

# NICTANews

## INSIDE

- NICTA flies the flag for Australian ICT Research
- NICTA takes Graeme Clark oration to regional units
- NICTA crash-proof code is a 'top ten' emerging technology



*NICTA researcher wears prototype headset as part of Bionic Eye research display at Techfest*



## Techfest 2011 sparkles

NICTA proudly hosted yet another successful Techfest showcase at the Australian Technology Park in February.

Techfest is NICTA's national ICT showcase, an event at which researchers and commercialisation staff from each of our five laboratories come together to show off their groundbreaking use-inspired ICT research to industry, government, educational and research institutions, and the general public. This was our sixth Techfest with over 450 people in attendance.

The event showcased an array of NICTA innovations in the areas of the digital economy, transport and logistics, biomedical and life sciences, safety and security, environmental management, enterprise software and telecommunications.

Research from NICTA's Implant Systems group, which is developing small, sophisticated and inexpensive implantable therapies to help treat neurological disorders, attracted plenty of attention. The two research teams involved in the Bionic Vision Australia consortium were kept busy with inquiries from visitors keen to check out NICTA's contribution to the development of the bionic eye.

Over thirty NICTA research activities were showcased including a booth dedicated to the recently launched NBN-focused Australian Centre for Broadband Innovation, a collaboration between NICTA, CSIRO and the NSW Government.

## Living Lab boosts Australia's logistics sector

On the same day that Techfest opened its doors in February, the Future Logistics Living Lab was launched. The lab is a collaboration between NICTA, enterprise software company SAP and Europe's largest application-oriented research organisation, Fraunhofer.

The Living Lab aims to improve the efficiency of Australia's logistics networks by fast tracking industry's adoption of emerging technologies and research outcomes. The Living Lab will help industry address challenges such as rising fuel costs, road congestion, carbon emissions and safety.

NICTA CEO Hugh Durrant-Whyte said: "The Living Lab is an example of research institutions, industry and government working together on important challenges for the logistics industry. NICTA is excited to be part of this initiative in Australia and will continue to drive innovation through industry engagement."

The Living Lab is located inside the NICTA building at Sydney's Australian Technology Park. Participants joining the founding members are Linfox, Hamburg Süd, Casella Wines, Ericsson, GS1 Australia, Gamma Solutions, Google, Tradegate, XAct Solutions, Victoria University and the University of New South Wales.



# NICTA sharpens focus on research excellence, wealth creation



Welcome to the April edition of NICTA News. As the new Chief Executive Officer of NICTA, it gives me great pleasure to introduce the vision and objectives that will drive NICTA forward over the next five years.

The primary goal for NICTA is to build and deliver excellence in ICT research and commercial outcomes for Australia. To achieve this, NICTA will focus on targeted research and commercial areas where it can achieve a world-leading position. It will attract and retain the very best researchers and research leaders in these areas, building research groups of significant world scale and scope. NICTA will focus on wealth creation opportunities that draw on and exploit these areas of excellence, and that make a substantial economic or social impact in Australia and internationally. Excellence will be our guiding principle.

## People

Our people are at the heart of this vision and endeavour; it is essential that we maintain the highest possible standards among our researchers and staff. I will be actively pursuing opportunities to attract top researchers to NICTA and will encourage all individuals to achieve their very best in research and commercial outcomes.

## Wealth Creation

NICTA will take a very broad view of wealth creation and national benefit goals. This will include funded industry partnerships, spin-out companies and research outcomes with major societal impact, all of which are valid expressions of wealth creation. NICTA will pursue research that delivers on each and all of these fronts.

## Great students

High quality, well-trained research students are the key to delivering major outcomes and to the future of ICT excellence in Australia. NICTA will be working closely with our university partners to attract the best possible research students and to create an environment where research students can achieve their best.

## Strong university relationships

Intimately related to NICTA's engagement with PhD students is our relationship with the university and research sector. To this end, NICTA is working to build strong and deep relationships with our university partners in a range of areas to achieve the best in research, training and commercial outcomes for Australia.

## Refocused organisational structure

NICTA's new vision will be articulated in a revised internal structure, which has now been put in place. Instead of the project-based structure organised according to research themes and business areas, we now have a simplified structure comprising six large-scale focused Research Groups and four industry sector Business Teams. Research Groups and Business Teams exactly align with the main objectives of research excellence and wealth creation.

## Research Groups

NICTA will focus on six research groups of significant scale and focus in areas where we have a genuine opportunity to be ranked in the top five in the world.

### These are:

- **Software Systems**
- **Networks**
- **Machine Learning**
- **Computer Vision**
- **Control and Signal Processing**
- **Optimisation**

The Networks Research Group will be led by Prof. Aruna Seneviratne, who has led our Australian Technology Park Laboratory for many years. Control and Signal Processing will be led by Prof. Rob Evans, who, like Aruna, has headed a NICTA Research Lab (Victoria). The Machine Learning Research Group will be headed by Prof. Bob Williamson, previously NICTA's Scientific Director.

Software Systems will initially be led by Prof. Gernot Heiser and Dr Anna Liu. Interim leaders have also been appointed for Computer Vision (Prof. Nick Barnes, Prof. Richard Hartley and Prof Peter Cork) and Optimisation (Prof. Mark Wallace, Dr Sylvie Thiebaut, Prof. Toby Walsh). NICTA is working with our university partners to recruit permanent research leaders for these groups. NICTA Business Teams are based around recognised application domains for ICT. Each Business Team is led by a small group of leaders who between them have strong technological and industry expertise and experience. The teams will build and develop a transformational vision and strategy for ICT in their sectors.

### The Business Teams are:

- **Broadband and the Digital Economy**
- **Health**
- **Infrastructure, Transport and Logistics**
- **Safety and Security**

The Business Team Leader for Broadband and the Digital Economy is Dr Terry Percival, formerly Director of our Neville Roach Laboratory. The Commercial Manager in this team is Glenn Downey, with input from Michelle Carden. Both Glenn and Michelle had senior roles in NICTA's Commercialisation area. Health will be led by Prof. Terry Caelli, former Director of our Queensland Research Laboratory, Dr Leif Hanlen and Lachlan James. Infrastructure, Transport and Logistics is headed by Rob Fitzpatrick, former Director of Commercialisation and Markets. Dr Andrew Verden and Dr Glenn Geers are lead technologists. The commercial team for Safety and Security will be led by Jodi Steel and Michelle Carden. Lead technologists will be appointed shortly.

NICTA is expecting to grow the number of Business Teams as we build skills and capabilities in new application areas.

The roles of Scientific Director, Lab Director and Chief Technology Officer will no longer exist in the new structure – these will be performed by Research Group and Business Team leaders reporting directly to the CEO. The Lab Director role will be met by Research Group and Business Team leaders in each state.

Finally, we now have an Engineering and Technology Development area at NICTA. This is a place where we develop prototypes and systems, to better engage with our industry partners and to identify problems that need further research. This important new activity will be led by Bill Simpson-Young, former head of R&D Services at NICTA.

I now commend you to the rest of NICTA News, where you can read about the many exciting activities we have been undertaking over the last four months.

*H. Durrant-Whyte*

**Hugh Durrant-Whyte**  
NICTA CEO

## INSIDE

NICTA flies the flag for Australian ICT Research 3

NICTA takes Graeme Clark oration to regional unis 3

Online video search takes shape as NICTA teams with Microsoft Research 3

NICTA crash-proof code is a 'top ten' emerging technology 4

NICTA and RTA target traffic incident management 4

PhD student aims to colour our world 5

Will the next Mark Zuckerberg please stand up? 6

Matt has his finger(print) on the pulse 6

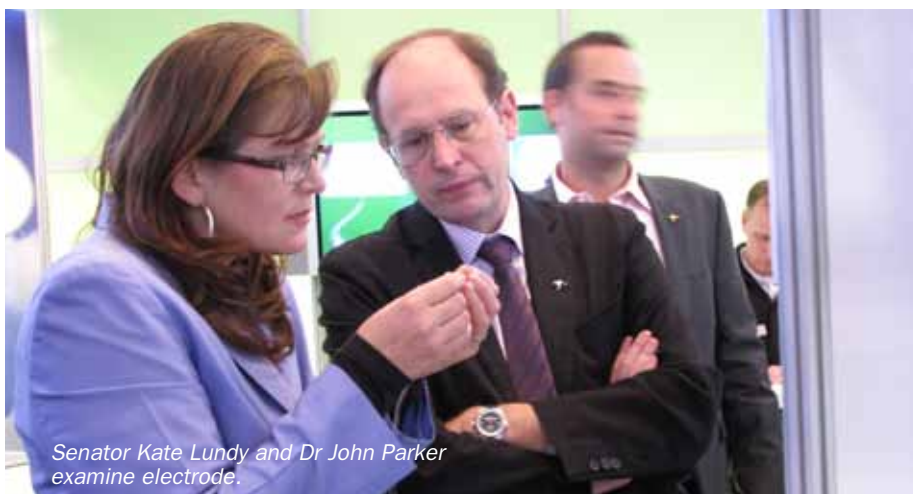
Lab News 7

P2P network engine flies into US and Europe 7

Events and short courses 8



# NICTA flies the flag for Australian ICT research at CeBIT Hannover



Senator Kate Lundy and Dr John Parker examine electrode.

In March 2011 NICTA took off for CeBIT Hannover for the second time, following seven successful years of exhibiting at CeBIT Australia.

CeBIT is the digital industry's biggest, most international event. This year NICTA was one of 4,200 exhibitors from over 70 countries. CeBIT attracted 339,000 visitors from 90 countries. NICTA demonstrated a selection of great research, including:

- Implant Systems technology
- AutoMap mapping software
- BrainGauge cognitive load monitoring
- Future Logistics Living Lab
- eGovernment
- Smart Mobile Content Distribution.

Exhibiting at CeBIT allows NICTA to engage directly with important ICT and user industries. As the largest global event of its kind, CeBIT provides international exposure and demonstrates the groundbreaking research we are doing at NICTA.

## Online video search takes shape as NICTA teams with Microsoft Research

NICTA is collaborating with Microsoft Research Asia (MSRA) to develop technology to improve the performance of online video search engines.

The research association aims to make it easier for computers to better understand video content, which up until now has been one of the most difficult technological challenges for search engine developers around the world.

Most search engines support keyword search for video-based content retrievals. NICTA's research will investigate mapping action words from video titles and transcripts to action segments within the video, delivering more accurate and faster results. The NICTA team will develop algorithms and prototype software and test them using Microsoft's video metadata.

Shipeng Li, MSRA Group Manager of Media Computing at Microsoft Asia, said: "I believe this research collaboration will result in real progress in the area of large-scale database search based on human action recognition. This research direction is well aligned with Microsoft's research strategy. We expect to establish a long term research collaboration between MSRA and NICTA in this area."

# NICTA takes Graeme Clark Oration to regional unis

The annual Graeme Clark Oration honours the achievements of Professor Graeme Clark, AO, who developed the first multi-channel Cochlear implant. In his only Australian appearance, Professor Terrence Sejnowski, a pioneer in computational neuroscience, delivered the Oration, The Computational Brain, to a capacity crowd at the Melbourne Convention Centre. You can view the Oration webcast and download the podcast or vodcast by visiting the Graeme Clark Oration website – [www.graemeclarkoration.org.au](http://www.graemeclarkoration.org.au).

This year, there were some extra people listening in. For the first time this important public science event was available via webcast to two sites in regional Victoria – Deakin University and the University of Ballarat – allowing ICT businesses and university communities the opportunity to participate in this event. The result - almost 100 "attendees" across both centres and a great start to NICTA building linkages with major regional centres of education and research.

The Graeme Clark Oration is sponsored by NICTA, the State Government of Victoria, The Melbourne University School of Engineering and other organisations interested in promoting excellence

in the life sciences. A complete list of sponsors is available at <http://www.graemeclarkoration.org.au/our-sponsors.php>.



Prof. Terrence Sejnowski

# MIT Technology Review says NICTA crash-proof code is a 'top ten' emerging technology



NICTA's formal code verification technology has been included in MIT Technology Review's annual list of the world's ten most important emerging technologies. Each winner is drawn from the editors' coverage of key fields, and is based on a simple question: is the technology likely to change the world? These innovations - each

Dr June Andronick

represented by a researcher whose vision and work is driving the field - promise fundamental shifts in areas from energy to health care, computing to communications.

"The embedded computers that are essential to controlling modern cars and medical devices rely on software for their safe operation, but testing that software for reliability has largely relied on trial and error. With the creation at NICTA of the core of an operating system that can be mathematically proven to be crash proof, such control software could be made much safer, which is vital for the foundations of our increasingly computer-driven world," said Stephen Cass, special projects editor, Technology Review.

"NICTA's seL4 microkernel verification applies mathematical, formal logic to program code and proves that this code will always work

reliably, never crash, and at all times operate as its specification dictates, as long as the proof assumptions are met," explained senior project member Dr June Andronick.

"The breakthrough was the demonstration that this kind of proof can be applied to complex, real-world software of realistic size," said Project Leader Prof. Gerwin Klein.

NICTA and the other companies included in the 2011 TR10 list are featured in the May/June edition of Technology Review at <http://www.technologyreview.com/tr10/>.

*The seL4 microkernel is now available from NICTA spin-out company Open Kernel Labs (OK Labs) under the OKL4 Verified brand name*



## NICTA and RTA target traffic incident management

NICTA and the NSW Roads and Traffic Authority (RTA) have reaffirmed a research agreement to develop new systems to improve the management of traffic incidents on the state's roads.

Working closely with the RTA's 24-hour Transport Management Centre (TMC) in Sydney, NICTA will help manage the workloads of TMC operators when a traffic accident

occurs or special events demand road closures and re-routing of traffic.

To do this, NICTA will apply unique technology, which continuously monitors changes in the operator's voice and speech patterns to then gauge their capacity to manage additional work. Also, emerging peak loads on the operator can be identified and mitigated.

"Apart from helping to spread the load in critical situations, this will also help

us understand how complex demands on operators affect the management of traffic incidents," said Dr Fang Chen, NICTA Project Leader. "We will use the results of ongoing research to help the RTA to redesign work practices, systems and user interfaces."



# PhD student aims to colour our world

Cong Phuoc Huynh joined NICTA in 2007 and is now busy completing a NICTA-supported PhD at the Australian National University in the area of physics-based computer vision. Photometric Invariants and Shape Recovery in Multispectral and Hyperspectral Imagery to be precise!

Physics-based computer vision consists of reflectance and illumination modelling, colorimetry and photogrammetry, multispectral and hyperspectral imaging and shape recovery. "I also work in pattern recognition including material identification, skin recognition and biometrics," says Huynh.

He says that the big research developments in his area of expertise are industry-grade and consumer imaging. Sensors, he explains, capture information in just three primary colours – red, green and blue (RGB). "I see these sensors evolving beyond the RGB colour model to incorporate more than three channels to capture information on more colours," says Huynh.

According to Huynh, another hot area is computational photography. "This involves the use of optical physics, reflectance and illumination modelling and an understanding of colorimetry and photogrammetry in manufacturing hardware and software to create digital photographic contents." Colour reproduction in electronic displays and digital art archiving, shape analysis for graphic rendering, scene and object recognition as well as non-invasive skin disease diagnosis are also part of the picture.

Huynh is always on the look-out for commercial opportunities. "NICTA's commercialisation and intellectual property courses always encourage me to keep an eye on commercialisation opportunities that may stem from my research outcomes."

"The commercialisation and IP training at NICTA are definitely an enhancement to the academic side of a PhD training program," Huynh adds. "I have received very effective supervision at NICTA with clearly defined goals and a very unified team. These factors helped me to sketch the road map of my own PhD study faster than I otherwise would have done."



**Who is your most admired scientist and why?**

I would not mention any particular name because scientists contribute to the advancement of sciences and the society in different ways depending on their fields.

Although I have preferences for the subjects I like to study, such as Mathematics, Physics and Computer Science, I would not say I only admire scientists within these fields.

In general I respect scientists who have brought well-being and happiness to other people throughout their career. For example, Howard Walter Florey and Ernst B. Chain developed penicillin into a useful anti-bacterial treatment (after its discovery by Alexander Fleming), that saved millions of lives during World War II.

**What is your favourite book?**

I like to read books that have been adapted into movies. Some that I've read are Sylvia Nasar's *A Beautiful Mind*, a biography of John Forbes Nash, Jr., winner of the Nobel Prize in Economics. I also enjoyed *Slumdog Millionaire*, a novel by Vikas Swarup, 2005.

I am also interested in history in general, and Vietnamese history in particular.

I would recommend the book *A General Review of Vietnamese History* by Truong H.Q, Dinh X.L., Le M.H. (2000).

**What do you love about being a researcher?**

Being a researcher, you have the freedom to pursue and express your thinking independently. The passion for creative thinking has driven me to this kind of work.

**What do you do to relax?**

A comedy or a cartoon is a treat for me after a busy day. I also like practicing photography while travelling or roaming around interesting landmarks or busy areas.

**What do you like the most about Australia?**

I enjoy the vast landscapes and the blue sky. Those bring some inner peace to my mind. In addition, the pace of life and work in Australia is quite relaxing and not as rushed as many other developed countries.



# Will the next Mark Zuckerberg please stand up?

While their friends were posting status updates on Facebook, a number of high-school students from across Australia were busy developing their own social networks. This was just one of the many tasks that attendees at this year's National Computer Science School (NCSS) enjoyed.

Run annually, the NCSS is aimed at students going into year 11 and 12 who are particularly interested in computer programming and website development.

Held at the School of IT at the University of Sydney, and co-organised with NICTA, the NCSS is designed to get students thinking about a future career in ICT. It also provides them with an opportunity to ask questions they may have about the ICT industry, jobs, and opportunities for people with ICT skills.

This year's NCSS attracted 73 students with the ten day event including a programming competition, a mentor interview program and the chance to take part in tours at NICTA's Research Laboratories and external companies such as Google.

The programming competition saw the group divided into two, with one given the challenge of developing a social network to rival

Facebook and the other required to programme robots to perform a 'rescue' before returning to their starting point with an obligatory victory dance upon completion.

Year 11 Keith Area school student, Nicholas Drasch, was one of two lucky South Australians to attend the NCSS. First introduced to the program last year but too young to apply, Nicholas believes his NCSS experience was well worth the wait. "I met so many people with the same interest as me," he told the Border Chronicle. In the future Nicholas plans to study computer software engineering of some kind, concentrating on his special interest of software development.

ICT professionals took part in the NCSS by providing 'mentor' roles to students. The mentor interview program provided NCSS students with a platform to help prepare for their professional careers, with a morning of individual mock interviews. The sponsors' role was to interview students and give feedback on their interview performance.

NICTA's Dr John Judge said: "The NCSS helps in stimulating interest in ICT research by concentrating on the imagination and wonders of technology innovation. It provides NICTA with a unique opportunity to deliver on our commitment to inspiring the next generation of

students to consider the unlimited potential of a career in technology.

As in the past, we were blown away by the calibre of students who attended this year's NCSS and look forward to seeing some of the faces around the NICTA corridors in the years to come."



## Matt has his finger(print) on the pulse

Congratulations to PhD student Matt Thompson, who has won the Prestigious 2011 Fulbright Queensland Scholarship.

Matthew's Fulbright Scholarship will allow him to further his research on assessing inaccuracies in fingerprint identification and collaborate with US fingerprint experts from the Los Angeles Police Department and the Federal Bureau of Investigation.

"Every day, law enforcement agencies identify thousands of fingerprint matches that can be used as evidence in convicting criminals," Matt said.

"Contrary to popular belief and TV shows like CSI, computers are not relied upon to match crime-scene fingerprints. Instead, human fingerprint experts decide whether a print belongs to a suspect or not."

"But, despite its 100 year history, there have been few peer-reviewed studies directly examining the extent to which experts can correctly match fingerprints to one

another. And mistakes made to date have resulted in innocent people being wrongly accused."

Matt will carry out his research at the University of California, Los Angeles to determine how accurate fingerprint experts are, explore the psychology that affects how well they match fingerprints, and maximise the reliability of fingerprint evidence in the criminal justice system.

The prestigious Fulbright program is the largest educational scholarship of its kind, created by U.S. Senator J. William Fulbright and the U.S. Government in 1946. Aimed at promoting mutual understanding through educational exchange, it operates between the U.S. and 155 countries.



## Australian Technology Park Laboratory

Successful IRSES Program Funding

Congratulations to Lavy Libman on his successful application for funding for the International Research Staff Exchange Scheme (IRSES) program (2011-2012). The funding was awarded on behalf of the Australian Academy of Science and is part of the EU Seventh Framework Programme.

## Neville Roach Research Laboratory

Toby Walsh' starts a Conversation

Toby Walsh is one of the first contributors to The Conversation website, a new independent channel for disseminating independent information, analysis and opinion from the academic research community. Catch The Conversation and Toby's lively contribution at <http://theconversation.edu.au/>

Prashant Varanasi – Winner of UNSW CSE 4<sup>th</sup> year Performance Award

Congratulations to NICTA student Prashant Varanasi on winning the UNSW CSE 4<sup>th</sup> year Performance Award, worth \$1000. The award will be presented at the annual UNSW CSE Prizes Reception in April/May 2011.

## Queensland Research Laboratory

NICTA paper published in one of the most prestigious AI journals

Congratulations Abdul Sattar, Shaowei Cai and Kaile Su for recently having their paper

“Local Search with Edge Weighting and Configuration Checking Heuristics” published in the Artificial Intelligence Journal, one of the most prestigious AI journals. The paper proposed new heuristics and was able to break the record on a 20+ year challenge problem on Minimum Vertex Cover (MVC).

## Victoria Research Laboratory

Peter Stuckey - 2010 University of Melbourne Woodward Medallist

Following on from his Google Australia Eureka Prize for Innovation in Computer Science, Peter Stuckey has been awarded the 2010 University of Melbourne Woodward Medal for Science & Technology for his article “Propagation via lazy clause generation”. Established by former Chancellor Sir Edward Woodward and Lady Woodward, the Woodward medals recognise University of Melbourne staff for research publications considered to have made the most significant contribution in their field during the previous three years. Two medals are awarded each year – one for Science & Technology and one for Humanities & Social Sciences.

Gad Abraham – Winner of a Promega Student Award

Congratulations to Gad Abraham on being awarded a Promega Student Award at the 32<sup>nd</sup> Lorne Genome Conference held in February. Gad received the award for his paper on “Sparse Linear Models for Genome-Wide

Analysis”, co-authored with NICTA's Justin Zobel and Adam Kowalczyk, and Mike Inouye. Three Promega Awards were given this year to encourage and reward research excellence in the field of gene expression and organisation.

Human Variome Project

January 20<sup>th</sup> saw VRL host a visit from the Chinese delegation that visited Melbourne to finalise China's contribution of approx. US\$300 million towards the work of the Human Variome Project (HVP). The funds will be used to create a new institute in China dedicated to the work of the HVP, the construction of new international databases of genetic variation in some 5,000 to 8,000 genes, and the establishment of the Chinese Node of the HVP. In total, the Chinese Government are expecting to provide 25% of the total output of the global Human Variome Project. NICTA is a long term collaborator with the HVP through the work of the Biomedical Text Processing project, in particular Lawrence Cavedon and Justin Zobel.

The Cosmonaut's Visit

Cosmonaut Alexander Ivanchenkov visited the Laboratory in March, inspiring a capacity crowd with his talk on his experiences as a Flight Engineer with the Soyuz and Salut space programs. Following a number of both short and long-stay space flights over many years, Ivanchenkov is now engaged in the training of cosmonauts for long space flights.

# P2P network engine flies into US and Europe

A NICTA-developed peer-to-peer network engine is fuelling two new children's online entertainment and education applications in the US and Europe. Badumna, developed by NICTA's Scalify research team, has been adopted by Finnish company Fantastec Oy and US company WishB LLC.

Fantastic Oy has developed a 3D 'edutainment' application for children that is expected to attract more than two million subscribers. “Scalify's Badumna platform allows us to deliver our edutainment application to a massive audience,” said Juha Väisänen, Fantastec Oy CEO, “The ability to scale means we can grow our user base with complete confidence. We expect our application, Polar Heroes, to grow to more than two million users in the near future. Having a product like Badumna is very important for us.”

WishB LLC is using Badumna to support its child-friendly GlobWorld social media environment. “We are currently running a free

anti-bullying campaign package for schools within GlobWorld. Our first campaign was a success with twenty thousand trading cards delivered in the US. Badumna is helping GlobWorld to deliver a fun way to seriously battle bullying,” said Dan Castro, WishB Chief Strategy Officer.

Scalify Project Leader Dr Santosh Kulkarni says Badumna was designed to support millions of users with minimal infrastructure and can provide significant competitive advantage over existing network engines.



# events

## AusInnovate: NBN Conference

The AusInnovate NBN Conference is the leading platform in Australia for connecting research, commercial and government communities to identify what is required to maximise the benefits from the NBN.

31 May

**Sydney Convention and Exhibition Centre, Darling Harbour**

<http://www.cebit.com.au/2011/conferences/ausinnovate-nbn>.

AusInnovate is organised by HFA in partnership with NICTA, CSIRO ICT Centre and the Defence Science and Technology Organisation.

## CeBIT Australia

CeBIT Australia is the leading business event in the Asia Pacific region for Information and Communications Technology that drives business strategy.

31 May to 2 June

**Sydney Convention and Exhibition Centre, Darling Harbour**

<http://www.cebit.com.au/>

## CommunicAsia

CommunicAsia is Asia's largest communications industry tradeshow. Singapore

21 to 24 June

<http://www.communicasia.com/>

## Big Picture Seminar Series

Queensland Research Laboratory  
Innovation in Biomedical Imaging and Information Technology

Prof. David Feng, University of Sydney

25 May, from 3.30pm to 6.00pm

Eagle Street Conference Centre

175 Eagle Street, Brisbane

Canberra Research Laboratory

Glenn Wightwick (IBM)

Details TBC visit [http://www.nicta.com.au/nicta\\_events/big\\_picture/canberra\\_research\\_lab\\_seminars](http://www.nicta.com.au/nicta_events/big_picture/canberra_research_lab_seminars)

## Meet the Founder Series

Canberra Research Laboratory

Scott Rashleigh, Founder, AOFR

5 July, times TBC

NICTA, Ground Floor Seminar Room

[http://www.nicta.com.au/nicta\\_events/meet\\_the\\_founder/crl\\_series](http://www.nicta.com.au/nicta_events/meet_the_founder/crl_series)

## Public Sector Reform and E-Government: Lessons Learned from the US Experience.

This presentation looks at recent US experience culling lessons learned in the latest public sector reform initiatives, especially identifying barriers and proposing an agenda for overcoming them.

Prof. Terry Buss, Executive Director and Distinguished Professor of Public Policy, Heinz College, Carnegie Mellon University, Australia.

5 May

NICTA Ground Floor Seminar Room

<http://www.egovernmentcluster.org.au/events/registration/index.php?id=11>

For more information on all of NICTA's events please visit: [www.nicta.com.au/nicta\\_events/events](http://www.nicta.com.au/nicta_events/events)

## short courses

Date	Course Title	Presenter	Location
5-6 May 2011	Progress in Radar Research	DSTO and University of Adelaide	Adelaide SA
11-12 May 2011	Fundamentals of RF System Design and Simulation	Dr Rowan Gilmore, University of Queensland	Canberra ACT
24-25 May 2011	Practical Machine Learning	Dr Edwin Bonilla NICTA	Adelaide SA
1-2 June 2011	Introduction to Linux for Embedded Developers	Dr Peter Chubb NICTA	Canberra ACT
14-17 June 2011	Advanced Topics in Digital Signal Processing	Professor fred harris San Diego State	Adelaide SA
20-21 June 2011	Cooperative Control of UAVs in Adversarial Conditions	Dr Isaac Kaminer & Dr Naira Hovakimyan Visiting US Instructors	Adelaide SA
22-24 June 2011	Guidance of Unmanned Aerial Vehicles	Dr Rafael Yanushevsky Visiting US Instructor	Adelaide SA
7-8 July 2011	Tactical Data Information Links (TADILs)	Howard Harvey Haoi Technologies	Sydney NSW



## AusInnovate: NBN Conference

31 MAY 2011, SYDNEY

<http://www.cebit.com.au/2011/conferences/ausinnovate-nbn>.



31 May – 2 June

NICTA invites you to join us at CeBIT 2011

Register now with the following promo code NICTA2011 for complementary exhibition entry.

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



Australian Government

Department of Broadband, Communications and the Digital Economy

Australian Research Council

### NICTA Funding and Supporting Members and Partners



THE AUSTRALIAN NATIONAL UNIVERSITY



THE UNIVERSITY OF NEW SOUTH WALES



Industry & Investment



The Place To Be



THE UNIVERSITY OF MELBOURNE



THE UNIVERSITY OF SYDNEY



Queensland Government



Griffith UNIVERSITY



Queensland University of Technology



THE UNIVERSITY OF QUEENSLAND AUSTRALIA