



# State of the Future



A Curtin University representative logs on to theSkyNet at the launch. The background depicts the local Universe from the data set used to test theSkyNet's accuracy. Galaxies in green are closer to the Milky Way and red are further. Image courtesy of Mark Calabretta, CSIRO Astronomy and Space Science.

## The sky's the limit

Within the first day of going live, nearly 3,000 people signed up as members of theSkyNet. A few weeks later, 5,800 people joined this community computing initiative that will advance our understanding of the Universe.

theSkyNet is a revolutionary project that enables people all over the world to donate spare computing power to help process astronomical data captured by radio telescopes from galaxies, stars and other, faraway celestial objects.

Professor Peter Quinn, Director of the International Centre for Radio Astronomy Research (ICRAR), said the project aimed to involve the public in the discovery process while raising awareness of radio astronomy and providing a real resource that astronomers can use.

"The key to theSkyNet is having lots of computers connected, with each contributing only a small amount of power, but the sum of those computers achieving a lot," he said.

"Radio astronomy is a data intensive activity and as we design, develop and switch on the next generation of radio telescopes, the supercomputing resources processing this deluge of data will be in increasingly high demand."

So far, theSkyNet team has been using data collected by the Parkes radio telescope in New South Wales to refine the system and



demonstrate that the results produced are scientifically accurate. theSkyNet will then move on to processing larger data sets in preparation for the enormous volumes of information that will flow from telescopes like the CSIRO's Australian Square Kilometre Array Pathfinder, once they come online.

...continued on page 2



# Minister's foreword

**Over the past few months in particular, I have seen many positive developments and achievements in the science and innovation sector.**

The State Government recognises the importance of making strategic investments that will enhance the growth and development of Western Australia's economy. That is why the Government provides support to a range of science and innovation initiatives that deliver direct benefits to the State.

Driving research and development activities in Western Australia and spreading the word about the importance of science and innovation are hard working and passionate scientists, communicators and

educators. It is important that we acknowledge and reward those individuals whose enthusiasm and achievements are a cut above the rest.

A perfect example of such a passionate individual is Brooke Topelberg, of Westminster Primary School. At last year's Western Australian Science Awards, Brooke was awarded the Primary Science Educator of the Year. She recently went on to receive a Prime Minister's Prize for Science.

Both awards are a fantastic recognition of Brooke's work and dedication to science education, and I extend my congratulations.

The Western Australian Science Awards are now in their 10th year and once again the quality

of applicants was outstanding. I congratulate all of the winners who were announced at the award ceremony on 8 December 2011. Professor Richard Hobbs, Professor David White, Mr Heath Dullard, Ms Linda Townend and the Farm Business Resilience Program are all very deserving of the awards they received. I also congratulate Dr Bernard Bowen who was inducted to the Western Australian Science Hall of Fame.

I have also recently hosted several events celebrating local innovation, including the Western Australian Innovator of the Year Awards. The five winning innovations in this awards program exemplify the strength and diversity of the State's economy.

In September I attended the launch of theSkyNet and was one of the first to log on to the network. This initiative is a great example of an engaging citizen science project that will provide a valuable resource for local researchers.

In recognising and rewarding the individuals and organisations that have achieved remarkable results in the science and innovation sector, the State Government celebrates the fantastic work being undertaken in the sector and highlights the positive contribution it makes to the development of our State.

**The Hon. John Day MLA  
Minister for Science and Innovation.**

# The sky's the limit

...continued from page 1

Science and Innovation Minister John Day officially launched theSkyNet in September and, together with Western Australian Chief Scientist Professor Lyn

Beazley and Perth Lord Mayor Lisa Scaffidi, was the first to log-on. theSkyNet is a collaboration between ICRAR (a joint venture

between Curtin University and The University of Western Australia) and UK-based eMedia Track. theSkyNet also has support from Systemic, a

Perth-based IT company and the Western Australian Government through the Department of Commerce.

By creating a network of thousands of computers through the Internet, theSkyNet has achieved a data processing capacity equivalent to that of a very powerful, \$1.5 million super computer.



For more information about theSkyNet and to sign up, visit [www.theSkyNet.org](http://www.theSkyNet.org)

Perth Lord Mayor Lisa Scaffidi, Science and Innovation Minister John Day, WA Chief Scientist Professor Lyn Beazley, representatives from ICRAR and Curtin University, and Andross Primary School students at the launch of theSkyNet.

# ICT Scholarships assisting the move towards a digital future

In the past 12 months, the Western Australian Chapter of the Australian Computer Society Foundation (ACSF) has awarded more than \$900,000 worth of scholarships to local ICT graduates.

ACSF is Australia's primary scholarship facilitator focused exclusively on the ICT industry. By encouraging private and public sponsorship of ICT higher education and research initiatives, and funding scholarships for tomorrow's ICT leaders, the ACSF supports the growth and development of the ICT profession in Australia.

ACSF in Western Australia is considered to be the most successful State Chapter, having raised over \$2.6 million from industry and provided more than 240 scholarships. In the past 12 months alone, the Western Australian Chapter has awarded 47 scholarships to a range of Western Australian undergraduate, post-graduate and mature age ICT students.

There are two main scholarship programs: Work Integrated Learning (WIL); and Grow a Graduate (GROW). The majority of funds awarded in Western Australia are for WIL scholarships which provide students with work experience through projects that are relevant to their academic studies. Students receive between \$34,000 and \$38,000 tax free to cover their participation in the program, generally over a 48 week time-frame.

ACSF scholarship recipient and Curtin University student, Natalie Tan, recently undertook an internship with Western Power's IT Support division. During that time, Natalie

and play their part in ensuring the expansion of a dynamic and innovative ICT sector in Australia.

"The range of multi-national organisations and smaller

Minister for Science and Innovation and patron of the Western Australian Chapter of the ACSF, Mr John Day, hosted the annual ACSF presentation event on 4 November 2011. The ceremony was held at Parliament House and acknowledged the scholarship donors, recipients and supporters, and other involved volunteer organisations.

Minister Day said that through its scholarship programs, the ACSF was playing an important role in supporting the development of Western Australia's digital future. "ICT professionals will be at the forefront of driving new innovation that transforms our lives and delivers solutions to address major challenges such as regional sustainability, climate change and industry productivity," Minister Day said.

The ACSF in Western Australia is supported by the State Government through the Department of Commerce, as well as by academic partners: the University of Western Australia and Edith Cowan, Curtin and Murdoch Universities.

## ACSF in Western Australia is considered to be the most successful State Chapter.

developed an insight into the 'big picture' of ICT across an enterprise and worked with a diverse range of clients on a wide variety of issues.

Dr Peter Dell, Natalie's academic supervisor at Curtin University,

Western Australian companies involved in the WIL program shows how applicable and valuable it is to enterprises across the spectrum," Mr Debrincat said.



L-R: Mr John Day; Scholar Joachim Mahati; Scholar Deepti Roopun; Donor Bryan Drennan Western Power, Enterprise Solutions Partner Division

said Natalie's work experience with Western Power provided an extremely valuable background for any future analyst.

Chair of ACSF, Mr John Debrincat, said the scholarships assisted ICT students to go on

The program is highly successful – 75 per cent of the scholarship holders from the last three years were offered a graduate role by their sponsor organisation.

For more information on the Western Australian Chapter of the ACSF and the scholarship programs, visit: [www.acsfoundation.com.au](http://www.acsfoundation.com.au)

# Plant Energy Biology launches revolutionary DNA sequencer

Can you imagine that capturing an amount of information which only a decade ago took four billion dollars and 10 years to complete can now be obtained in a single day?

*Image courtesy of Richard Jacoby.*

In today's rapidly evolving world, such unimaginable advances in technology are not only reality but are steering Western Australian research to the forefront of innovation and discovery.

The Hi-Seq 1000 Illumina Deep Sequencer, recently acquired by the Australian Research Council Centre of Excellence in Plant Energy Biology (the CoE), is an example of such an advance. In just a few days, the sequencer is able to read every base pair of DNA that makes up an organism. The sequencer then sorts the data to form a meaningful genetic map.

Professor James Whelan of the CoE said genetic mapping provided important information which would enable local researchers to make incredible breakthroughs in a variety of disciplines.

"The sequencer provides cost-effective access to data that will facilitate a range of important discoveries about our genetic past and the genes responsible for diseases in plants and animals," he said.

"One of the important features of the sequencer is that it will allow researchers in a variety of fields including ecology, evolutionary biology, environmental science and other cellular and genetic disciplines, to investigate all types of organisms."

For example, researchers at the

CoE are investigating the genetic mutations and genes of interest in breeding crops for traits specific to Western Australia. These include increased tolerance to drought, heat, pests and salinity, and will allow local producers to respond to environmental change and disease more rapidly.

Research is also being conducted into subtropical grape cultivation, an area with strong market

a solution for the intensive management required in the cultivation process.

The Western Australian node of the CoE was established in 2005 at the University of Western Australia and aims to be a world-leading centrepiece for Australian research in fundamental plant science.

Professor Ian Small, Director of the CoE, relocated to Western

Through ongoing support and investment from the State Government, through the Department of Commerce, the CoE has successfully leveraged a further \$30 million from other sources.



*Staff at the ARC CoE in Plant Energy Biology using the sequencer.*

opportunities. Due to favourable environmental conditions, producers in subtropical areas can supply grapes outside of the normal season. Researchers at the Centre are working to develop

Australia from France in 2006, after he was awarded a WA Fellowship (then a Premier's Research Fellowship); a State Government initiative that aims to attract excellent researchers to the State.

The first of its kind in the State, the sequencer is already being used for a range of exciting research initiatives.

For more information, visit [www.plantenergy.uwa.edu.au](http://www.plantenergy.uwa.edu.au)

# \$25,000 to make my business more competitive? Sounds like a good deal to me!

Park Engineers, Infratech and Cays Engineering are just three of the companies which have benefited from the State Government's new Industry Facilitation and Support Program.

The Industry Facilitation and Support Program (IFSP) offers dollar-for-dollar financial assistance up to \$25,000 to small to medium sized enterprises (SMEs) in the manufacturing and service sectors to improve their competitiveness to participate in major resource projects in Western Australia.

Minister for Commerce Simon O'Brien said the State Government recognised that SMEs were facing increased competition from international markets.

"Better responsiveness to market demands is an important means for local industry to maintain its ability to compete for contracts and grow," Mr O'Brien said.

"IFSP will provide eligible SMEs with support to make the changes that will ensure they adapt and respond to the changing business environment."

Park Engineers, a steel fabrication company based in Welshpool, will use the assistance to purchase a software program that will improve the company's project planning capabilities.

General Manager Malcolm Swaddle said oil and gas project proponents were specifying in tender documents, a preference for a specific planning and scheduling program, which Park Engineers does not currently use. "This funding will enable us to upgrade our current systems with a globally accepted project management tool that will meet the needs of our customers and comply with tender specifications for major oil and gas project work – two very important areas that will enable Park Engineers to grow," Mr Swaddle said.

Eligible SMEs can use the IFSP assistance to promote their capabilities to participate in state, national and global supply chains; meet the pre-qualification requirements of major resource projects; and undertake specialist training to improve operational processes and productivity.

Mandurah's Cays Engineering will use the assistance to purchase wireless scanners to automate the company's tracking of steel components at each stage of production.

Financial Controller Teresa Twining said while Cays Engineering was already winning resource contracts, the company would use the funding to improve production efficiency and to train staff. These changes would further build Cays' reputation as a reliable and qualified supplier.

Infratech in O'Connor provides total geotechnical solutions to organisations across the civil engineering, resources and manufacturing industries.

The company will use the funding to increase its market exposure and profile in the local, national and international mining and mining services sector through targeted promotional and marketing activities.

To apply for the Industry Facilitation and Support Program or for more information, visit [www.commerce.wa.gov.au/innovationdevelopmentschemes](http://www.commerce.wa.gov.au/innovationdevelopmentschemes)





# A boost to innovation in Western Australia

## Dollars to help overcome barriers

The State Government recognises that SMEs have great ideas in the palm of their hands but that turning these ideas into sustainable business opportunities with real commercial outcomes can be difficult.

To help small to medium sized enterprises (SMEs) overcome some of the barriers that exist on the path to commercialisation, the State Government is pleased to announce the Innovation Vouchers Program.

Under the program, eligible Western Australian-based SMEs will have access to a financial boost of up to \$20,000. This funding can be used towards engaging professional skills or services that will help turn an idea into a commercial reality.

The first round of applications has already closed and successful applicants will be announced in January 2012. Applications for the second round will open on 3 February 2012.

This program is part of the Western Australian Innovation Development Schemes administered by the Department of Commerce's Industry, Science and Innovation Division.

For more information, visit  
[www.innovation.wa.gov.au/vouchers](http://www.innovation.wa.gov.au/vouchers)

## Igniting commercialisation

Aspiring innovators and corporate entrepreneurs have had a lesson in how to prepare their innovative ideas for commercialisation at Curtin University's Ignition program.

Ignition is an intensive 5.5 day training program that blends educational teaching sessions, small group mentoring and expert clinics with the opportunity for participants to network with successful innovators and professional service providers.

Jane Garrett, Ignition Program Director, said participants are given a competitive advantage by learning from expert presenters with real world innovation experience about the best way to take an idea and turn it into something that will not only benefit society but will provide financial returns.

The first round of Ignition took place in November 2011 and more than 100 people came together to make the event a great success.

The Department of Commerce, through the Industry, Science and Innovation Division supports the Ignition program. The next round is planned to run in the first half of next year, with registrations opening around March 2012.



For more information, visit  
[www.ignition.curtin.edu.au](http://www.ignition.curtin.edu.au)  
or contact Jane Garrett at  
[jane@globalcomposition.com](mailto:jane@globalcomposition.com)

# Outstanding local innovation showcased



WESTERN AUSTRALIA  
**Innovator  
of the Year  
2011**

Western Australian-based company, Intium Energy Ltd, has taken top honours at the 2011 WA Innovator of the Year Awards for its smart conveyor roller monitoring sensor.

Intium Energy specialises in remote sensing and energy efficient solutions for the multi-billion dollar mining industry.

Intium's Senior Engineer Greg Nancarrow said the company had identified that there was no reliable way to detect deteriorating roller bearings on conveyor belts before actual failure and that developing a solution was imperative.

"We discovered that production losses attributed to conveyor belt failure in the mining sector can equate to more than \$100,000 per hour," Mr Nancarrow said.

"In order to overcome this loss, we developed a sensor that when fitted to the belts of traditional bulk haulage conveyors, alerts maintenance staff when the belt's rollers are degrading.

"This enables staff to change the roller before it fails, thereby avoiding significant losses in production volume and also averting potential hazards."

With more than 55,000 kilometres of conveyor belts installed nationally, Australia presents a large market for Intium's product. Significant export opportunities also exist, which Intium plans to explore once a full trial of the sensor has been completed at the end of this year.

The WA Innovator of the Year Awards is administered by the Department of Commerce and provides the State's creative thinkers with the skills to help turn their ideas into commercial reality. Winners receive financial support as well as access to professional services and mentoring.



L-R: Brian Bradley, Director General Department of Commerce, Tim Jones and Greg Nancarrow of Intium and Wally Yamanaka of Mitsubishi Corporation.



Greg Nancarrow of Intium and the roller monitoring sensor (below).



Other winners in the 2011 Innovator of the Year Awards.

## Mitsubishi Start-up Category Winner Curtin University

A team at Curtin University is developing a drug to treat diabetes that can be swallowed, alleviating the discomfort of injections for diabetics.

## Mitsubishi Growth Category Winner Meridian Safety Pty Ltd

Meridian has developed the T-Line Safety System that works to protect people from falling when working at high levels. The revolutionary system allows users to move horizontally and vertically while working around overhead obstructions.

## iiNet Encouragement Award Winner iCetana

iCetana has developed Intelligent Video Surveillance Software that automatically monitors video data from CCTV. The innovative system highlights the rarest and unusual events - typically only one per cent of the total footage recorded.

## Woodside Encouragement Award Winner The University of Western Australia (UWA)

UWA's Large O-tube is an underwater simulator that can recreate cyclone conditions on a seabed to test the stability of subsea pipelines. This unique facility is the first of its kind in the world and will ensure more efficient and safer offshore oil and gas infrastructure.

For more information, visit  
[www.commerce.wa.gov.au/innovator](http://www.commerce.wa.gov.au/innovator)

# WA breast milk research recognised nationally

**Western Australian researcher, Dr Foteini Hassiotou, was recently crowned winner of both the state and national AusBiotech Awards for her breakthrough in breast milk stem cell research.**

Dr Hassiotou's discovery that stem cells found in human breast milk have the potential to help people suffering from diseases such as Parkinson's and diabetes is an exciting development in stem cell therapy, especially because the cells can be obtained ethically and non-invasively.

Dr Hassiotou said that when she first started the project, she had no idea that breast milk stem cells were so versatile.

"We initially examined whether these cells could become breast-specific cells. We then had the idea to test whether they could also become other cell types," she said.

which they are grown. "If we can understand the properties of these cells and their role in the breast, we can use them as models for breast



*Dr Foteini Hassiotou.*

cancer research and innovative stem cell therapies."

Dr Hassiotou's research and inspiring work earned her

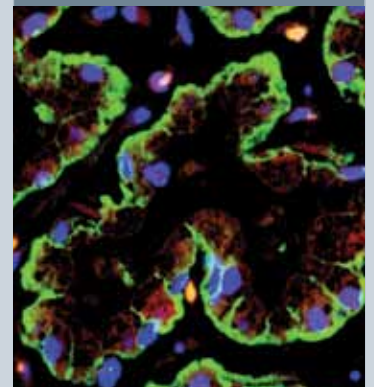
the Innovation Centre WA on 14 October 2011, and said the discovery would lead the way in stem cell research for years to come.

breast cancer and how it can be successfully treated. Dr Hassiotou is a member of the Hartmann Human Lactation Research Group at the University of Western Australia. This group was established by Peter Hartmann, one of the world's leading lactation experts. Last year, Professor Hartmann was awarded the prestigious Rank Prize for Nutrition in recognition of his groundbreaking work in the field.

As part of winning the national award, Dr Hassiotou will attend and present her findings at an international stem cell research conference. This will provide her with the opportunity to learn from world-leading researchers and will be an excellent boost to her future research endeavours.

For more information, visit [www.ausbiotech.org/studentexcellenceawards](http://www.ausbiotech.org/studentexcellenceawards)

*Cross-section of an alveolus in the human lactating breast.*



## The discovery will lead the way in stem cell research for years to come.

"We found that stem cells in breast milk are able to turn into not only breast cells, but also cells of the bone, cartilage, fat, brain, liver and pancreas, depending on the medium in

the 2011 Western Australian AusBiotech-GSK Student Excellence Award.

Science and Innovation Minister John Day presented Dr Hassiotou with the award at

Following her win at the state awards, Dr Hassiotou travelled to Adelaide to present her research at the AusBiotech2011 National Conference and was awarded the national AusBiotech-GSK Student Excellence Award.

Dr Hassiotou has now returned to Perth to continue investigating the properties of breast milk stem cells and their role in babies which are breastfed. Her findings also open the way for further use of these cells as models in breast cancer research, primarily in understanding what leads to

## Contact details

*State of the Future* is received by more than 1800 key industry representatives, local councils, media and other organisations. The newsletter is a great way to promote your business. In each issue we profile different companies within the science, technology, innovation, industry and enterprise fields.

If you have some news or a story to tell about what your company is up to for *State of the Future* please contact:

**Department of Commerce**  
**Industry, Science and Innovation Division**  
 Email: [soft@commerce.wa.gov.au](mailto:soft@commerce.wa.gov.au)  
 Phone: 08 9263 8295

Various stories have been written in conjunction with ScienceNetwork Western Australia. For more information on Western Australian initiatives please visit [www.sciencewa.net.au](http://www.sciencewa.net.au)

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