

The newsletter of Engineers Australia's College of Information Telecommunications & Electronics Engineers



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from the chair

Choosing among options

by Peter Hitchiner

Recently I assisted a client in a project which demonstrated opportunities of technology to deliver education using broadband networks. The trial was a great success from a student engagement perspective and for appreciation of the learning experience in the technical

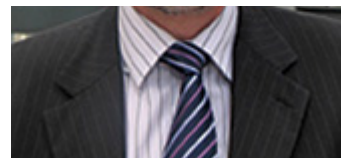


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environment used. In fact, the trial encouraged further exploration of the use of the technology and, with the prospect of continued success, medium term expectation of more widespread deployment. The work did however raise the question in my mind as to whether the resources used to deliver those outcomes might have been better focused elsewhere in terms of national educational/economic impact.



Typically technology can offer a solution to most envisaged challenges. In this case, we face the particular challenge of identifying where to best focus resources (time, people and dollars) to generate the best value outcome (by appropriate comparative measures). Ubiquitous and affordable broadband opens up an immense array of opportunity and choice including in education. Individuals' resources are limited, so how are those choices made? Ironically the availability of ubiquitous and affordable broadband, which depends so much on engineers, may itself be putting further pressure on engineering resource supply simply by providing further opportunities for students to study subjects other than science, technology, engineering and mathematics (STEM).

Engineers must promote the use of technology to increase the proportion of students taking on STEM subjects, because it won't be done for us. Engineers need to help students in assessing the value of pursuing STEM subjects and to assist educators to devise ways of using broadband to help make those subjects more appealing. Technology now delivers a plethora of options for students and they will increasingly need help in making choices. If we don't influence this, can we be surprised if the apparent fall in the proportion of students taking STEM courses continues?

I take this opportunity to wish all members of the ITEE College a healthy and prosperous 2012.

This column also appears in the ITEE College Board Chair [blog](#): please post your feedback.

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ITEE College Board Meeting November 2011

The College Board met in Perth on 17 and 18 November. The following outcomes are reported for the information of College members:

- Representation on the College Board is now active from all divisions except Newcastle, with new representation

from Tasmania and Northern divisions and continuing representation from other divisions. The Board also agreed to improve communication with other bodies with corresponding membership from EA's National Committee on Transport Engineering (to facilitate engagement on Intelligent Transport Systems (ITS)) and the Australian Council of Deans of ICT (the Board already includes representation from Australian Council of Engineering Deans).

- A Board committee was established to review the National Committee on Software Engineering, including effectiveness and purpose. Any College member wishing to provide comments may do so through the ITEE College Chair blog.
- The Board noted that the next Australian Software Engineering Conference will be held in 2013, after a hiatus of two years. Plans for EA participation as a sponsor in Radar 2013 and in the Australian Symposium on Antennas (also 2013) are being advanced. EA's involvement in the recent Asia Pacific Microwave Conference in Melbourne is very positive in providing visibility for EA in the ITEE disciplines and is responsive to the need for EA to provide information and professional opportunities for its members. Plans are under way for EA sponsorship of two ITS conferences. The Board is keen to ensure engagement of local groups with conferences held in their locality – however this doesn't seem to be occurring very effectively. The Board representatives will endeavour to facilitate such opportunities. Conferences provide an important opportunity for eminent speakers to make presentations to College members during their visit.
- The Board has been considering various initiatives to encourage papers for the Australian Journal of Electrical and Electronics Engineering on topics falling within the ITEE discipline. If more interest can be generated it may be possible to initiate additional (specialised) journal titles. It is likely that such initiatives will involve largely electronic publication for members.
- A three year forward program of eminent speakers is being planned. Plans are now being developed for Dr Trevor Bird, recently retired as Chief Scientist at CSIRO's ICT Centre, to undertake our next eminent speaker program during 2012.
- The Board has been asked to assist in the development of guidelines to assist candidates and interviewers for Stage Two (chartered) Competency for ITEE discipline. This work will be undertaken over the next few months.
- The number of nominations for the IREE Neville Thiele

Award continues to disappoint and steps to improve the dissemination of information about the award will be taken.

- A second award to be funded by the IREE Foundation is being proposed with a much broader set of eligibility criteria.
- The Board is taking steps to improve the ability to communicate with and support member information needs though development of the ITEE College web pages.
- The Board commenced a review of its operational plan for 2012/13.

If you have any input or feedback on these matters, please visit the College Chair's [blog](#).

Peter Hitchiner is the ITEE College Chair 2011.

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news

Digital communications for railway

Design and maintenance firm UGL Infrastructure has been contracted by RailCorp to design, construct, commission and maintain a new Digital Train Radio System (DTRS) at about 250 locations within the NSW rail corridor, in addition to more than 60 sites in tunnels throughout the electrified rail network.

The replacement of the existing analog train radio system with DTRS is intended to fulfil recommendations from the Special Commission of Inquiry into the 2003 Waterfall train accident to provide a common platform of communication for staff working on the railway. According to RailCorp, the DTRS will ensure that train drivers, train controllers, signallers and train guards on RailCorp's electrified network are able to communicate with each other using the same system with the same technology, thereby addressing the issue of staff miscommunications which was cited by the commission as one of the causes of the 2003 accident.

The project will involve the installation of new radio masts or, where possible, attaching DTRS equipment to existing infrastructure. Cabinets containing electrical and other equipment will also be installed.

The DTRS is based on the GSM-R standard now widely used by rail operators in Europe and Asia. In Australia, this system is being installed on the Melbourne train network by the Victorian government. With 372km of track, the Melbourne network is approximately one quarter the size of RailCorp's electrified network. Its digital train radio system comprises 69 sites that require new masts.

Work in NSW will begin between Waterfall and Sutherland to the south of Sydney, and is expected to take several years.

Construction, installation and commissioning of the DTRS equipment is expected to take an average of six weeks to complete at each site.

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Australians win big at international awards

The Australian Information Industry Association (AIIA) reported last month that Australia returned from the [2011 Asia Pacific ICT Alliance](#) (APICTA) Awards with its best result in the history of the competition. Of the six Australian companies competing at the international technology innovation awards in Thailand, three won their respective categories outright and three returned with merit awards. A full list of winners can be viewed [online](#).

Each competitor won the right to compete following success at the [2011 iAwards](#), Australia's premier technology Awards program. An internationally affiliated awards program for Australian technology innovators, the iAwards are hosted each year by the AIIA in partnership with the Australian Computer Society and the Pearcey Foundation.

APICTA is a networking and product benchmarking opportunity for ICT innovators and entrepreneurs in the region.

2011 marked the first year that the Sustainability and Green IT category has been included in APICTA, with Australia winning the inaugural award through the CSIRO's next-generation catchment management system.

APICTA 2011 was organised by the Association of Thai ICT Industry and supported by the Software Industry Promotion Agency.

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CSIRO supercomputer earns kudos

CSIRO's graphics processing unit (GPU) supercomputer maintained a strong position on the 2011 Top500 list

announced last month at the SC11 conference in Seattle, USA.

Coming in at number 212, CSIRO's GPU supercomputer is one of the first GPU-based clusters to run Windows and is now ranked as the second fastest supercomputer running Windows in the world.

CSIRO eResearch director Dr John Taylor said rankings for the Top500 list are determined using the Linpack benchmark test which measures, under certain conditions, the number of calculations a supercomputer can do per second.

"We've been building a strong collaboration with Microsoft over the past few months to optimise the Windows HPC operating system on our CSIRO GPU supercomputer and perform the Linpack test," Dr Taylor said.

"We are thrilled with the result. We now have a performance of 75.3 Teraflops in double precision on Windows HPC."

The supercomputer runs dual Linux and Windows applications to cater for the needs of scientists who use these different operating systems for running software code and analysing data from experiments.

"We recognised that most CSIRO scientists are working on Windows workstations now, so we wanted to make supercomputing more accessible from the desktop and allow them to speed up their research, giving them a competitive advantage in science internationally," Taylor said.

CSIRO's GPU supercomputer was installed in Canberra in November 2009 by Xenon Systems of Melbourne. It combines 256 Intel central processing units (CPUs) with 64 NVIDIA Tesla S2050 which contain 256 graphics processing units (GPUs).

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Record number of consumer complaints

The Telecommunications Industry Ombudsman (TIO) received 197,682 new complaints in 2010/11 – an increase of almost 18% on the previous year. The 2011 TIO Annual Report, released online last month, attributes the rise to mobile phone service faults and increased smart phones use.

"The record number of complaints made to the TIO is disappointing. Customers who have complained to us have been frustrated not only by mobile telephone problems, but also by deficient customer service and complaint handling," ombudsman Simon Cohen said.

Over 112,000 of the new complaints received by the TIO were about mobile phone services – an increase of 51% from the previous year. Of these, more than 32,000 were about

Vodafone, almost tripling the number of its new mobile phone complaints when compared to the previous year.

The most common mobile phone complaint issue was about service faults, with 56,475 new complaints made to the TIO, a 180% increase. Consumers were most concerned about poor mobile coverage and service drop-outs.

Many of the remaining new mobile phone complaints could be attributed to inadequate information provided to consumers about the costs associated with smart phones and related billing disputes. For example, a 26% increase was recorded in disputes about internet charges on mobile service.

"There has also been an alarming increase in the number of consumers with high debts because they could not monitor their usage adequately, the majority using mobile phones," Cohen said.

"It is in everyone's interest to make sure there are effective and easy-to-use monitoring tools available to consumers to track their own usage. Service providers should also monitor customers' usage and notify them if they are accruing unexpectedly high bills to avoid people not being able to pay their bills and facing credit and debt collection problems as a result," Cohen said.

Complaints about landline, internet and mobile premium services (MPS) all reduced in 2010/11.

"MPS complaints are down almost 50 per cent, which reflects positively on stronger government and industry regulation," Cohen said.

Investigations by the TIO also reduced in 2010/11, despite the sharp increase in new complaints, demonstrating the effectiveness of the TIO's referral and conciliation processes.

The entire TIO Annual Report is available [online](#).

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Sensor technology to make workplaces safer

New research from technology company Siemens has suggested that sensor technology could improve safety in Australian workplaces. The research, which is part of the company's Picture the Future 2030 Safety scheme, revealed that Australian workplaces are currently suffering one fatality per day and are costing over \$57 billion every year in medical expenses, lost hours and compensation.

"Through the introduction of sensors we see that machines can

detect who is about to operate a machine and if they are not trained the machine will literally shut-down," said head of Picture the Future Safety research Chris Vains.

This sensor technology would extend to imbedded devices in clothing or uniforms to communicate directly to machinery or vehicles so that clear safety information is available to all workers, regardless of whether they are employed on a casual or full-time basis.

"We see a future where there will be no need for a yellow line or barrier stopping workers from doing their work. Sensors will detect if the employee is qualified to operate equipment – and if they are wearing safety goggles – an image will appear as a hologram to provide clear safety instructions."

The sensor technology identified in the research is expected to be made available within the next decade, and Siemens predicts that this type of technology will become commonplace in many industrial settings by 2030.

For the full study and findings, and for more information on Picture the Future 2030 Safety, click [here](#).

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Research to help with national data security

A Curtin University researcher has been awarded a \$50,000 Commercialisation Australia Skills and Knowledge Grant to develop a business plan for a powerful and innovative data cleansing technology.

Research fellow Dr Fedja Hadzic has created the Data Quality and Integrity Toolkit, which is designed to allow government and private organisations to identify and prevent sources of database contamination.

Hadzic said the software cleaned up the duplications and errors that could prove to be a major issue when found in highly sensitive databases belonging to government and large corporations.

Curtin director of IP Commercialisation Rohan McDougall said the grant would help to support the building of a strong business case around the technology, comprising a product development plan, market analysis, intellectual property strategy, costing and pricing modelling and sales forecasts in order to help secure commercialisation partners.

"We will work with Dr Hadzic to develop a comprehensive business plan to attract the additional investment necessary for full commercialisation of the toolkit," he said.

"A critical part of this Skills and Knowledge Grant expenditure will be used to find a commercial partner, to help develop and commercialise the technology."

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Tip us off!

Do you know something the ITEE College or the IT/telecommunications/electronics engineering industry should know? Tip us off! e-Monitor is on the look-out for information that would interest our readers.

Do you wish that someone in the media would cover a particular story or interest? Let e-Monitor know and we'll investigate.

You can submit tips, feedback, or an idea for a story via [email](#) or on [Twitter](#).

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new products

Signal conditioner

Meggitt Sensing Systems has introduced the Endevco model 2793, a 16-channel power supply and signal conditioner, designed to accept inputs from Isotron or other piezoelectric transducers and remote charge converters (RCC) within a high-impedance measurement system.

Each channel of the Endevco model 2793 offers constant current excitation, either 4mA or 10mA for the transducer or RCC, with all outputs buffered for driving long cables. The signal conditioning unit offers a relatively low per-channel cost and a wide frequency range of 1Hz to 80kHz. LED status indicators inform the user of short, open or normal operating conditions, ensuring greater test setup reliability.

For added flexibility, each channel provides gain (1 or 10) and current excitation (4mA or 10mA) settings, selectable by internal jumpers. In addition, the model 2793 offers a "D" output connector for simple connection to a D/A board.

www.meggittsensing.com



Meggitt Endeveco

Fast Fourier Transform cores

RF Engines Limited has released its new HyperSpeed Plus Pipeline Fast Fourier Transform (PFFT) cores on FPGA. The HyperSpeed Plus cores are intended for use in applications where extreme processing speed is required within minimum silicon resources, such as wideband surveillance and scientific or test instrumentation. When coupled with the latest analog-to-digital converter devices, the HyperSpeed FFT is capable of analysing tens of GHz of bandwidth continuously in real-time.

www.rfel.com

Modular industrial patch panel

Belden has introduced the new modular industrial patch panel (MIPP), a termination panel for cables that need to be connected to active equipment such as switches, industrial Ethernet devices and any other device with an Ethernet link. MIPP provides a connection between Belden cables and Hirschmann switches and is designed to have the same look and feel as the Hirschmann range of products.

Using patchcords to connect to active equipment, cables can be terminated outside the cabinet. With a lightweight aluminium structure, the MIPP can easily be mounted on a DIN Rail, or it can be fixed at the sides of the cabinets simply using a wall mount plate. Thanks to its small housing, high port density and modularity, cabinet space is kept to a minimum.

www.beldensolutions.com



Belden MIPP

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calendar

The Communications Alliance's Broadband and Beyond 2012 industry conference will be held in Sydney on 22 February. The theme for the event is "the Seamless Connected Environment". The conference will feature a keynote presentation from Ruckus Wireless CEO Selina Lo. It will also showcase [speakers](#) from Google, Fairfax Media, and pieNetworks among other organisations, discussing what will be required to deliver a perpetually connected and rewarding environment. Register [online](#).

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