

# monitor

news 1

college news 7

calendar 8

new products 9



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*Doctoral and master students with their professors at the UTS research showcase 2009.*

## University of Technology Sydney Research Showcase 2009

The Faculty of Engineering and Information Technology (FEIT) at the University of Technology Sydney (UTS) hosted a research showcase to display the research undertaken by its doctoral and masters students.

Some of the projects involved collaboration with industry and covered inter-disciplinary fields. Posters had been set up in the foyer of their gallery function centre and presentations were carried out in three separate rooms with judges sitting in. After every presentation, the floor was open to questions from the audience and the judges.

Hoang Trieu, from the Centre for Health Technologies, presented his topic titled "Performance evaluation of a semi-autonomous laser-based powered wheelchair", which won one of the presentation prizes. Most autonomous obstacle avoidance

algorithms in wheelchair applications were originally designed for mobile vehicles. The algorithms usually rely on prior information about environments such as a building map or a topology map.

Hoang's project was designed for assistive mobility systems with research into his own algorithms. The adaptive shared control strategy in his project involved using artificial intelligence and the Bayesian recursive technique to combine local environmental information gathered using a laser range-finder sensor with the user's intentions. The most suitable autonomous task in different situations was selected based on this combination.

Rather than choosing to design a fully autonomous wheelchair, Hoang felt that letting users have some control over movement during travelling would allow them

to move around more easily and dictate their own path if they should change their mind as they were traveling to their original destination.

Other winners of the presentation prizes were:

- Greg Gibbes who was supervised by Associate Professor Guang Hong from the Centre for Intelligent Mechatronic Systems for his topic "Modelling the gas dynamics of a prototype free-piston engine"
- Stephen Hunt who was supervised by Associate Professor Ken Dovey from the Centre for Human Centred Technology Design for his topic "Understanding learning in IT projects: An examination of the Australian experience".

The poster prize was won by Gibbes and another student, Fan Yang, supervised

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by Professor Ananda Sanagavarapu from Centre for Health Technologies for his subject "Microwave imaging techniques for breast cancer detection".

Ante Prodan, a PhD candidate from the Centre for Quantum Computation and Intelligent Systems, presented his research on "Topology control on self-organising wireless mesh network" and won the innovation prize. His research was supported by a linkage-grant from Alcatel-Lucent and the Australian Research Council.

Prodan's work focused on mute-radio wireless mesh networks (MR-WMN). The project's objective was to increase the overall MR-WMN capacity using multi-radio routers coupled with a smart self-organisation process for assigning channels in the MR-WMN.

The proposal was to create a self-organisation algorithm that was based on a distributed, light-weight, cooperative multi-agent system to reduce cochannel interference. Combined with this was the use of a transmit power control (TPC) based approach for topology control and a non-TPC strategy.

One aspect of Prodan's research was that a listening node would update data about the quality of a particular link based on traffic addressed to it. If the received traffic was not addressed to it, the node would still analyse the traffic to obtain useful information like signal-to-noise ratio and data rate, and in the case of weak signals, contention interference. The node would be constantly updating information about the spectrum and its neighbours while performing statistical processing to reason which radio channel to use and ways to create a shorter path.

One of the aims for the project was to ensure the scalability, robustness and

flexibility of the project. An example of the commercial usage of such research would be that it could be implemented for the occasional large events where the organisers needed to set up a network for the many attendees but it would be costly to set up something permanent. This research would enable such a network with good connectivity to be set up.

From the ARC Centre of Excellence for Autonomous Systems, Conan Yu presented a colour tracking and moving object detection system for ubiquitous robotics using a field-programmable gate array (FPGA).

A new digital chip was designed to replace the traditional microprocessor in the ubiquitous robotics system. The FPGA chip was chosen as a prototype for its low cost and power consumption. Most of the project's hardware can be placed onto one chip instead of using multiple sensors and circuitry. The objective of the project was to design a machine that could present intelligent behaviour and learning abilities similar to humans using the least circuit design and power consumption. The presentation was on the sensory design stage of his project.

Yu designed a hardware-based sensory system that enabled a group of mobile robots to cooperatively form a desired formation or motion pattern, such as a column, a line, a wedge, a diamond or a circle while avoiding collision with each other and other obstacles. This was achieved by the use of a FPGA and digital camera in one central server to detect motion and send remote signals to each robot to direct them into a formation. One of the other sensory functions used in the project was FPGA-based real-time colour tracking where objects could be tracked based on their colour.

## ICT specialist flying to Africa

Electronics engineer Salma Farouque from Vodafone Australia has headed out to Africa to work as an information and communication technology (ICT) specialist for the United Nations (UN) World Food Program. She is based in Kampala, Uganda, and travelling through East and Southern Africa for the year that she will be working in this regional role.

The Vodafone Group Foundation is sponsoring Farouque for her position in Africa as part of Vodafone's World of Difference program. Vodafone has an ongoing partnership with the UN and under this partnership Farouque will be working in the Delivering as One UN project. During her time in Africa, she

will work as an ICT consultant helping to roll out IT services through UN offices in Africa.

Farouque believes that working on this project will be challenging as there are different locations and logistic requirements to be considered. However, she finds the challenge interesting as well and was excited to go. She began an awareness and values training at UN World Food Program Headquarters in Rome on 15 June. She was in Africa on 22 June to begin her hands-on training.

Farouque has been working for Vodafone for seven and a half years after graduating in 2002 from Swinburne University, Melbourne.

## Comments on proposed changes to 2008 EMC Labelling Notice

Members of Engineers Australia generated a consolidated policy response to the proposed changes by the Australian Communications and Media Authority (ACMA) to the 2008 Electromagnetic Compatibility (EMC) Labelling Notice. Allan Sangster, chair of the EA's Electrical Branch in Sydney, approached ACMA with the policy response and received feedback.

The proposed changes to the EMC Labelling Notice were a result of discussions within ACMA's Technical Working Group (TWG). The policy objectives of EMC regulation are to minimise the likelihood of interference between devices and to manage the noise floor. The endeavour was to avoid imposing unnecessary financial and administrative burdens on industry and, where possible, further align the Australian EMC regulatory requirements with the New Zealand EMC regulatory requirements, consistent with the obligations under the Trans-Tasman Mutual Recognition Agreement (TTMRA).

The majority of the comments in the policy response expressed support for the objectives of the proposed changes with particular note to the subsequent reduction in financial and administrative burden on industry.

Some concern was voiced that the changes might cause a regulatory arrangement inconsistent with Australia's major trading partners as well as cause Australia to be a dumping ground for substandard goods affecting ACMA's ability to protect the RF spectrum.

The ACMA staff has reaffirmed that the EMC Labelling notice is one of the principal means used to regulate EMC by imposing obligations at the point of supply.

The proposed changes to the EMC Labelling Notice fall into the categories:

- scope of EMC regulation
- threshold of compliance levels
- labelling
- record keeping.

### Scope of EMC regulation

The majority of the comments on the increased limit for maximum power consumption from 6nW to 1mW limit gave conditional support because it was believed the 1mW was more realistic and practical than 6nW. Others would prefer a descriptive limit stating that the maximum power consumption of a device would not be able to create RF emissions of a level high enough to cause interference. Given the feedback received, ACMA intends to review the 1mW limit 12 to 18 months after its implementation to reaffirm that the pro-

posed limit is an effective balance between regulatory burden and policy objectives.

### Threshold of compliance level

A number of responses had interpreted the proposal to include battery operated devices in the low risk devices category as exempting the device from having to comply with the applicable EMC standard. However, AMCA staff noted that all devices that are within the scope of the EMC Labelling Notice must comply with an applicable standard.

Due to a clear difference in interpretations concerning the battery-operated

devices, ACMA will publish a fact sheet that will provide further information on devices scoped by the definition of battery operated devices.

### Labelling

Comments also expressed uncertainty over the interpretation and application of the proposed labelling exemption. This was in reference to the proposal to exclude labelling requirements for devices supplied in a quantity of less than 10 units per calendar year. Concerns included the question of whether the exemption applied

to high risk devices and the possibility of confusion among customers and potential exploitation.

ACMA's staff is currently reconsidering if they should proceed with this proposal in light of the confusion and uncertainty in industry that this might cause.

### Record keeping

There were concerns over recognition of overseas manufacturers' declaration of conformity in lieu of a local supplier's declaration of conformity due to a perceived increase in risk of non-compliant devices coming into Australia and clarification was

**“The majority of the comments in the policy response expressed support for the objectives of the proposed changes with particular note to the subsequent reduction in financial and administrative burden on industry.”**

sought on various operational aspects of the declaration of conformity. ACMA responded that the obligation to ensure a device complies with the applicable EMC technical standard rests with the local supplier. Thus, the supplier is responsible for making a risk management decision when dealing with devices from overseas.

In general, the discussions between EA's members and ACMA staff have been considered fruitful. When ACMA staff have completed draft amendments to the EMC Labelling Notice, they will circulate the changes for further comment.

## Charging up windows

New Energy Technologies, a US based company, announced its research into developing windows that are capable of generating electricity. This is accomplished by coating the glass with what the company claims to be the world's smallest known organic solar cells.

The technology involves organic solar arrays that are transparent and made of conducting polymers with the same semiconducting electrical properties as silicon but with better capacity to “optically absorb” photons from light and generate electricity.

The solar cells are fabricated using environmentally-friendly hydrogen-carbon based materials. As demonstrated

in a published peer-reviewed study in the Journal of Renewable and Sustainable Energy of the American Institute of Physics, the cells can successfully generate electricity.

The size of the cells means that the solar arrays can be fabricated on a broad range of substrate materials such as glass, plastic and even paper.

These ultra-small solar cells can also generate electricity from visible light found in artificial light such as fluorescent lighting often used in offices. The absorption properties of the ultra-small solar cells enables development of an ultra-thin film, only 1/1000th the thickness of a human hair.

## Recognition of Hiive Systems

Hiive Systems, a start up web-based software company, won the CeBIT Early Innovator Award for Australia and New Zealand on 13 May in Sydney.

Hiive Systems builds web-based software that helps professional services companies provide more efficient and co-ordinated service delivery to their clients. Affinity is their flagship application that was developed specifically for the needs of the service industry. The software enables organisations from small businesses to public companies and government sectors to manage their service delivery efficiently.

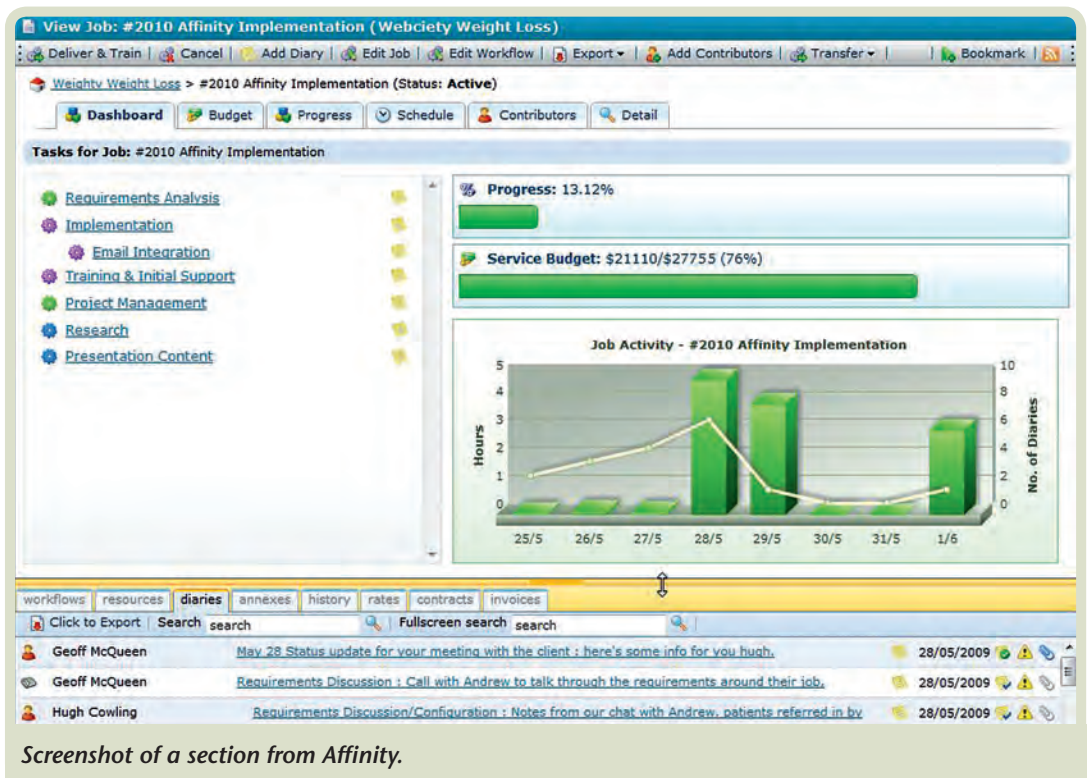
The latest version of Affinity was launched on 12 May by CEO of National Information Communication Technology Australia (NICTA) Dr David Skellern. In the same week, Hiive Systems passed the milestone of having more than 1 million client interactions tracked within Affinity. "The achievement of the million interactions milestone is great validation for our team and the performance of our product. It demonstrates that our users are embracing our product," Hiive Systems' founder and managing director Geoff McQueen said.

The NSW Department of

Planning upgraded to Affinity earlier this year. John Ross from the department's performance monitoring and project management branch explained: "Before we had this platform from Hiive Systems, getting visibility on where assessments were up to and generating reports on departmental performance was very manual and time consuming. With Affinity, we're now able

to check on the latest progress of assessments across our various branches and units, whether the staff are working on them from our head office, a regional office or even from home."

Hiive Systems now runs free web seminars (webinars) of its software Affinity and registration is available at [www.hiivesystems.com](http://www.hiivesystems.com).



## Cyber-terrorism

Cyber-terrorism was a focal point at the Australia-US ministerial meeting in Washington last April.

Recent examples of serious security breaches in the US were the hacking into Pentagon's US\$300 billion Joint Strike Fighter Project which is a weapons program involving the development of a new fighter plane and into the US electricity grid network.

Another incident occurred in 2008 in Lodz, Poland. A 14 year old boy hacked into the city's tram system and used it like a giant train set by adapting a television remote control to change track points. Chaos ensued as four vehicles were derailed and 12 people injured.

Usually, the motivation for such subversion is political and aims to harm or spread fear to affect domestic, national or international events.

Australian foreign minister Stephen Smith indicated that cyber attacks will be high on Australian security priority lists. "When I'm asked about cyber security, I don't identify one particular incident, one country, or one threat. This is an issue which Australia has made clear we address generally, and there are very strong references to the need to apply appropriate resources to protect against cyber security in our recent national security document. This is an issue which all modern nation-states confront," he said.

### A 14 year old boy hacked into the city's tram system and used it like a giant train set.

A way for organisations to defend themselves against hackers would be to employ specialised industrial control system (ICS)

security services to mitigate risk. ICS security specialists take a multidisciplinary approach by applying standards-based risk management techniques to identify and treat cyber risks.

Solutions will be based on individual threat assessments and appropriate mitigating controls are selected and implemented for treatment through a process of risk identification and categorisation.

The range of controls that are usually recommended are:

- technology
- network architecture
- control system configuration
- policies and procedures
- staff vetting.

Source: "Managing cyber-security risks to your critical assets: An insight into SCADA security risks" by Dr Chris Beggs and Benn Alp. ([www.skmconsulting.com](http://www.skmconsulting.com))

## Technology for the police

The release of the 2009/10 Tasmanian budget comes with planned new technology boosts for Tasmania's Police. Jim Cox, the minister for police and emergency management, announced that tracking devices will be fitted on police vehicles to boost officer safety and improve incident responses.

During the next financial year, \$1.1 million will be spent on fitting Automatic Vehicle Location (AVL) technology to patrol vehicles which enables them to be monitored using Global Positioning System (GPS) data.

"This technology will have massive benefits for increasing the safety of frontline police, with information on the exact location of the vehicles fitted with the devices displayed in real time on a computer screen

in Police Dispatch," Cox said.

"It also provides assistance in the management of incidents and deployment response to emergencies, as dispatch operators will have real time information on the location of resources.

"In a critical or dangerous incident, Police Dispatch will know instantly and accurately where a police vehicle is located."

New technology will also be used for a more efficient delivery of the police's Radio Dispatch Services (RDS). An Automatic Call Distributor (ACD) is being installed to manage emergency calls and dispatch resources.

ACD is usually used in call centres to manage large call volumes efficiently. ACD

will help the police's RDS by evenly distributing phone calls to multiple operators while recording call metrics to allow immediate and future workload modelling. The ACD is also capable of prioritising certain calls subject to governing organisational business rules.

The ACD will potentially deliver:

- improved real time management of phone calls to RDS
- improved financial management with the development of demand-driven rosters
- opportunities for improved solutions through the implementation of emerging technologies in the AVL Project or Project Meridian.

## Update on fibre to the home conference

The fourth annual Fibre to the Home (FTTH) Conference on 19 May in Melbourne brought together leading industry players and analysts to discuss the latest market trends, policies and technologies in the FTTH realm. The conference covered new technical insights in the broadband industry and updates from operators around the Asia Pacific region.

The federal minister for broadband, communications and the digital economy, senator Stephen Conroy, highlighted the need for the first national wholesale-communications network to drive employment and stimulate the economy. In addition to the investment's potential to create 25,000 jobs in Australia for each of the eight year build periods, the availability of high-speed broadband will maximise Australia's potential for future economical growth opportunities, he said.

"Access Economics predicts that a national high-speed broadband network would lift economy-wide productivity growth by 1.1% after 10 years. It views this as a conservative estimate."

He said the national infrastructure would support smart grids, improve energy efficiency and reduce carbon emissions. The health, aged care and in-home care sectors would be supported by broadband to reduce the need for hospitalisation and provide a better quality of life for patients. Broadband used in education could break down geographic barriers and ensure

resources for students wherever they live.

Michael Cosgrave, the general manager for the communications group of the Australian Competition and Consumer Commission (ACCC), spoke about the ACCC's role in the telecommunications sector to promote long-term interests of end-users, including both consumers and businesses. Under the Trade Practices Act, the ACCC aims to promote competition while encouraging efficient use of and investment in infrastructure in Australia.

Cosgrave also spoke about the potential of having the National Broadband Network (NBN) operator structurally separated, providing wholesale services only and offering them on an open access basis.

"This commitment to structural separation offers an unprecedented opportunity to make a definitive break from an industry structure dominated by the vertical integration of the incumbent fixed line operator in downstream markets."

The vertical integration of Telstra was referred to by Cosgrave as one of the most substantial regulatory issues in the Australian telecommunications industry and had significantly constrained competition.

"Structural separation of the new NBN operator will mean that the operator has an incentive to treat access seekers on an equivalent basis. Indeed, it is possible that the level of regulatory oversight of the NBN company could be lower as a result," said Cosgrave.

He also stressed the importance of the NBN providing access service that is sufficiently technologically neutral and flexible to support a wide range of existing and future applications and services.

Cosgrave urged that Australia should pay attention to the lessons learned by other companies, governments and regulators around the world as they roll out fibre networks.



*Senator Stephen Conroy states that the fibre to the home project has the potential to create 25,000 jobs for each year of its construction.*

**"Access Economics predicts that a national high-speed broadband network would lift economy-wide productivity growth by 1.1% after 10 years. It views this as a conservative estimate."**

## Cast of ABB robots in Terminator

ABB robots have found unexpected roles in the new Terminator Salvation movie released by Warner Brothers. The movie featured 18 of the company's robots.

Jaffe Entertainment, a product placement firm, had contacted ABB and other robotic manufacturers initially to review their product lines for the movie. Director Victor Zolfo and production designer Martin Laing decided on the ABB products and worked with ABB Robotics' vice-president of marketing Ted Wodoslawsky to select the robot models for the roles.

Cast in manufacturing roles, the twelve ABB IRB 6620 and six ABB IRB 1600 robots were on the movie set in a converted powerplant in Albuquerque, New Mexico. Special effects were utilised to make the scene look like there was an almost endless manufacturing line of robots to mass produce a growing army of Terminators.

ABB field service engineer Erik Ryskamp spent 10 weeks installing, programming and operating the robots with periodic support from ABB technicians.

"Erik and his team worked with us very closely creating an incredible ballet with the robots, actors, stuntmen and Christian Bale," Zolfo said. "What the ABB programming system was able to get the robots to do was better than we ever expected."

Every robot had an ABB IRC5 controller to facilitate the precise programming required for various scenes. Unlike their usual conditions outside of a movie set, the robots were significantly made-up and covered in black soot for the movie. All robots have since been returned to ABB to be prepared for future roles in real-life industrial manufacturing.



*ABB's IRB 6620 robot that was used in the movie.*

## Knowledge engine

Wolfram|Alpha was officially launched on 15 May as the world's first computational knowledge engine that is currently offered free on the web. Wolfram|Alpha computes answers to specific questions using its built-in knowledge base and algorithms. It differs from search engines as it does not provide links to other websites and, unlike Wikipedia, does not include narrative and only contains facts.

The knowledge engine was created by British physicist and mathematician Stephen Wolfram, who is also the creator of the computer program Mathematica. Wolfram|Alpha is supposed to have the ability to interpret questions in everyday language and answer those questions by consulting disparate pieces of information. The long-term goal of Wolfram|Alpha is to make all systematic knowledge immediately computable and accessible to everyone.

The engine has a wide range of topics from mathematics, physics and engineering to nutrition, culture and organisations. Wolfram|Alpha draws from multiple terabytes of curated data and synthesises them into entirely new combinations and presentations. The service answers questions, solves equations, cross-references data types, projects future behaviours and more.

Wolfram said: "Fifty years ago, when computers were young, people assumed that they'd be able to ask a computer any factual question, and have it compute the answer. We've successfully built

a system that delivers knowledge from a simple input field, giving access to a huge system, with trillions of pieces of curated data and millions of lines of algorithms. Wolfram|Alpha signals a new paradigm for using computers and the web."

A limitation in Wolfram|Alpha is that the usage of less accurate key search words can result in no answers. Other than that, Wolfram|Alpha can only provide results to problems or questions in relation to the knowledge in its database.

The emphasis of Wolfram|Alpha in its early stages was on computation, mathematics or quantitative knowledge so search-

**"Fifty years ago, when computers were young, people assumed that they'd be able to ask a computer any factual question, and have it compute the answer."**

ing for the lyrics to a recent pop song or a quote from a movie will produce no results.

The engine is in continual development as the amount of data to be added to it is limitless.

Wolfram|Alpha can be found at [www59.wolframalpha.com](http://www59.wolframalpha.com).

## Broadband: New highways for the 21st century

by Peter Hitchiner

Broadband communications is as essential in today's economy as other infrastructures like road and rail, though this importance is perhaps not so readily realised. It now plays an important role in engineering projects with their increased dependence on information and communication technologies and the dispersion of engineering teams among offices and field locations.

Increasingly, commerce and government needs to be connected to computing (including supercomputing process capabilities) and information sources such as spatial/mapping, financial, educational and health information. In trade, the tracking of goods through intelligent location systems require an increased use of broadband. eHealth and eEducation are becoming essential services to support traditional health and education services.

Broadband is also increasingly recognised as an important contributor to sustainability and more efficient use of carbon resources. One particular and widely noted advantage is the ability to substitute some travel by teleconferencing.

The possibilities of demand side management of the electricity power system will become increasingly important as nations endeavour to use their supply side infrastructure more efficiently. The ability to shed targeted loads which are not instantaneously required (example; adjusting airconditioning temperatures by a few degrees temporarily during peak demand) will allow supply to be maintained for other requirements and reduce the need for additional infrastructure to supply peak demands by smoothing the peaks in demand.

The ability to collect, process and respond to a range of environmental and user data facilitated by the availability of broadband will have profound implications on the ability to support increasing population and expectations for improving living standards.

The ability for carriers to access a competitor's infrastructure (on reasonable commercial terms) has probably been the greatest inhibitor to the take up of broadband and other services throughout Australia and in particular regional Australia where competition exists only in limited locations. To overcome this issue, the National Broadband Network is planned to be a wholesale open access network.

The long term objective should be to deliver fibre optics as close to all premises as possible because fibre does have the capability to deliver the greatest bandwidth to every premise. Wireless broadband is a

very effective means of delivering the "first mile" access from the fibre into premises, especially in less populated areas where the cost of provisioning optical fibre per premise is relatively high.

Construction and capital cost represents the single biggest barrier to providing services particularly in thinly populated areas where the potential revenues for recovery are much lower. There are also maintenance costs to consider and which can be significant for considerable distances of optical fibre. Reliability is an important feature of any telecommunications service and can be designed into networks by using redundant architectures which do not need to add significantly to overall costs.

Other specific engineering challenges that need to be considered, especially in remote and regional areas, are:

- power supplies which must include the ability to keep remote sites running for

periods in excess of 4 hours following the loss of primary power

- equipment enclosures including passive cooling where electrical power resources are costly, and appropriate enclosure ratings (protecting against vermin, dust etc)
- planning approvals and access provisions for construction and subsequent maintenance
- physical and electronic security.

*This is an edited version of Peter Hitchiner's paper titled "Broadband: New highways for regional development in the 21st century" for the 2009 Engineers Australia Regional Convention held from 12 to 14 June at Grafton, NSW. Hitchiner is the president of Engineers Australia's Sydney Division and also a principal of Insight Telecommunications Consulting.*

## ASWEC updates

by Paul Strooper

For more than 20 years, the Australian Software Engineering Conference (ASWEC) has been a joint production of Engineers Australia and the Australian Computer Society.

This year, ASWEC's Industry Papers have been made available to Engineers Australia Library's electronic Resources collection ([www.engineersaustralia.org.au/ieaust/quicklinks/library-services.cfm](http://www.engineersaustralia.org.au/ieaust/quicklinks/library-services.cfm)). ASWEC aims to reach engineers practising software application, development and research in all engineering disciplines.

The theme of ASWEC 2009, held at Gold Coast in April, was "Agile, the new mainstream." Agile software development methodologies generated extraordinary interest when they first appeared in the late 1990s. The Agile pitch offered high quality software without telephone-book scale documentation and endless process rules, freeing technical people to focus on technical outcomes and requiring customers to take responsibility for trade-offs between cost and scope.

Early on, developers embraced Agile without reservation while the reception from management was decidedly frosty; yet both views reflected a misunderstanding of Agile's key themes. It is the focus on delivering business value early and

responding to changing customer needs, within a quality driven framework that has seen organisations turning to Agile to gain competitive advantage.

**"The ability to collect, process and respond to a range of environmental and user data facilitated by the availability of broadband will have profound implications."**

As in previous years, the conference attracted strong support from local industry, universities, professional bodies and the government. Many local and national industry sponsors were involved in the organisation of the conference.

ASWEC 2010 is being organised in Auckland, on 6-9 April (pending approval), which would be the first time for the conference to be held in New Zealand. If you are interested in helping out or would like to register your interest in the conference, contact [aswec2010@cs.auckland.ac.nz](mailto:aswec2010@cs.auckland.ac.nz).

*This is an edited version of an article written by Paul Strooper from the School of ITEE, University of Queensland.*

For a more comprehensive list of engineering events, visit Engineers Australia's online events calendar at [www.engineersaustralia.org.au/events](http://www.engineersaustralia.org.au/events)

**Courses:** **Introduction to project management** (3 days) Canberra 3 Aug; **Software project management** (3 days) Canberra 28 Sep; **Complex project management** (3 days) Canberra 24 Aug; **Managing integration projects** (2 days) Canberra 17 Aug; **Requirements engineering** (2 days) Canberra 23 Nov; **Systems thinking and modelling** (3 days) Canberra 28 Sep; **System dynamics modelling practicum** (3 days) Canberra 23 Nov; **Introduction to enterprise architecture** (2 days) Canberra 28 Sep; **Systems planning** (3 days) Canberra 30 Sep; **Principles of geographic information analysis and remote sensing overview** (5 days) Canberra 28 Sep. *Inquiries:* Yvonna Gruszka, Business Services Unit, UNSW@ADFA 02 6268 8421, fax 02 6268 8690, email [business.office@adfa.edu.au](mailto:business.office@adfa.edu.au)

**Courses:** **Demystifying information security management systems** (1 day) Melbourne 14 Jul, 13 Oct, Sydney 13 Jul, 12 Oct; **Building a business case for IT governance and information security** (1 day) Melbourne 25 Sep, 23 Nov, Sydney 9 Oct, 2 Nov; **Understanding and implementing a business continuity management system** (3 days) Melbourne 24

Aug, 25 Nov; **Understanding and implementing information security management** (3 days) Melbourne 14 Sep, 14 Dec, Sydney 27 Jul, 6 Oct; **Auditing information security management systems** (2 days) Melbourne 26 Oct, 10 Aug, 19 Oct. *Inquiries:* 1300 727 444, email [training@saiglobal.com](mailto:training@saiglobal.com), web [www.saiglobal.com/training](http://www.saiglobal.com/training)

**Courses:** **TCP/IP and Ethernet Networking** (2 days) Adelaide 16 Jul, Brisbane 23 Jul; **Fieldbus, DeviceNet and Ethernet** (2 days) Brisbane 24 Aug; **Programmable Logic Controllers** (3 days) Perth 7 Sep; **Practical motion control for engineers and technicians** (2 days) Melbourne 12 Oct, Brisbane 15 Oct; **Practical routers and switches (including TCP/IP and ethernet) for engineers and technicians** (2 days) Perth 9 Nov, Sydney 12 Nov, Brisbane 16 Nov, Townsville 19 Nov; **Practical fibre optics for engineers and technicians** (2 days) Brisbane 7 Dec, Melbourne 10 Dec, Perth 4 Dec; **Practical radio telemetry systems for industry** (2 days) Perth 3 Sep, Melbourne 3 Dec, Sydney 7 Dec, Brisbane 3 Dec; *Inquiries:* IDC Technologies 1300 138 522, fax 1300 138 533, web [www.idc-online.com](http://www.idc-online.com)

## CONFERENCES

**6th international conference on autonomic and trusted computing** (4 days) Brisbane 7 Jul. *Inquiries:* web [www.itee.uq.edu.au/~atc09](http://www.itee.uq.edu.au/~atc09)

**Kernel conference Australia 2009** (3 days) Brisbane 15 Jul. *Inquiries:* Claire Operie 02 9844 5275, email [Claire.Operie@sun.com](mailto:Claire.Operie@sun.com), web [au.sun.com/sunnews/events/2009/kernel/index.jsp](http://au.sun.com/sunnews/events/2009/kernel/index.jsp)

**Data centre management 2009** (2 days) Sydney 28 Jul. *Inquiries:* web [www.iqpc.com.au/ShowEvent.aspx?id=175574](http://www.iqpc.com.au/ShowEvent.aspx?id=175574)

**3rd annual technology in government and the public sector summit** (2 days) Canberra 10 Aug. *Inquiries:* web [www.acevents.com.au/ausgovtech2009/](http://www.acevents.com.au/ausgovtech2009/)

**Spatially enabled government summit** (3 days) Canberra 31 Aug. *Inquiries:* web [www.iqpc.com.au/ShowEvent.aspx?id=178068](http://www.iqpc.com.au/ShowEvent.aspx?id=178068)

**Software testing Australia/New Zealand conference** (2 days) Wellington 24 Aug, Sydney 27 Aug. *Inquiries:* web [www.softed.com/stanz](http://www.softed.com/stanz)

**Power industry conference: Convergence of IT, automation, control and communication technologies** (2 days) Melbourne 2 Sep. *Inquiries:* Jasmin Hazelton 08 9321 1702, email [jasmin.hazelton@idc-online.com](mailto:jasmin.hazelton@idc-online.com), web [www.idc-online.com/](http://www.idc-online.com/)

[newsletters/images/0909\\_IT\\_CFP.pdf](http://newsletters/images/0909_IT_CFP.pdf)

**18th international conference on plastic optical fibres** (5 days) Sydney 7 Sep. *Inquiries:* 02 9524 1799, fax 02 9524 1744, email [pof2009@mtci.com.au](mailto:pof2009@mtci.com.au), web [pof2009.mtci.com.au](http://pof2009.mtci.com.au)

**6th annual wireless world 2009** (2 days) Sydney 9 Sep. *Inquiries:* 02 8908 8555, web [wirelessworld2009.com](http://wirelessworld2009.com)

**e-Security for Government 2009** (2 days) Melbourne 22 Sep. *Inquiries:* [www.iqpc.com/ShowEvent.aspx?id=193518&langtype=1033](http://www.iqpc.com/ShowEvent.aspx?id=193518&langtype=1033)

**International global navigation satellite systems society symposium on GPS/GNSS** (3 days) Gold Coast 1 Dec. *Inquiries:* 07 5520 4288, fax 07 5508 2175, email [krys@ignss.org](mailto:krys@ignss.org), web [www.ignss.org](http://www.ignss.org)

**Asia-Pacific digital economy summit** (4 days) Melbourne 14 Dec. *Inquiries:* web [www.aiaa.com.au/pages/apacdigitaleconomysummit.aspx](http://www.aiaa.com.au/pages/apacdigitaleconomysummit.aspx)

## CALL FOR PAPERS

**Conference: International global navigation satellite systems society symposium on GPS/GNSS** (3 days) Gold Coast 1 Dec. *Inquiries:* web [www.ignss.org](http://www.ignss.org)

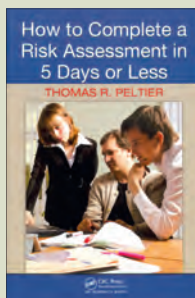
**Abstracts due:** 17 Jul. ■

## How to Complete a Risk Assessment in 5 Days or Less

Thomas R Peltier

\$145.45 + GST = **\$160**

2009 9781420062755 440pp



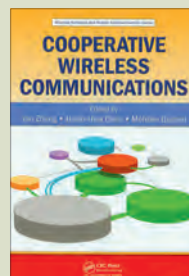
The Facilitated Risk Analysis and Assessment Process is a methodology for ensuring threats to business operations are identified, examined and documented. It involves analysing one system, application, platform, business process or segment of business operation at a time. By convening a team of internal subject matter experts, the FRAAP will rely on the organisation's own people to complete the risk assessment. Developed by an information security specialist the process can be applied to many industries.

## Cooperative Wireless Communications

Ed. Y Zhang, H-H Chen, M Guizani

\$181.82 + GST = **\$200**

2009 9781420064698 513pp



This comprehensive handbook provides the knowledge to develop and implement cooperative mechanisms for infrastructure-based wireless systems and self-organising multi-hop wireless networks (ad hoc, peer-to-peer, sensor networks) # Offers guidance on technical, practical and deployment aspects # Explains the latest IEEE standard specifications # Explores key challenges and solutions in 3G, B3G, 4G, WiMAX, ad hoc, mesh and sensor networks # Covers cooperative diversity, virtual MIMO, cognitive radio networks, resource and mobility management # Discusses energy efficiency, routing, MAC, topology control and security.

## Temperature control solution

Unitronics released new Jazz models as a cost-effective solution for temperature control in the form of a low-cost programmable logic controller (PLC) with an embedded human machine interface (HMI) and direct Temperature Measurement Inputs.

If a system or process requires temperature measurement, users can choose a proportional-integral-derivative (PID) controller or a high-level PLC that includes PID functionality. The PID controller is cheaper but must be set up as an extra unit, programmed and able to communicate with other parts of the system. Using a high-level PLC can save a lot of work but they are costly.

Unitronics stated that its two Jazz PLCs can fully replace the PID controller without exceeding users' budgets.

The JZ10-11-UA24 offers two Thermocouple/PT100 inputs, two analog inputs and two analog outputs while JZ-11-UN20 offers one Thermocouple/PT100 input and

one analog input. Both models include additional digital I/Os with the total I/O count reaching up to 24 onboard I/Os.

All Jazz models include four auto-tune PID loops. PID can be set using the onboard temperature and analog inputs, and the analog or pulse width modulation outputs.

Jazz also features a full-function HMI with a two line LCD text display that shows up to 60 user-designed screens and a 16-key keypad. The multilingual display supports over 15 languages and 20 graphic symbols including the degree sign.

Software functions include interrupt, loops, math, store and compare. Communication options include SMS messaging, Modbus networking and PC access via Modbus or OPC.

A Jazz PLC with onboard temperature inputs can be used for any small machine where "smart" temperature control is needed such as ovens activated according to real-time clock, simple ramp and soak, simple multistep programmers and other



*Jazz PLC model.*

applications. It can also be used for simple autoclaves, rotating tables, home automation and other small-to-medium systems where cost-effectiveness is important.

[www.unitronics.com](http://www.unitronics.com)

## Socket adapter for processor

Ironwood Electronics' new socket, SF-BGA316C-B-62F, allows 0.8mm pitch, 17x17mm body, 20x20 array analog device ADSP-BF539/ADSP-BF539F ICs to be socketed. It is used in automotive applications. The Giga-snaP™ BGA SMT adapter pair consists of the new, patent-pending female sockets with machined pins epoxy over-molded into an assembly that matches the male pin LS-BGA316C-61.

The RoHS compliant product is soldered to a PCB using standard soldering methods. Both adapters are constructed with high temperature FR-4 bodies.

The LS-BGA316C-61 BGA adapter, to which the user attaches a target 316 ball Analog Devices BGA chip or other compatible chip, is plugged into the female socket on the board. Once this step is completed, the chip is interconnected and the system is ready to operate.

The SMT adapters have the same solder ball types as the IC they are emulating. The Giga-snaP BGA Surface Mount Feet Adapters require half the force of conventional adapters at 4.5 kg for the 316 pin device. The electrical path of the Giga-snaP BGA SMT adapters, a high

priority performance issue defined by the physical length from the top connection point on the male adapter to the solder ball on the female socket, is 4.5mm. This is the shortest connection length for machined pin sockets, therefore providing good transmission of high frequency signals.

These adapters passed environmental tests (MIL-STD) and qualified for use in automotive applications. The 0.8mm Giga-snaP BGA SMT Adapter line is available in many different pin counts.

[www.ironwoodelectronics.com](http://www.ironwoodelectronics.com)

## Belden Unveils DataTuff Cat 6 UTP Round Design Cables

Belden, a company that develops signal transmission products, has introduced a new Category 6 DataTuff Twisted Pair industrial Ethernet cable.

The new cable is Ethernet/IP compliant and is a round construction, which makes it suitable for sealed industrial connectivity applications.

It features a solid bare copper conductor and a heavy-duty oil- and sunlight-resistant jacket.



*Belden's Category 6 industrial cable.*

In addition, the cable features Belden's bonded-pair technology, a patented design that bonds the individual insulated conductors of each pair along the full length of the cable.

The Bonded-Pair cables maintain a consistent distance between conductors, with no twisting or gaps, resulting in good electrical performance.

[www.belden.com](http://www.belden.com)

## New module for wireless connection

Siemens has released a module, IM154-6 PN HF IWLAN, for wireless connection of IP65/67 Profinet I/O. The new module enables the higher IP rated ET200pro distributed I/O system to communicate via industrial wireless LAN.

The module can be operated in a 2.4GHz or 5GHz IWLAN radio network with maximum data rates of up to 54Mbit/s.

It enables the ET 200pro system to be employed for applications where a wired solution could only be implemented at high cost due to wear and tear, separation and inaccessibility.

Some potential areas of application are driverless transport systems, warehouse logistics, goods transport, electrical trolley conveyors, building management, service applications and other possibilities.

The interface module consists of an interface unit (IWLAN radio card that is compatible with IEEE 802.11a/h/b/g and IEEE 802.11e/i), and a connection unit.

The interface unit and the connection unit are supplied together with the terminating module. The directly or separately mounted antennas are connected to the interface module via a screwed connection (R-SMA). The device name and the user



Siemens wireless module.

and configuration data can be stored on a SIMATIC Micro Memory Card.

A high degree of security is achieved with the WPA2/IEEE 802.11i mechanism. Here, modern procedures have been defined that control both a regular change of

the complete 128-bit key, as well as access control (authentication) of subscribers. The Advanced Encryption Standard is used for data encryption.

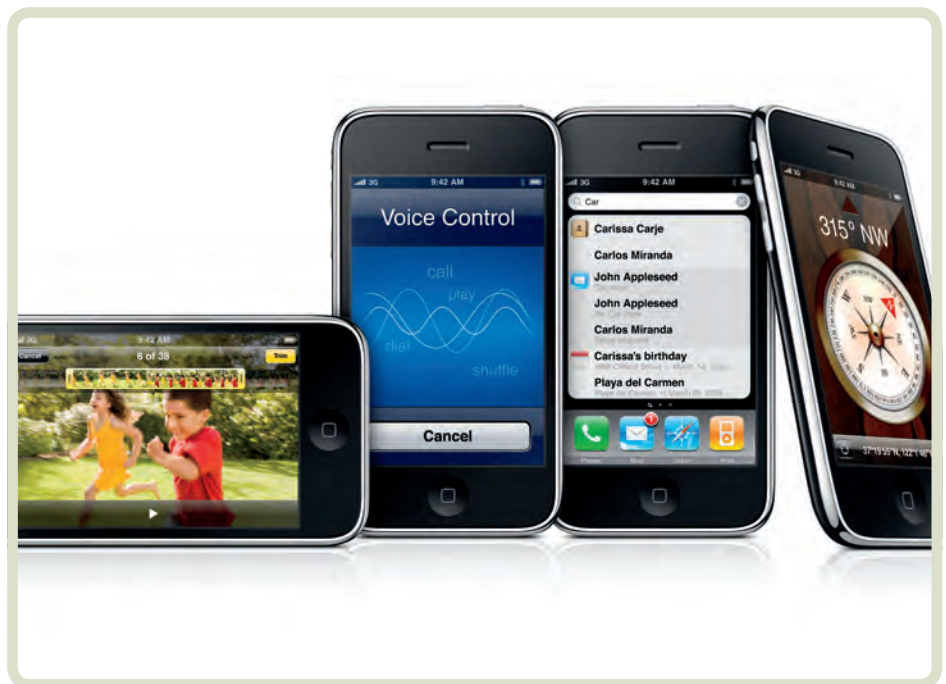
[www.siemens.com.au](http://www.siemens.com.au)

## iPhone's latest

Apple has released its latest version of iPhone called the iPhone 3GS, with the 'S' representing speed. Apple states it is the most powerful iPhone made, operating twice as fast as the superseded model in booting up, rendering web pages and managing applications. The battery life is said by Apple to be longer, with five hours of talk time and nine hours of web surfing.

The iPhone 3GS has its storage doubled to 16GB and 32GB in the two models for sale in Australia and comes with many new features. The 3-megapixel camera has new capabilities and video recordings can be edited on the iPhone itself before being sent to friends or uploaded to YouTube. A hands-free voice control feature allows the user to speak a name or number for the phone to dial it, or choose a track from the music library to play, among other uses.

The new "Find my iPhone" feature enables people to use an Apple online MobileMe service to locate lost or stolen devices by showing the user a map of where the phone is. A message can be sent to the iPhone where it will play an alert sound, even if it is on silent mode. All data can also be remotely erased from lost or stolen iPhones and then restored if the lost



phone is found again.

Numerous other new features on iPhone 3GS include cut, copy and paste, a bigger landscape keyboard, Spotlight to

search the contents of the iPhone, and a new operating system that allows iPhones to connect to one another wirelessly for communal activities like playing games.