

# NICTA NEWS

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

## NICTA preparing for the future

**NICTA is committed to being a world-class ICT research institute. To ensure we reach this high standing our executive team consults regularly with our Board of Directors and advisory groups. The role of these groups is to ensure NICTA's strategic research and commercial initiatives are constructively scrutinised by internationally respected figures.**

The International Science Advisory Group (ISAG) and International Business Advisory Group (IBAG) provide external advice to the NICTA board. Their charter is to help generate NICTA's long-term strategic vision in research and commercialisation.

These groups include many high-profile national and international members of the academic, research and business communities.

In August, the ISAG and IBAG members met in Melbourne for the fifth year running. We are delighted to report that at this annual meeting of NICTA's advisory groups, the members said NICTA is making great progress.

Since the members of the ISAG and IBAG last met with NICTA 12 months ago, we have spun out three companies, improved our strategic approach across our research and business areas and strengthened our education portfolio.

NICTA's people are outstanding. We have 419 staff and 297 NICTA-enhanced PhD students. We are getting some truly excellent research results and we have a strong commercialisation pipeline supported by a growing entrepreneurial culture. The number of collaborations with industry, both domestic and internationally, is growing.

The three-day ISAG/IBAG event included presentations by the NICTA executive team on NICTA's research structure, commercialisation processes, an update on the progress of our spin-out companies and education initiatives.

In delivering a feedback session to NICTA, ISAG member, MIT Professor Rodney Brooks said NICTA was very clearly on a track to success and the sort of advice the advisory groups were offering this year had moved into the "tweak phase".

Among other comments, he said the advisory groups felt NICTA's research structure and business development process was now appropriate and clear.

You can read more about the ISAG and IBAG meeting in an article in this newsletter.

Also during the ISAG/IBAG meeting, two new initiatives were explained to our advisory group members.

The first is a new Project that builds on NICTA's previous work with the Australian Institute of Sport (a program of the Australian Sports Commission).

The Project, titled "Body Area Networks of Embedded Systems for Humans" or BANESH, examines the use of microprocessors and miniature transmitters to interpret information from small, smart devices used for biometric monitoring.

At present, elite athletes are monitored by coaches under special laboratory conditions to ensure safety and peak competitive output. The problem with this is that coaches are unable to interpret the data collected in real-time so as to make instant adjustments to training regimens.

The aim of the BANESH Project is to collect data from small inexpensive sensors and transform the data into useful information in real time.

Through the use of machine learning techniques – such as smart processing algorithms to segment data – NICTA is working now with the AIS to identify patterns in data already collected from athletes.

The Project will utilise NICTA's expertise in a number of areas and will use a critical mass of researchers. The BANESH Project will also provide excellent opportunities for NICTA to collaborate with industry to address issues of national and international concern.

I also want to bring to your attention a new industry cluster that NICTA is chairing. The Embedded Systems Australia (ESA) cluster is chaired by NICTA's CTO, Embedded Systems, Dr Chris Nicol.

Embedded Systems Australia is a joint initiative of NICTA, the Australian Electronics and Electrical Manufacturers Association (AEEMA), The Warren Centre for Advanced Engineering (within the University of Sydney), and the NSW Government through the Department of State and Regional Development (DSRD).



The steering committee also includes senior representatives of major Australian and multinational corporations including ResMed, Cochlear, Microsoft, Canon Information Systems Research Australia (CISRA), iTech Corporation and Invetech.

A launch of the cluster, held on December 11 at the NSW Premier's Reception Room, was attended by around 120 people. An Australia-wide industry survey, which will help Australian businesses to better understand its capability in Embedded Systems and related areas is underway.

Future project ideas under consideration by the cluster include: technology road mapping for Australia, collaborative industry projects, and promotion of embedded systems skills in secondary schools.

To learn more about the cluster, please email Peter Edmonds at [ESA@nicta.com.au](mailto:ESA@nicta.com.au).

This issue of NICTA News also reports on two exciting new technology licenses signed with NICTA. The first, for technology developed in NICTA's Managing and Monitoring the Internet (MAMI) Project, is with Optium, a leading supplier of high-performance optical subsystems. The second, a software license for intellectual property created in NICTA's Smart Cars Project. It is with Sydney road infrastructure company Pavement Management Services.

I hope you enjoy this edition of NICTA News! All of us at NICTA wish you a happy and safe time over the Christmas and New Year festive period.

Regards,

David Skellern  
Chief Executive Officer

The imagination driving Australia's ICT future.



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# NICTA realising vision for Canberra's ICT knowledge precinct with new Laboratory

The Canberra operations of NICTA has moved into its new premise, which is set to become the hub of innovative ICT activity in the Australian Capital Territory.

Australian Capital Territory Chief Minister Mr Jon Stanhope officially opened NICTA's new facilities on December 12, which brings together NICTA's three offices in Canberra.

Around 200 people attended the festive-themed opening in the new Canberra Lab.

The NICTA Laboratory is located within the new 6800 m2, A-grade, 4-star environmentally-friendly building on London Circuit, adjacent to The Australian National University (ANU).

The \$60 million commercial development by developer Leighton Properties will be used as a base to help grow and develop ICT research in Australia and the Australian Capital Territory.

"NICTA's new laboratory in West Civic is an important piece of the West City knowledge precinct that is forming around ANU Exchange," NICTA Chairman Mr Neville Stevens AO said.

"With the completion of the new research facility on London Circuit, the Canberra and ACT community have an iconic global landmark which will reflect the true innovation of Canberra's world-class ICT research," he said.

"NICTA's researchers are already producing new knowledge and techniques and are putting their imagination to work with local small and medium businesses on significant technology break-throughs which will benefit the Canberra community and the nation."

A series of 10 paintings gifted by local artist Nicola Sasanelli AM will adorn the walls of NICTA's new Canberra Research Laboratory. Adj Prof Sasanelli is the Scientific and Technology Attaché at the Italian Embassy in Canberra.

The series of paintings are a tribute to scientists who have changed the world, such as Pythagoras, Leonardo Da Vinci, Charles Darwin and Albert Einstein.

"I am very happy to see my paintings hanging in NICTA's new Laboratory," Adj Prof Sasanelli said. "This project was born from a personal passion for abstract art I have nurtured over the years and from the desire to stimulate more aggressive marketing policies for scientific and technological research."

Laboratory Director for the Canberra Research Laboratory Dr David Everitt is thrilled the paintings will be housed at NICTA's new Canberra facility. "Nicola's paintings are vibrant and depict a real passion for the revolutionary work undertaken by these scientists, I am sure they will be a real inspiration to the outstanding researchers working at this Lab," Dr Everitt said.

NICTA's imaginative and ground-breaking research is placing Australia at the forefront of global ICT research and its researchers are developing technologies that meet the current and future needs of society. At the opening today, NICTA demonstrated its work to VIPs in areas such as Intelligent Transport Systems, medical imaging and statistical machine learning.

The ACT government, in addition to The Australian National University, the NSW Government and the University of NSW, is a foundation member of NICTA and has played an integral part in building NICTA into a world-class ICT research institute.



Australian Capital Territory Chief Minister Jon Stanhope and NICTA Chair Neville Stevens officially opening NICTA's new Canberra Lab



*"The ISAG and IBAG members met in Melbourne for the fifth year running."*

L to R: Prof Jeffrey Ullman, Prof Dieter Rombach, Mr Duane Zitzner, Ms Heather Killen, Prof Craig Mudge and Prof Rodney Brooks

## NICTA's Advisory Groups meet in Melbourne

NICTA's two advisory groups met in Melbourne between 29-31 August to discuss the organisation's progress during the year, the members believe NICTA is making great progress.

The three-day event included presentations by the NICTA executive team on NICTA's research structure, commercialisation process, an update on the progress of our spin-out companies and education initiatives.

A number of researchers also presented updates on key NICTA projects including BANESH, Supercom and Gigabit Wireless.

Under the influence of the International Business Advisory Group (IBAG) and International Science Advisory Group (ISAG), NICTA's strategic research and commercial initiatives are constructively scrutinised by leading international figures.

On the last day of the meeting, ISAG member, MIT Director Professor Rodney Brooks, moderated a feedback session which was relayed via video-conference to all NICTA labs.

"The sort of advice we are giving is in the 'tweak' phase," Professor Brooks said. "It is really about tuning where you are going."

He said the advisory groups felt NICTA's research structure and business development process were now clear.

"We are impressed that Melbourne is now on line and there is thrust in the life sciences area."

Professor Brooks said NICTA's Bionic Eye project was "inspiring and important". He said the projects up and running in the life sciences area would provide opportunities for "tremendous" long-term pay off.

The advisory groups had a number of primary recommendations for the year ahead for NICTA.

"We think Australia, the government and the country at large under-appreciate the importance of ICT," Professor Brooks said.

"We believe Australia needs both NICTA and the CSIRO ICT Centre, but NICTA needs to be more visible, part of becoming more visible is having NICTA's fingers reach across more boundaries."

With regards to NICTA's commercialisation process, Professor Brooks said the Australian landscape was unique and the pipeline development process in this country needed to be different to that in other parts of the world.

"Australia is unique and has its own model, but continuing to benchmark internationally is important."

Professor Brooks added that the development of several IT platforms within NICTA was a good way for NICTA to get its brand name out in the marketplace. "It is also an alternative way to capitalise on NICTA's intellectual property."

### 2007 INTERNATIONAL BUSINESS ADVISORY GROUP MEMBERSHIP

Mr Duane Zitzner, HP, Executive Vice President, Retired

Mr Narayana Murthy, Infosys, Chief Mentor Officer and co-founder of Infosys

Prof. Craig Mudge, Pacific Challenge

Mr Bob Bishop, Silicon Graphics, Vice Chairman & former CEO

Ms Heather Killen, Hemisphere Capital, Founder & Managing Partner

### 2007 INTERNATIONAL SCIENCE ADVISORY GROUP MEMBERSHIP

Dr Jean Vuillemin, Ecole Normale Supérieure & former Scientific Director, INRIA

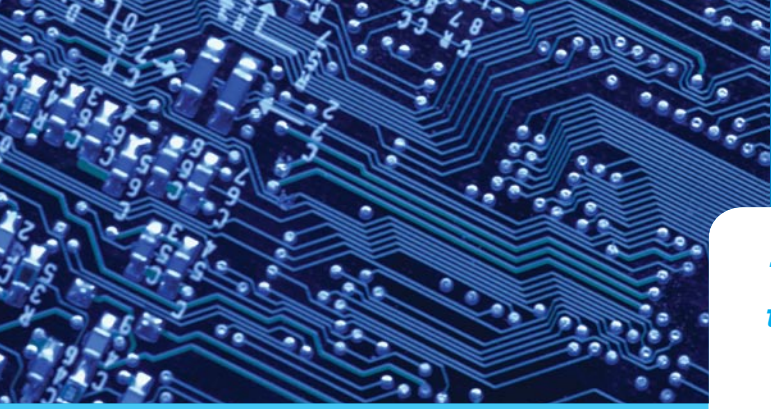
Prof. Dieter Rombach, Fraunhofer Institute for Experimental Software Engineering, Executive Director; and Director of ICT Cluster

Prof. Jeffrey Ullman, Stanford, Professor Emeritus of Computer Science

Prof. Rodney Brooks, MIT, Director, Computer Science and Artificial Intelligence Laboratory

Dr Stuart Feldman, Google Labs  
Ease Coast, Vice President  
Engineering

In July 2007 Sir John Taylor FRS, FREng, Roke Institute, Chairperson was newly appointed to the ISAG.



***“NICTA has a commercialisation pipeline, three companies have already spun-out.”***



## NICTA's Commercialisation Team

**The commercialisation of intellectual property (IP) developed through world-class research is fundamental to NICTA's mission of facilitating technology transfer and creating channels to market for NICTA research.**

NICTA stimulates technology transfer through a range of approaches including start-up companies, technology licensing, collaborations with the Australian information and communications technology (ICT) sector and working with industries outside the ICT sector.

NICTA has a commercialisation pipeline. Already three companies – Open Kernel Labs, Audinate and 7-ip - have spun out of NICTA and a number of Projects are moving through the pipeline.

NICTA has a rigorous commercialisation process, the stages in the pipeline include:

- **Market Engagement:** This stage encompasses general industry development activities, market intelligence, industry clusters, IP protection and collaborations
- **Business Development:** This is the formal stage of commercialisation. It includes a four-step process to nurture the commercial success of our research Projects
- **Spin-outs and Licensing:** NICTA's main commercialisation vehicles are spin-outs and licensing
- **Business Areas:** NICTA's Business Areas are the market sectors where we seek the majority of our use-inspiration.

**NICTA's strategies for successful commercialisation include:**

- Ensuring NICTA has a clear, fast and flexible IP Framework as a foundation for commercialisation and industry partnerships
- Identifying and funding the development of proof-of-concept and working models to demonstrate market application
- Assisting with the creation of and access to capital for spin-out companies and business partnerships
- Developing domain applications in partnerships with industries that are major users of ICT.

NICTA has assembled a team of experienced business development professionals to ensure researchers achieve commercial impact with their research.

Rob Fitzpatrick started as NICTA's Director of Commercialisation in November and will be responsible for NICTA's Business Development and Industry Liaison activities [see breakout box].

His team has a strong commercial focus. Most members have previous startup experience and several have worked for private and institutional investors. They have considerable experience in early stage business strategy, new product development, high technology sales and marketing and venture capital raising.

NICTA's new Director of Commercialisation, Rob Fitzpatrick, has an extensive background in business and technology in the ICT sector globally, including management, consulting, start-ups and business development for large corporates.

Mr Fitzpatrick is well regarded within industry, specifically for his roles as part of the team that set up and ran online grocer ShopFast and as a consultant for over seven years with worldwide management consultancy McKinsey & Company, consulting to clients in Australia, Europe, the US and Asia.

Since 2003, he has maintained an active portfolio of information and communications technology businesses including HeardIT and a number of other technology start-ups.

**“NICTA gives me the opportunity to work with some of Australia's and the world's leading ICT researchers,”** Mr Fitzpatrick said. **“Use-inspired research in the ICT space will differentiate our future and provide an opportunity to strengthen Australia's position on the global map.”**

Mr Fitzpatrick will direct NICTA's commercialisation activities, developing the business skills of NICTA's research project teams and where appropriate, linking those projects with industry partners. This will help to further target and refine NICTA's research activities and strengthen NICTA's pipeline of commercial opportunities.

*The NICTA-developed techniques will be used for highway and pavement management by Pavement Management Services.*



## NICTA signs technology transfer deals

### **NICTA signs deal with Pavement Management Services**

NICTA has signed its first technology transfer deal, a software licensing deal with Sydney road infrastructure company Pavement Management Services.

The agreement will enable Pavement Management Services to rapidly commercialise research from NICTA's Smart Cars Project, which is based at NICTA's Canberra Research Laboratory.

The Smart Cars Project uses computer technology, particularly image analysis, to enable a safer driving experience. The goal of the project is not to create an autonomous vehicle, but to provide input to the driver about road conditions, obstacles and potential hazards, letting the driver retain control of the vehicle while benefiting from the input from the computer system.

The particular NICTA-developed techniques to be used by Pavement Management Services can automatically detect, recognise and geographically pinpoint road signs using video-footage shot from surveying vehicles.

"We are very excited to be working with Pavement Management Services and anticipate the relationship will help us to evolve our research and expand the commercial opportunities into neighbouring areas," NICTA Researcher and Smart Cars project leader Dr Lars Petersson said.

### **NICTA inks deal for ground-breaking technology for telcos**

NICTA has signed a commercial license agreement with Optium, a leading supplier of high-performance optical subsystems, covering groundbreaking optical signal-to-noise ratio (OSNR) monitoring technology.

This is the first technology licence agreement for the Managing and Monitoring the Internet (MAMI) project, which is based at NICTA's Victoria Research Laboratory.

NICTA's new generation OSNR monitoring technology is compatible with optical switches, including reconfigurable optical add/drop multiplexers (ROADMs), and can distinguish and measure the impairment caused by optical amplifier noise, improving the ability to manage telecommunications networks.

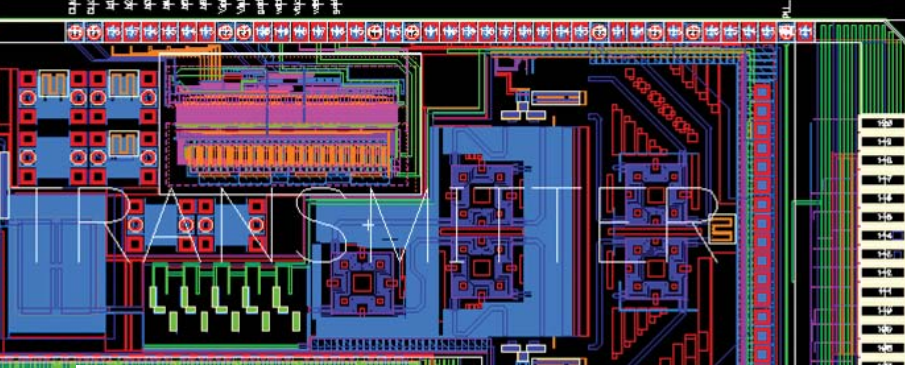
"The licensed technology is the product of a number of years of work by a team in NICTA's Victoria Lab and represents the first of a number of exciting new related technologies due to be released by NICTA over the next twelve months," NICTA Chief Executive Officer, Dr David Skellern said

"This technology operates in-band providing live information on actual performance and is faster and less complex than similar devices," NICTA Principal Researcher and MAMI Project Leader Mr Trevor Anderson said.

"These advantages enable network-wide awareness and significantly improves an operator's ability to manage high-speed optical networks," Mr Anderson said.

"The information provided by the monitor will provide additional confidence in the robustness of new high-speed networks supporting highly efficient network designs."

"This is the beginning of what we expect to be a long-term relationship with Optium as a partner in the development and commercialisation of optical networking technologies coming out of NICTA," NICTA Entrepreneur-in-Residence, Mr David Wright said.



# NICTA's research into Gigabit Wireless

**NICTA's Gigabit Wireless Project has developed technology that will enable the future of data and media management and distribution around the office and the home.**

In the not-too-distant future, existing indoor wireless networks will not be able to supply the required bandwidth to support content-rich applications. To address this emerging problem, NICTA is developing wireless technology that will allow wireless communication links of up to 5 Gb/s - many orders of magnitude faster than existing wireless technology, and available at a much lower cost.

The radio frequency (RF) and mixed signal components of this technology are developed at the Victoria Research Laboratory in Melbourne and the Baseband and Medium Access Control components are developed at NICTA's Australian Technology Park Lab in Sydney.

This achievement is made possible by the availability of unlicensed spectrum in the 57 to 64 GHz band. NICTA's researchers are taking advantage of the availability of 7GHz of unlicensed spectrum to develop a low-cost, gigabit per second integrated millimetre-wave transceiver on the most widely used and inexpensive silicon process technology, CMOS.

The use of millimetre-wave technology has the advantage that it allows further miniaturisation of components on a single chip and it also allows the integration of antennas on the chip. Fabricated devices

include integrated antenna, transmit and receive switches, power amplifier, radio, baseband and medium access controller.

The end result of the technology could, for example, mean you could join a high definition DVD player and a high definition TV, NICTA Gigabit Wireless Project Leader Professor Stan Skafidas said.

"Another application is there may not be any video and DVD stores in the future, there will be kiosks that you walk up to and when you are near it you could download a movie in a few seconds and watch it on your video iPod or put the device near your plasma TV and beam the signal.

"The technology will mean devices will connect to each other wirelessly, leading to an improved user experience."

Prof Skafidas said the difference between NICTA and other competitors is NICTA is developing an integrated chip on a low cost electronic process, CMOS.

The research team are world leaders in developing next generation millimetre-wave systems on bulk CMOS

"We are the first group to have made great progress in building an integrated radio on CMOS," Prof Skafidas said.

Prof Skafidas said some of the NICTA team's competitors include UC Berkeley, which have spun out a company called SiBEAM, and research teams in Singapore and Europe.

Prof Skafidas said the acquisition of the LSI team will significantly contribute to the

chip's development. "They are a world class group and there is great synergy between the two groups."

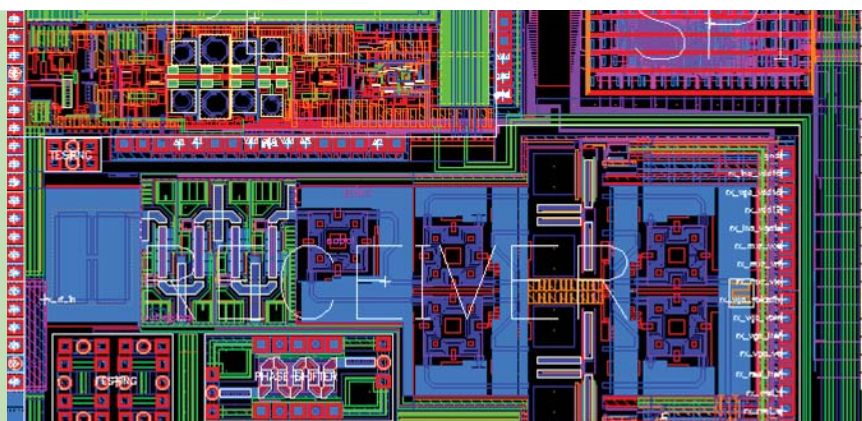
Sixteen researchers were recently made redundant from LSI Australia (formerly Agere Systems) following the closure of their North Ryde research facility.

The Australian Government announced in October an extra \$4.8 million over two years to NICTA to enable the retention of the team of world-class researchers in Australia.

"NICTA identified an opportunity to merge the LSI Australia-Agere team with an existing research effort to create state-of-the-art personal broadband wireless chips which will enable people to transfer large multi-media files, such as entire movies, up to a thousand times faster than currently possible," NICTA Chief Technology Officer of Embedded Systems Dr Chris Nicol said.

NICTA's Gigabit Wireless research Project is collaborating with IBM T.J. Watson, Princeton University, and Georgia Institute of Technology. The Project has also received significant industry support from Cadence, Synopsys, Agilent, Anritsu, Ansoft and Suss MicroTec.

*Written by Professor Stan Skafidas*





New NICTA researchers and management at the Australian Government funding announcement with Senator Helen Coonan.

# NICTA Lab News

## Canberra Research Laboratory

**A new project is building critical mass at the Canberra Research Laboratory. Building on previous work with the Australian Institute of Sport (a program of the Australian Sports Commission), the Body Area Networks of Embedded Systems for Humans, or BANESH Project, examines the use of micro processors and miniature transmitters to interpret information from small, smart devices used for biometric monitoring.**

BANESH utilises NICTA's expertise in a number of areas and will use a critical mass of researchers.

At present, elite athletes are monitored by coaches under special laboratory conditions to ensure safety and peak competitive output. The problem is coaches are unable to interpret the data collected in real-time so as to make instant adjustments to training regimens. The aim of the BANESH Project is to collect data from small inexpensive sensors and transform the data into useful information.

Through the use of machine learning techniques – the use of smart processing algorithms to segment data - NICTA is working with the AIS to identify patterns in data which are already collected from athletes.

A number of new staff also joined the CRL in previous months. These include Roy Yang, who is a user interface programmer and will be working on the BANESH project. Damian Merrick also joined NICTA to work in the BANESH project, he will be working from the Australian Technology Park Laboratory.

Catherine Menon has started as a research programmer in the Managing Complexity Theme. She works primarily on the L4.verified project. Le Song, a PhD student will be working with the Statistical Machine Learning team. He will be visiting NICTA until March 2008.

## Neville Roach Laboratory (Kensington)

A group of around 20 senior high-school students from years 10 and 11 pondered the question about what will happen in the future at a special workshop. Students from local schools around Randwick, Kensington, Mascot and Maroubra near the NICTA Research Laboratory at Kensington were invited to participate.

NICTA has been running a series of '2020 Vision' foresighting workshops over the last few months. These have involved CEOs, CIOs, opinion leaders and industry analysts as well as NICTA research scientists and PhD students.

NICTA will use the visions from the workshop to guide its future ICT research.

On Thursday 1 November a very unusual masterclass took place at the Lab when Sydney Youth Orchestra (SYO) violinist Megan Lee led the award-winning 'RoboFiddler' in a performance. The robotic violin player is sponsored by NICTA and was created by University of Adelaide mechatronics engineering students.

Seventeen-year-old Megan Lee led RoboFiddler in playing the two pieces it performed at the ARTEMIS competition.

"I am interested to see what kind of sound RoboFiddler makes. But I think the emotion and responsiveness of a real-life musician mean that the finest performances will always be by flesh and blood!" Megan said.

NICTA Senior Research Engineer Dr John Judge said that the challenges for RoboFiddler are great: "RoboFiddler have a long way to go, and participating in a masterclass with a real performer is part of the next step to true musicality".

## Victoria Research Laboratory

From 6-7 December, NICTA hosted its Summer Scholars Showcase for NICTA-funded undergraduate summer scholars from our partner universities. This year's

Summer Scholars Showcase was hosted by the Victoria Research Lab. Around 100 students attended the event. The event demonstrated opportunities at NICTA whilst also offering an opportunity for the students to interact with staff. This year students were also exposed to the Artemis Orchestra Program.

## Australian Technology Park

The Australian Government provided extra funding to NICTA to enable the organisation to hire researchers with world-class skills in silicon chip design. The LSI Australia (formerly Agere Systems) researchers were made redundant following the closure of their North Ryde research facility.

"Through this team Australia has developed a core competency in silicon chip design which is leading edge and contributed to Australia's ICT capability," NICTA's Education Director Professor Aruna Seneviratne said.

The researchers will be working on wireless-related research within NICTA's Embedded Systems Research Theme. This research is developing next generation wireless networks.

The addition of the researchers to the Gigabit Wireless Project team will allow NICTA to fast-track research on the technology.

The researchers will be based at the ATP facilities and will be an important part of NICTA's efforts in Embedded Systems.

## Queensland Research Laboratory

Professor Hans Burkhardt, a visiting researcher with the Queensland Research Laboratory from the University of Freiburg in Germany, and his team have just won German Federal Government funding of around 33 million euro over the next five years for a Centre of Biological Signalling Studies. Hans is currently working with the SAFE Sensors team, which includes Brian Lovell and his colleagues.

# STOP PRESS

*Dr Mark Reed has won Engineers Australia's most prestigious award.*

- The IREE Neville Thiele Award is Engineers Australia's most prestigious award. Canberra Research Laboratory researcher Dr Mark Reed has won this year's award. The award is named in honor of A.N. (Neville) Thiele OAM, an outstanding Australian Electronics Engineer, former President of the IREE and a world-renowned expert on audio engineering standards and the design of loudspeakers.
- Professor Brian Anderson has been honoured by His Majesty the Emperor of Japan by being awarded, on 3 November, The Order of the Rising Sun, Gold Rays with Neck Ribbon. The award is for his outstanding contribution in bringing Australia and Japan together in the academic sphere, including the scheme he initiated to invite Japanese researchers to the ANU and his ongoing collaboration with Japanese researchers.
- Martin Wehrle and Jussi Rintanen's "SAT Planning with a Relaxed Definition of E-Step Plans" has been selected for the best paper award at the Australian Artificial Intelligence Conference which took place on December 2-6 on the Gold Coast. Martin is a PhD candidate at the Albert-Ludwigs-Universität Freiburg in Germany. Jussi is a Principal Researcher at NICTA's Canberra Research Laboratory.
- Best Student paper award: Matt Ruan, 7th International Symposium on Communications and Information Technologies ISCIT2007, "Turbo Equalisation using Particle Filtering with Grouping", co-authored by Mark Reed and Zhenning Shi.
- Best Student paper award: Roy Timo, Australasian Telecommunications Networks and Applications Conference ATNAC 2007, Christchurch, New Zealand, for the paper "Strong Stochastic Stability for Dynamic Source Routing", co-authored by Kim Blackmore and John Papandriopoulos.

## EVENTS

### Victoria Lab Seminar

January 25 - Raghu Ramakrishnan, Vice President of Yahoo

### Big Picture Series

February/March - Jim Peacock, Australia's Chief Scientist

### Meet the Founder

January - Michael Luther, CEO of Uplogix

### Short Courses

- Introduction to UAVs: Missions, Links and Payloads – 18 - 19 February 2008 (Adelaide)
- Modern Digital Receiver Techniques: From Theory To Practice – 18 - 20 February 2008 (Adelaide)
- Introduction to Linux for Embedded Developers – 21 - 22 February 2008 (Wollongong)
- Tactical Data Information Links (TADILS) – 26 - 27 February 2008 (Canberra)
- Systems Engineering Introduction – 28 February 2008 (Canberra)
- Introduction to Sonar Signal Processing – 3 - 4 March 2008 (Fremantle)
- Systems Engineering – 10 - 12 March 2008 (Brisbane)
- Systems Engineering Management – 13 - 14 March 2008 (Brisbane)
- Introduction to Digital Signal Processing with FPGAs – 31 March 2008 (Australian Technology Park, Sydney)



Australian Government  
Department of Broadband, Communications  
and the Digital Economy

NICTA Members



Department of State and  
Regional Development



The University of Sydney



Queensland University of Technology



NICTA Partners