

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For further information visit the CRC for Smart Internet Technology: www.smartinternet.com.au

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CRC spin-off generates 2000% revenue growth

"Our system allows mines to mine deeper, quicker and safer. So they make more money as well as being safer."

Dr David Noon, GroundProbe Co-Founder.

The CRC for Sensor Signal and Information Processing (CSSIP) winds up in 2006 having created a significant international business. In November 2005, GroundProbe came runner-up in the Deloitte Technology Fast 50 - a rundown of Australia's most dynamic fast-growing technology companies - thanks to its spectacular revenue growth of more than 2000% over the previous three years. GroundProbe was set up as a spin-off company in 2001 having started out as a PhD project for CSSIP at the University of Queensland.

Greatest industry asset

Today GroundProbe has 62 employees, built around the original research team, and in 2005 earned $12.5m revenue supplying its revolutionary radar technology to the mining industry on four continents. Its Slope Stability Radar monitors rock wall stability in open-cut mines and can anticipate a collapse before it happens. One customer representative, geotechnical engineer Ian Hulls describes the product as, "one of the greatest assets ever introduced to the industry".

GroundProbe Co-founder Dr David Noon says, "Our system allows mines to mine deeper, quicker and safer. So they make more money as well as being safer." SPIRE Innovations, the CSSIP's commercialisation arm, has retained a 48% stake in the company.

Another CSSIP spin-off, Wedgetail TRDC Pty provides training and R&D support to the Defence industry. Since setting up in 2001, it has completed work on a $2m contract with Northrop Grumman Corporation to deliver advanced radar and communications training to the Australian defence community, as well as one worth $1m for Boeing. National ICT Australia took over Wedgetail's short-course business in July 2005 and it continues to provide high level technical training to Australian Defence Forces, Tenix Defence, BAE, Raytheon and many more.

The CSSIP also helped iOmniscient Pty to develop the intelligent surveillance system, IQ-180. The product gained instant global recognition for the small Sydney-based company when it won an award at IFSEC, the world's top security industry conference. One of the judges, David Dickinson, Chief Executive of the British Industry Surveillance Association, said, "What iOmniscient has to offer is years ahead of anything else we have seen. Organisations should consider their duty of care if they decide not to implement technology like this."

Currently hundreds of security cameras report to hundreds of monitors which are watched by a handful of people. "With an intelligent surveillance system there is potential to have the entire network 'thinking' as one – looking for suspicious objects, tracking potential suspects and alerting security people," says Doctor Mark Toner, Chairman, CSSIP.

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GroundProbe slope stability radar

For further information visit the CRC for Sensor Signal and Information Processing: www.cssip.edu.au

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Small is bountiful

"43pl has enabled small to medium-sized companies to do things collectively that they could not possibly do individually"
Peter Woodgate, CRCSI Chief Executive

43 Pty Ltd, the umbrella company formed by the Cooperative Research Centre for Spatial Information (CRCSI), is helping small to medium-sized Australian companies to compete in the rapidly growing spatial information – or spatial mapping - industry. For the cost of a few thousand dollars these smaller companies are encouraged to treat the CRC as their research division, with access to top university and government researchers, as well as the neutral ground to meet clients and suppliers.

"43pl has enabled small to medium-sized firms to do things collectively that they could not possibly do individually," says Peter Woodgate, CRCSI Chief Executive.

The CRCSI is aiming to invest 60-80% of its research budget in projects that promise commercial outcomes for its shareholders.

Mr Woodgate says, "43pl companies have a real say in research directions and the research is directed to real world problems they encounter in providing products and services."

Sharing information

The CRCSI's first commercial product, Hazwatch, is being launched in 2006 after trials with emergency services in Western Australia, Queensland, Victoria and New South Wales. The web-based system is designed to track an emergency, such as a bushfire, offshore incident or terrorist attack, and provide information about it in near-real time to the emergency services. The system "gives crisis managers more timely information with which to make early and effective decisions about what needs to be done," says Mr Woodgate. It consolidates live information feeds from multiple web services for emergency response staff across organisations and locations. "Everybody sees and shares the same information," says Project Leader Mark Carniello.

"We started with a rough concept and input from the many participants quickly refined it," says Mr Carniello. "Agencies who had their own Geographic Information systems and online databases didn't always have interoperability in mind, so we had to battle to create consistency."
The CRC's neutrality helped it utilise data from private businesses, such as that from mining companies. "We have reassured private organisations that we can filter their data and not give any clues to their competitors," says Mr Carniello.

The development of Hazwatch highlights what is possible for small companies under the 43pl umbrella. Participants in the project include public sector agencies, private firms and Curtin University plus $250,000 development funding from CRCSI. Hazwatch is being marketed by start-up company iintegrate and 43pl member NGIS.

Peter Woodgate, CRCSI chief executive

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For further information visit the CRC for Spatial Information: www.crcsi.com.au