monitor

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Green plastic circuits

Queensland scientists have developed an electronic circuit board made of plastic.

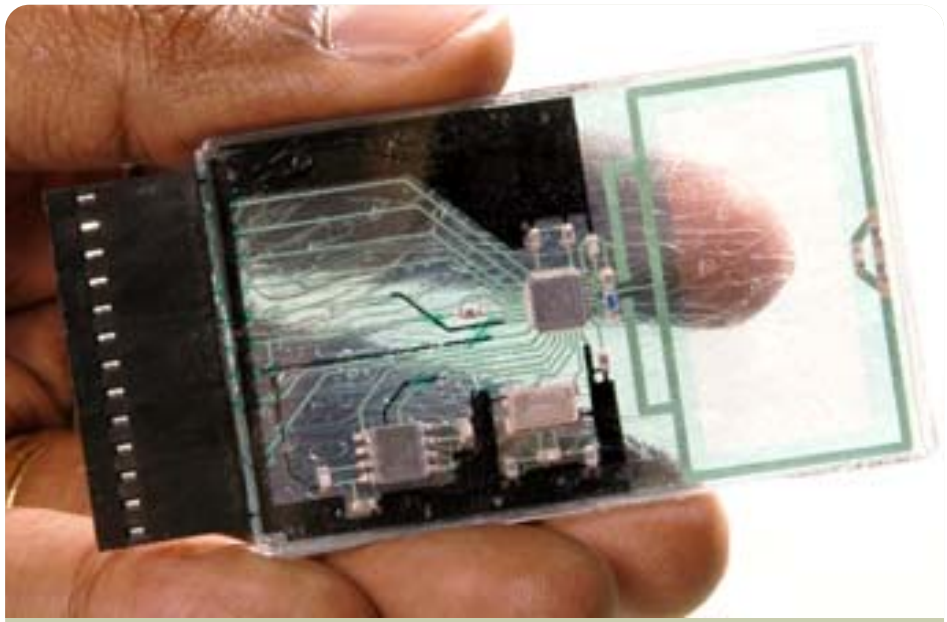
A research team from Griffith University's School of Engineering and the Cooperative Research Centre for Microtechnology led by Professor David Thiel developed the technology which is called Circuits in Plastic.

To create the circuit, conductive tracks are screen-printed directly onto a polycarbonate board containing the components. The technology offers environmental benefits, according to Thiel. "There is minimal use of wet chemicals during the circuit board manufacturing process and less byproduct ends up in landfills," he said. Additionally, the circuits could use biodegradable or recycled plastic.

The technology complies with the European Union laws which come into effect on 1 July. The Restriction of Hazardous Substances and Waste of Electrical and Electronic Equipment govern the use of hazardous materials and disposal of electronic waste. Traditional printed circuit boards (PCBs), which use lead-based solders, do not comply with these new standards.

According to Thiel, the technology is also more economical. Lead-free PCB fabrication generally requires a stencil printer, pick-and-place machine and reflow oven, costing more than $1 million. The machinery that creates Circuits in Plastic includes a pick-and-place machine, hot embossing machine and a reel-to-reel printer with an optional injection moulding machine totalling $100,000 to $200,000. The technology also has a simpler fabrication and packaging process.

Thiel said engineers and scientists are currently researching several other technologies including printed organic electronics.



Griffith University's Circuits in Plastic circuit board offers environmental benefits.

Technology copyright report released

A report on the inquiry into technological protection measures was released last month by the House of Representatives' Standing Committee on Legal and Constitutional Affairs. The report has recommendations that address exceptions to copyright anticircumvention statutes. According to Linux Australia IP policy adviser Rusty Russell, the issues mentioned in the report are important to Australian open source development and implementation.

Linux Australia president Jon Oxer welcomed the release. "In particular the recommended exception for interoperability between computer programs and data, if adopted, will ensure that both the consumer and the industry are not shackled by vendor lock-in or corporate agendas," he said.

The report can be viewed at www.aph.gov.au/HOUSE/committee/laca/protection/report.htm

Source: linux.org.au

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Energy system gets personal

CSIRO has developed an energy management system which lets households manage energy according to their preferences and needs. The technology complements smart electricity meters and aims to reduce blackouts and greenhouse emissions, and improve the reliability and efficiency of the electricity grid. It also addresses price volatility, network security and demand peak problems.

Offering users more choice and control over their energy consumption was the main priority, explained Dr Geoff James of the CSIRO ICT Centre. "One consumer may prefer to only run their airconditioner when energy is below a certain price but to make an exception if the temperature rises to a certain level. Another consumer may wish to switch off energy-hungry appliances during demand peaks in return for price reductions," he said.

The system features sensors and agents which monitor power generation and demand. It then makes control decisions based on parameters set by generators, distributors and consumers.

"Industrial users can tailor their demand profile to take maximum advantage of fluctuations in price and availability of energy," James said.

CSIRO is currently running a prototype energy management system at its Newcastle Energy Centre. Dr Glenn Platt of CSIRO Energy Technology describes the system as a "mini electricity grid" incorporating a micro gas turbine generator, photovoltaic arrays, a wind generator, a weather station, cool rooms and part of the building's climate system.

The system is also being trialled by a major Australian utility company.
Source: www.csiro.au

Cracking computing complexity

A new field of mathematical and scientific study has been developed to answer the growing complexity of computer systems.

Some organisations admit that their computer systems are so complex that they cannot confidently predict their behaviour.

Complexity theory, which includes chaos theory and complex adaptive systems, has been studied for many years. Workshops are now examining the results of that research for potential ICT applications.

In 2003, the UK Royal Academy of Engineering and the British Computer Society published a report called "The Challenges of Complex IT Projects". The study identified inadequate education in IT application and project skills in universities, undervaluation of system architecture and the failure to recognise and replicate sound practices in developing complex IT projects. According to the report, research into complexity would aid development of effective, globally-distributed computing systems.
Source: www.warren.usyd.edu.au

Merger for airblown fibres

A national distribution deal between network provider Emtelle and Madison Technologies last month will allow Madison to distribute Emtelle's airblown fibre installations and ducted networks.

Blown fibre networks involve lightweight fibre bundles installed into dedicated tube routes using airflow with no splicing. The networks can be used in LAN, MAN or smaller home installations.

The two companies will now collaborate to roll out fibre to the home and fibre to the desk technologies across Australia.

Queensland signals on track

University of Queensland researchers collaborating with Queensland Rail are developing a signalling project for railways.

Called Siglink, the project aims to partially automate design checking for signalling interlockings which help trains travel safer. UQ's School of Information Technology and Electrical Engineering (ITEE), led by Associate Professor Paul Strooper, Dr Kirsten Winter and Dr Peter Robinson is conducting the research.

Researchers Lionel van den Berg and Wendy Johnston said the Siglink project would help detect errors early in the design process to avoid costly fixes later on. It would also contribute to maintaining safety standards for Queensland Rail.

Siglink follows a previous collaboration with QR called Sigtools which supports the generation of control tables that define how railway interlocking should behave. Sigtools performs early checks to eliminate errors when the control tables are designed and generated while Siglink checks the tables more extensively for safety problems once they are fully defined.

The Siglink project aims to make Queensland Rail's trains safer.

PHOTO: UNIVERSITY OF QUEENSLAND

Johnston said Siglink extends Sigtools using model-checking software that tests the system to guard against derailment and collisions. The Siglink project is jointly funded by QR and an ARC Linkage grant. The project is expected to be completed by next year.

Training software engineers for defence

The South Australian government has committed $4.73 million over four years to develop a software engineering centre focusing on defence work. Called the Centre of Excellence in Defence and Industry Systems Capability (CEDISC), it aims to train about 50 software engineers annually to compete for defence contracts.

The centre will be based at the University of South Australia's Mawson Lakes campus. The university will also contribute about $600,000 in funding. The curriculum includes collaborative education and training programs in software and systems engineering and systems integration. The centre was outlined last month at the Defence Sector Launch.

South Australian Premier Mike Rann said information systems are critical to the $6 billion Air Warfare Destroyer contract, the AWD Systems Centre and the $1 billion AP3C Orion upgrade. He also emphasised the importance of electronics and information systems to modern defence systems which allow warships to operate and communicate effectively. "[CEDISC] will help us capture the largest possible slice of the $15 billion to $19 billion to be spent on information systems over the next 10 years in Australia," he said.

Source: www.unisa.edu.au

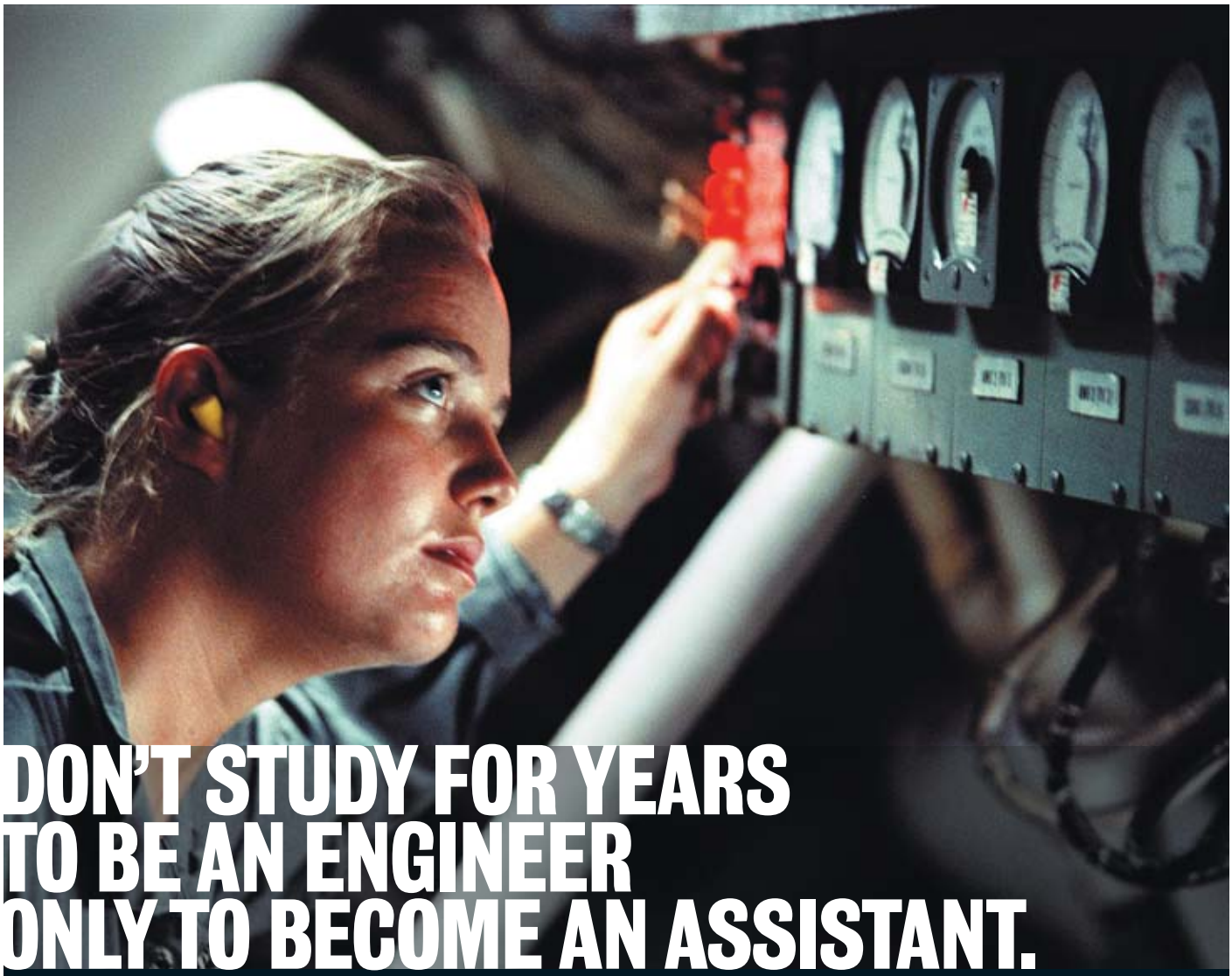
Darwin devices go international

Darwin-based In Motion Technologies (IMT) has been acquired by Fasco Asia-Pacific, a division of US-based Tecumseh Products Company.

Founded in 2002, IMT became the commercial outfit fronting 10 years of brushless motor development led by Professor Dean Patterson of Charles Darwin University. IMT developed the axial-flux brushless motors used in the Desert Rose solar car during the 2005 World Solar Challenge. Brushless motors are now used in almost all of the world's solar cars.

With help from the government through the AusIndustry program, IMT adapted the technology to devices such as airconditioners and fans, reducing operating power requirements.

IMT's staff will form the core group for a Research and Development Center of Excellence at Fasco Asia-Pacific in Australia. Developing energy efficient motors is a key focus for Tecumseh as it aims to incorporate high-tech motors into domestic appliances.



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Asteroid deflection consortium

A European aerospace consortium led by British firm QinetiQ has won a €450,000 contract from the European Space Agency (ESA) to design a space mission to deflect asteroids that might collide with Earth.

The consortium includes the Swedish Space Corporation, Verhaert Space, the Open University and SciSys. The mission is called Don Quijote.

The issue of asteroid impact was mentioned to ESA in 1996 by the Council of Europe. Recommendations from other international organisations, including the United Nations, followed. ESA responded by conducting threat evaluation and mission studies. In 2004, a panel of experts recommended pursuing the Don Quijote asteroid deflection concept.

The consortium's proposed mission would use two spacecraft to engage a threatening asteroid. The first craft, an orbiter called Sancho, would orbit the target asteroid for several months and measure its position, shape, mass and gravity field. The second craft, an impactor called Hidalgo, would slam into the asteroid at a relative speed of 36,000km/h. Sancho would continue monitoring the asteroid's position to measure the deflection caused by the impact.

This simulated image shows the orbiter craft Sancho observing the impactor craft Hidalgo slamming into an asteroid to alter its trajectory.

PHOTO: ESA

The QinetiQ team is competing against two other consortia. The ESA will select the winning design next year.

ICT salaries have increased

ICT professionals have benefited from real salary increases of up to 5.2% over the March 2005/2006 period.

These figures came from the Australian Information Industry Association's (AIIA) Survey of Salaries and Remuneration Packaging in the Australian ICT Industry published last month.

The survey examined the salaries and benefits of 33,722 individual employees from key ICT companies.

According to the study, when ICT salaries were compared to CPI, the average real salary increase for ICT professionals over the past 12 months was 2.1%. In the August 2004/2005 period, this figure was 1.2%.

AIIA chief executive Rob Durie predicted that ICT salaries would continue to grow by 4% in the next financial year. He also opposed claims that the industry had a skills shortage, claiming that the survey results suggested the ICT labour market was "in balance".

AIIA board director Ian Birks said the salary increases appeared to be driven by industry demand for specific types of skills, particularly CISSP, SAP, Siebel and ecommerce.

Birks said they had not seen any clear evidence that skills shortages were affecting salaries. "This is something we'll be more likely to see in the long term," he said.

For more information on the salary survey, visit www.aiia.com.au/i-cms.isp?page=114.

Visitors browse the show floor at the 2006 Consumer Electronics Show in Las Vegas. PHOTO: CES

Australian ICT to appear in Las Vegas

Australian ICT products from the Australian Electrical and Electronic Manufacturers' Association (AEEMA) will appear at the Las Vegas Consumer Electronics Show next year.

AEEMA chief executive Angus Robinson believes that with the Australia-US free trade agreement in place, the time is right for its members to consider entering the US market. He also stressed the importance of government agencies like Austrade to high-tech companies that want to increase technology exports.

According to Robinson, attending CES is part of a key initiative of Australia's Electronics Industry Action Agenda. It also reflects parallel efforts in building a presence for the electronics industry in Asia.

AEEMA also plans to establish an industry cluster in Melbourne for telematics. This would take advantage of Victoria's new five-year ICT industry plans and Australia's Electronics Industry Action Agenda which had created a national telematics grouping, according to Robinson.

Source: www.aeema.asn.au

Innovation awarded

Mobile phone technologies, card payment systems and a website for booking hotel accommodation were among the winners of the 2006 Australian Information Industry Association's iAwards held this month in Sydney.

The ABC's James O'Loghlin hosted the annual event which recognises achievement in the Australian ICT industry. The awards were presented by the AIIA, *Australian Financial Review*, CSIRO ICT Centre and MIS Australia.

The winners will represent Australia at the Asia Pacific ICT Awards which will be held in Macau later this year.

Wotif.com won the Inspiration award for overall ICT excellence for a tourism website where accommodation information can be updated and viewed online. MYOB CEO Craig Winkler won the Tony Benson CSIRO award for individual excellence in ICT, and SRA Information Technology won the Community award for its EnviroSys database.

Mathematics makes a splash

Scientists are using mathematics to help Australians perform in the swimming pool.

A joint project between Monash University, the Australian Institute of Sport and CSIRO Mathematical and Information Sciences is mathematically modelling changes in swimming strokes to improve the speed of top swimmers.

The research uses the same software CSIRO uses for other fluid simulations such as animating water for movies and modelling volcanoes and tsunamis.

"Firstly we need to understand how water interacts with the human body during competitive swimming," CSIRO researcher Chris Glendenning said. "We are building a virtual model of a swimmer and are using mathematical techniques known as Smoothed Particle Hydrodynamics or SPH to run simulations of the virtual model swimming in a pool. SPH describes fluid flow as the motion of individual particles. Using this technique means we will be able to more accurately simulate the interactions of water with a swimmer, which is particularly complex at the water's surface."

> The software can compare swimming styles between different swimmers.

To begin, the researchers create a virtual swimmer by using a laser body scanner to scan the skin surface of a swimmer and motion capture technology to discover how they swimmer moves through the water. By combining the skin surface and motion capture information, the researchers are able to simulate the skin surface for all the poses the swimmer adopts while swimming.

"By making slight changes to the swimming stroke and by rerunning our simulations, we'll be able to find out whether the swimmer goes faster or not," said Glendenning.

The software can compare swimming styles between different swimmers and superimpose the techniques from different swimmers onto each another.

The researchers aim to produce some practical results in time to implement improvements for the London Olympics in 2012.

Source: www.csiro.au

Nanotechnology for Queensland

The Queensland state government has formed the Queensland Nanotechnology Alliance (QNA) with major industry players. The QNA aims to inform companies about the commercial benefits of nanotechnology.

Acording to Dr Peter Kambouris, nanotechnology is "the purposeful manipulation of matter at the atomic or molecular level". Engineers and scientists have been researching nanotechnology since the 1960s and current consumer products already use it.

Kambouris is the state manager of Future Materials, a national materials technology network, and one of several key players developing the Queensland nanotechnology sector. He said nanotechnology will create new design options because it transcends traditional mechanical rules.

"Various forces act on [the world]; gravity pulls you down to the earth, friction between you and the ground allows you to walk, and tables and chairs seem like solid objects. These rules do not apply at the nanoscale," he said.

Modifying the compound titanium dioxide (TiO_2) for sunscreens demonstrates this. As a large chunk, TiO_2 absorbs less UV radiation than a smaller particle. But when TiO_2 is ground to "nanosize" (around 0.1nm to 100 nm), its absorption capacity improves, offering far better protection.

By dealing with materials on the molecular level, nanotechnology also bypasses bottlenecks in creating new products and lowers costs in existing ones. Brisbane's CMD Design used nanotechnology to cut plastic manufacturing costs in Cox Enterprises' ride-on mower.

The ability to use injection-moulding rather than casting techniques to fabricate certain mower parts reduced costs.

Gavin Harrop is a Queensland scientist who leads the G James Glass research team at the Brisbane Eagle Farm plant. Here, an assembly line using nanotechnology manufactures construction-strength glass products with advanced features such as self-cleaning, antireflective and antifogging properties. The technology could be used to create energy-efficient glass in buildings.

Source: www.azonano.com

Virus blocker

Virus software company Symantec's Gateway Security 3.0 program has been certified by the Tolly Group, an IT testing organisation.

Tolly evaluated Gateway Security 3.0 on identifying and blocking more than 200 network attacks from email and SQLnet.

Source: www.maxaustralia.com.au

Entries open for electrical award

Entries are open for the 2006 Engineers Australia Graduate Electrical Power Engineer of the Year award. Organised by the Electrical College Board of Engineers Australia, the Electric Energy Society of Australia and sponsored by NHP, the award recognises achievement in electrical power engineering for engineers that have graduated six years ago or less.

Visit www.engineersaustralia.org.au/about_us/colleges/electrical for more information. Entries close 23 June.

Tasmania's entry into the national electricity market

by David Brumby

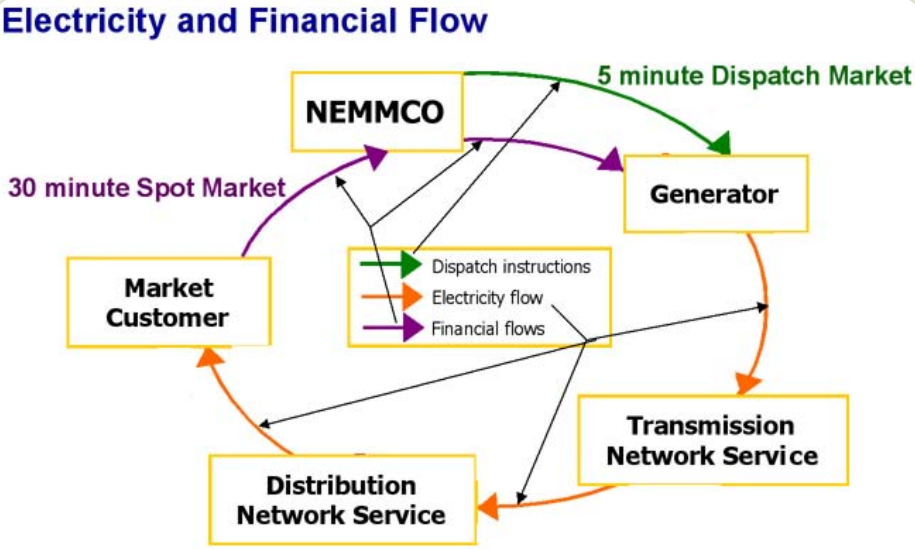
The IEE Sir Victor Burley Lecture was presented last October by Henry Gorniak. He introduced his subject by defining the national electricity market (NEM) as a wholesale electricity pool for trading electricity between generators and wholesale customers. The market is operated by NEMMCO (National Electricity Market Management Company Limited) on a 24/7 basis with Queensland, NSW, Snowy, Victoria, South Australia and Tasmania being participating regions. Tasmania joined the market on 29 May 2005 but will not be connected until Basslink is commissioned early this year. The linked transmission system extends some 4600km from Cairns to Port Lincoln and Tasmania and is the longest transmission line in the world.

Basslink is an unregulated network service provider. Regulated income is determined by the regulator and is low risk while unregulated providers carry a higher risk but can charge higher prices.

In operating the market, NEMMCO forecast the five minute demand and must now supply enough generation to meet that demand. It receives the generator offers and feeds this data, with the demand data and details of any constraints, into the National Electricity Market Demand Engine (NEMDE) which produces the optimum dispatch solution.

NEMDE uses an algorithm to predict what will happen every five minutes based on previous activity. NEMMCO must also be able to advise customers of impending supply variations. The predictions of system adequacy extend for a period of two years ahead. NEMMCO also manages the ancillary services of frequency control and voltage control, the former being managed through the market process and the latter through the contract process. They are obliged to follow rules to build in safety margins and ensure reliability.

All power is traded through the NEM (gross pool). NEMMCO sets the price at the start of each five minute dispatch period. The 30 minute spot market price (the trading interval price) is the half hourly average price of the five minute dispatch prices. NEMMCO performs the market settlement for participants with generators and market customers respectively being paid and billed the spot price.



All power traded through the National Electricity Market is priced at the start of each five minute dispatch period.

Prior to the construction of the Queensland/NSW interconnect NEMMCO's experience with Queensland has helped equip it to handle the Tasmanian situation. Since Tasmania's entry into the NEM and until Basslink is commissioned, the constraint on the Vic-Tas link is infinite (ie no power can flow). During this period (as was the case prior to entry to the NEM) Tasmanian generation must therefore meet demand. Ancillary services must also be provided within Tasmania. In this situation there is minimal or no competition.

Gorniak said that as the NEM relies on the generators following the dispatch targets and the Tasmanian generator control is very complex, some "non-conformance" has resulted in variation from forecast. NEMMCO and Hydro Tasmania are working together to improve this issue. All frequency control must also be sourced in Tasmania (until Basslink is commissioned). A review of frequency control performance is being carried out. The factors contributing to this review are the generators adapting to new processes, a new control method being established and NEMMCO refining procedures to be used in the Tasmanian context (eg requirements for frequency control Gorniak said. Low water storage is also an issue as the long-term forecast processes are not well suited to "energy limited" regions such as Tasmania. NEMMCO and Hydro Tasmania are working on improvements to modelling and predictions to reflect storage levels. There are other projects such as snow loading and SCADA issues that also required attention.

Once Basslink is commissioned the power flow across the interconnectors will be the outcome of the dispatch of generators on either side. Basslink is registered as a Market Network Service Provider (MNSP) and the link is a DC interconnector that requires a dispatch target. Basslink must therefore offer transfer capacity and price into the market. NEM dispatch processes will determine a flow target that will be consistent with the minimum overall cost to the market. In effect, Basslink will buy energy and sell it with an appropriate markup.

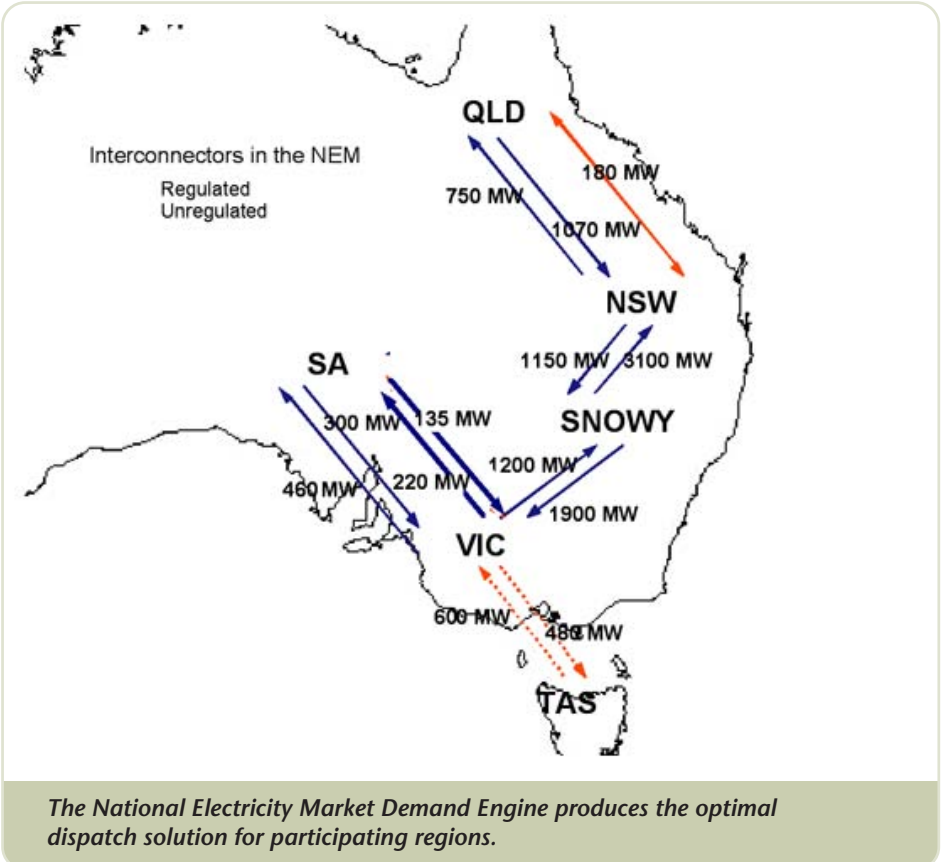
Basslink will be able to transport a frequency control service. The system will include a frequency controller that adjusts Basslink flow in response to frequency difference between Tasmania and Victoria (ie if the frequency is lower

in Tasmania, Basslink flow will shift slightly towards Tasmania). This allows participants to transfer their frequency control capability across Basslink and hence provides greater competition.

Gorniak summarised that Basslink will provide options for better utilisation of hydro resources in Tasmania, and access to alternate power sources from mainland. Greater competition for both energy and ancillary services will result as participants in Tasmania are exposed to the greater complexities of a national electricity market. A Special Protection Scheme (SPS) will maintain secure operation of the Tasmanian power system including the Frequency Operating Standards.

The Sir Victor Burleigh Lecture is presented annually by the IEE. It forms part of the Joint Electrical Program, a cooperative program covering Engineers Australia's Electrical Branch and ITEE College, the IEE and the Telecommunications Society of Australia within Tasmania.

Henry Gorniak is the manager of power system operations, of NEMMCO. He is based in Queensland.



The National Electricity Market Demand Engine produces the optimal dispatch solution for participating regions.

Software engineering – Are we there yet?

by Christopher Skinner

A recent advertisement for "Software engineer (2 positions)" caught my eye. The CSIRO ICT Centre needs "enthusiastic and qualified research engineers to join the team for six months to help develop two applications." They were a system for telecollaboration by medical practitioners over advanced networks and a system for providing remote education facilities for teaching media related courses.

The advertisement continued: "The successful applicants should have C++ application development skills. Experience developing multimedia applications is highly desirable".

The prospective employer seemed like a highly regarded organisation so I called CSIRO to ask what academic or professional qualifications would be required. But the person who answered could not find any information regarding specific qualifications needed for the job. The advertisement had demanded five essential criteria and four desirable criteria – all relevant to the roles. But there was nothing about qualifications.

Incidents like this suggest that there is progress to be made in the maturation of software engineering into a reputable field of engineering practice. Accreditation has made some advances here. The Australian Computer Society and Engineers Australia identified a need for recognised tertiary courses in software engineering. This resulted in the Joint Board of Software Engineering which has since supervised the accreditation of several university courses.

> Many computer science and computer engineering courses do not train software engineers to make good decisions.

Criticisms, however, persist. This year, the New York-based Association for Computing Machinery published a commentary by Nancy Leveson, professor of aeronautics and astronautics at the Massachusetts Institute of Technology and Professor John Knight of the University of Virginia. Called "Software and Higher Education", it argues that valuable engineering techniques like rigorous specifications and systematic inspections are absent from many large and important software projects, resulting in increased risks, costs and delivery delays.

The problem, they argue, lies with many computer science and computer engineering courses which do not train software engineers to make good decisions. Leveson and Knight criticise schools that teach topics from a narrow perspective without emphasising principles of software development. They also criticise course exercises that are limited to web applications and isolated computer assignments while neglecting areas such as realtime and embedded systems.

Issues such as these, among the many challenges in software engineering education, will be addressed by Engineers Australia's National Committee of Software Engineering which meets this month. When we see clients asking for software engineering professional qualifications we may perhaps conclude that progress has been made.

Christopher Skinner is a member of Engineers Australia's National Committee of Software Engineering. He may be contacted on 0414 990 834 or email cjskinner@acslink.net.au.

For a comprehensive list of upcoming engineering events, visit Engineers Media's fully searchable continuously updated events database.

CLICK HERE TO VISIT THE DATABASE

Electrical Engineering

Course: **Power system harmonics, earthing & power supply quality** (2 days) Brisbane 8 May, Sydney 10 May. *Inquiries:* Applied Technology Group of Companies 1300 651 052, fax 1300 651 072, email register@apptechgroups.com, web www.apptechgroups.com

Conferences: **CIGRE conference** (1 day) Sydney 8 May; **TechCon Asia Pacific 2006** (2 days) Sydney 9 May. *Inquiries*: Tina Brown, TJ H2b Analytical Services 03 8544 2413, web www.tjh2b.com

Seminar: **EESA protection, control, SCADA & communication seminar** (1 day) Melbourne 18 May. *Inquiries*: Helen Woodall, Materials Australia 03 9326 7266, fax 03 9326 7272, email events@mateng.asn.au, web www.materialsaustralia.com.au

Information & Communications Technology

Seminar: **New level of control & safety through improved networking & device management** (1 day), Singapore 28 Apr. *Inquiries*: Ms Chan Poh Loon, +65 6829 8627, email PohLoon.Chan@ips.invensys.com

Conference: **Telecoms world Australasia 2006** (2 days) Sydney 5 May; **Mobile content world Asia Pacific 2006** (3 days) Sydney 5 Jun. *Inquiries:* Terrapinn 02 9005 0700, fax 02 9281 3950, email enquiry.au@terrapinn.com, web www.terrapinn.com

Conference: **CeBit Australia 2006** (3 days) Sydney 9 May. *Inquiries*: Blake Young, Hannover Fairs 02 9280 3400, email blake.young@hannoverfairs.com.au, web www.cebit.com.au

Software Engineering

Courses: **ISEB foundation certificate for software testing** (3 days) Sydney 8 May, Melbourne 22 May; **ISEB practitioner certificate – practical tester** – Sydney 8 May, Melbourne 22 May; **ISEB practitioner certificate – test strategist** (2 days) Sydney 8 May, Melbourne 22 May; **ISEB practitioner certificate – technical tester** – (2 days) Sydney 10 May, Melbourne 24 May; **ISEB practitioner certificate – test manager** – (2 days) Sydney 10 May, Melbourne 24 May. *Inquiries:* Planit 02 9954 0699, fax 02 9956 6815, email training@planit.net.au, web www.planit.net.au

Course: **Software project management** (3 days) Canberra 15 May. *Inquiries:* UNSW@ADFA Business Services 02 6268 8421, fax 02 6268 8135, email business.office@adfa.edu.au, web www.unsw.adfa.edu.au/units/busservices/short_courses/index.html

Engineering Education Australia

Courses: **Risk management** (2 days) Melbourne 8 May, Sydney 23 May, Brisbane 14 Jun; **Writing winning technical documents** (2 days) Brisbane 3 May, Sydney 10 May, Melbourne 1 Jun; **Stormwater management** (2 days) Darwin 20 Apr, Perth 4 May, Brisbane 18 May, Adelaide 1 Jun, Melbourne 8 Jun, Sydney 15 Jun; **Expert witness skills: Investigation & reporting** (1 day) Perth 12 May, Townsville 26 May; **Negotiation skills** (2 days) Sydney 16 May, Brisbane 23 May, Adelaide 30 May, Canberra 6 Jun, Perth 14 Jun, Melbourne 20 Jun; **Earthworks** (2 days) Sydney 18 May, Brisbane 1 Jun, Melbourne 15 Jun; **Legal & professional liability** (2 days) Canberra 25 May; **Financial management** (2 days) Adelaide 5 Jun, Melbourne 5 Jun, Sydney 19 Jun, Brisbane 29 May; **Contract management** (2 days) Canberra 8 May, Hobart 22 May, Townsville 29 May, Adelaide 6 Jun, Darwin 15 Jun, Brisbane 19 Jun, Sydney 26 Jun; **Project management** (2 days) Townsville 11 May, Adelaide 8 Jun, Brisbane 21 Jun, Sydney 28 Jun; **Sustainability assessment** (2 days) Melbourne 13 Jun, Sydney 15 Jun; **Managing sustainability** (2 days) Melbourne 13 Jun, Sydney 15 Jun; **Concrete technology** (6 days) Sydney 1-3 May & 15-17 May, Brisbane 19-21 Jun & 17-19 Jul; **Generator technology design & operation** (4 days) Brisbane 6 Jun; **Presenting & preparing expert reports** (1 day) Perth 15 May, Townsville 26 May; **Preparing for HV inspection or audit** (1 day) Perth 11 May, Townsville 25 May.

Inquiries: Frank Martinelli, Engineering Education Australia 03 9326 9777, fax 03 9326 9888, email frankm@eeaust.com.au, web www.eeaust.com.au

new products

Instrumentation releases

Texas-based National Instruments has released two network interfaces for its compact fieldpoint platform. The cFP-1804 four-slot and the cFP-1808 eight-slot interfaces have five standard protocols to connect directly with industrial platforms. Engineers can integrate more than 30 I/O modules into their systems via industry standards like TCP/IP, Modbus and Optomux.

NI has also released a new PCI data acquisition (DAQ) board. The PCI-6230 isolated M series board features analogue and digital I/O lines. The PCI-7390 position (pulse) command motion controller can connect directly to motion drives like Yaskawa Sigma II, Mitsubishi MR-J2S and Panasonic Minas A. Both technologies use isolated circuitry which guards against voltage spikes, helping to protect hardware, data and the engineer.

NI also released a new version of its LabView control design toolkit, a collection of tools and mathematical functions for analysing, designing and implementing control systems. The toolkit features realtime deployment and Kalman filtering which allows engineers to estimate and account for noise in systems where such factors cannot be directly measured. The toolkit accounts for fractional I/O delays which increases closed-loop system performance.

More information – Qikreply 18

Locking the laptop

Targus' new video port lock uses a combination lock to secure notebooks, desktop PCs, projectors, monitors and other devices equipped with a standard video port.

The video port lock has over 10,000 settings.

The Defcon video port combination lock features a 2m, vinyl-coated steel cable and a combination lock with over 10,000 settings.

More information – Qikreply 16

Embedded developers

Altium's Designer 6.0 electronic product development system now supports embedded designs using the Altera Nios II field programmable gate array processor.

Engineers can move their designs easily between different hardware platforms, targeting soft processors, discrete processors and hybrid FPGA/processor devices.

Designer is FPGA vendor-neutral and provides cross-device soft processor cores that can be implemented in large-scale FPGAs. It also supports third-party soft and discrete processors.

Altium has also released the NanoBoard-NB2 – a FPGA-based development board targeting unified processor/FPGA system design. The technology provides developers with a hardware platform to implement and interactively debug designs targeted to a wide range of processor and FPGA architectures.

The NB2 supports a range of plug-in peripheral boards to support the widest possible range of system devices. It is backwards-compatible with NB1 daughter boards.

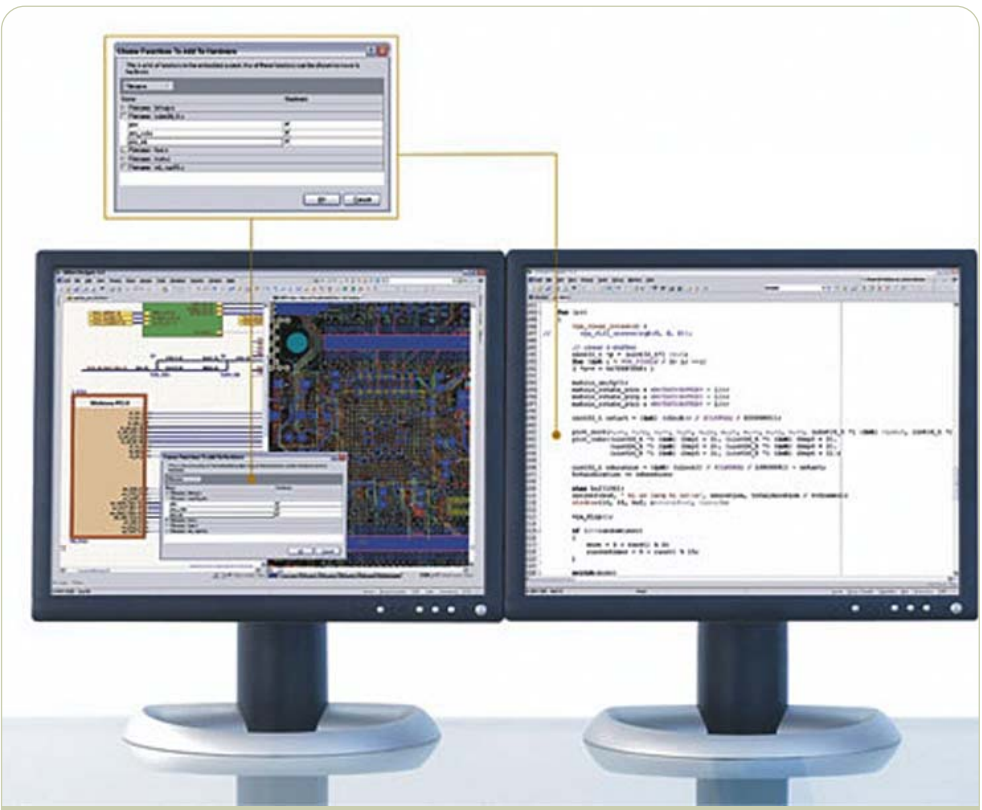
For complex designs, an onboard controller can chain together multiple NanoBoards. When a design is downloaded to the NanoBoard, the controller also manages communication between the software and active design elements such as processors and FPGA-based virtual instruments.

Altium has also released a unified hardware/software compiler technology. Based on the Viper ANSI/ISO C compiler platform, the system can simultaneously generate executable code and concurrent hardware for implementation in FPGAs from standard C code. It also generates all of the required code to link the two together at runtime. Developers can test various code implementation options without manually reengineering the system hardware.

It will allow embedded engineers using Altium Designer to automatically offload selected C functions from the processor into hardware. The system automatically generates hardware within an FPGA to execute the selected functions, and compiles the remaining software to automatically make use of that hardware.

The system uses standard ANSI/ISO C so software developers can use programmable hardware without having RTL or board-level hardware design expertise.

More information – Qikreply 26



Altium's unified compiler can simultaneously generate executable code and concurrent hardware.

Downstreaming entertainment

Motorola has developed a downstream channel bonding technology that allows the delivery of high-bandwidth data and multimedia services like online movies, music downloads and videogaming.

It bonds together four downstream channels to deliver over 120Mbps of downstream services from Motorola's BSR 64000 cable modem termination system to a cable modem. It aims to provide up to four times the downstream capacity as defined in the Docsis 2.0 standard. The additional downstream bandwidth allows operators to provide customers with multimedia services without upgrading the hybrid fibre coaxial network.

More information – Qikreply 24

Portable programming

The Java Runtime Environment (JRE) and Java Development Kit (JDK) are now available on the FreeBSD operating system after the FreeBSD Foundation negotiated a licence with Sun Microsystems. The binaries are based on JDK 1.5 and work with the official FreeBSD 5.4 and 6.0.

More information – Qikreply 25

For more information on any of these products, send an email to

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with the subject headline "Monitor Qikreply". Your contact details and the Qikreply number of the product should be included in the body of the email.