

Newsletter

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NZCSRSC 2013

The 11th NZ Computer Science Research Student Conference (NZCSRSC 2013) was held at the University of Waikato, 15-19 April. There were 50 attendees from NZ universities.

New to the NZCSRSC this year were prizes for best paper (\$1,500), best presentation (\$500) and best poster (\$500). Prize money was provided by Google, and judging was performed by the NZCSRSC steering committee: **Ian Witten, Tim Bell,** and **Robert Amor**. The prizes are to be used for travel or other research-related expenses for the winners.

Best Paper: **Syed Saud Naqvi,** Optimizing Bio-Inspired Visual Attention Model (Victoria).

Best Presentation: Mumraiz Khan Kasi, Semantic Event for Energy Efficient Wireless Sensor Networks (Waikato).

Best Poster: Cameron Mclean, A Pattern Language for Sharing Laboratory Science Practice (Auckland)

Craig Nevill-Manning of Google delivered the opening address, "Engineering Creativity in Silicon Valley, New York, and New Zealand". He discussed Silicon Valley, the New York tech hub, and outlined a plan that could foster similar growth of tech centres in NZ. Andrew Scothern from Gallagher presented the second keynote. He related a fascinating story of the evolution of software development processes at Gallagher over a five-year period.

Alyona Medelyan, a Waikato PhD alumnus and former NZCSRSC organizer, gave the third keynote address, which showed results of a recent survey of former NZ CS PhD students. This should be of interest to all CS staff and students: her slides are available at the CSANZ website and she kindly re-recorded her talk and put it up at http://www.youtube.com/watch?v=01kmqLMdjjo.

The first of two panels were held immediately following the opening keynote. The topic for discussion was "What can you do with a PhD in industry." The panel members were John Cleary (Realtime Genomics), Rob Heebink (Gallagher), Craig Taube-Schock (University of Waikato) and Craig Nevill-Manning. The second panel consisted of Waikato faculty members Geoff Holmes (Dean of the Faculty of Computing & Mathematical Sciences), David Bainbridge (Associate Professor), Annika Hinze (Senior Lecturer), Doris Jung (Research Fellow), and Keith Soo (Lecturer). The topic was "What can I expect from an academic career?" There were also six workshops to choose from: "The Publication Game" (Ian Witten); Time Management" (Tim Bell); "How to be a fantastic paper reviewer" (Annika Hinze); "Doing and communicating research is changing" (Andrea Schweer); "From PhD student to academic" (Judy Bowen) and "The Oral Examination" (Te Taka Keegan).

An Industry Night was held at Waikato Innovation Park. Each sponsor made a brief presentation, after which attendees

mingled. We are grateful for the support of the conference's sponsors: Gallagher, Pingar, Compaq, Google, Catalyst IT, Fishpond, Realtime Genomics and Serrato.

The purpose of NZCSRSC, to promote networking and interaction between participants, faculty, and industry, was amply fulfilled by this year's Conference, and we are happy to have been able to bring everyone together in a friendly and collegial environment. We look forward to the next one!

Craig Taube-Schock

On behalf of the NZCSRSC 2013 organizing committee. Website: www.2013.nzcsrsc.ac.nz

This year NZCSRSC returned to Waikato 21 years after its inception there, and I warmly congratulate **Michael Rinke**, **Craig Taube-Schock**, and their team for a great job of organising it. The presentations were excellent – it is often remarked that the standard of presentation, and questioning, at NZCSRSC outshines that of major international conferences. This year the keynote talks were outstanding, I found the panels unusually interesting, and the "Industry Night" was fascinating. For instance, do you know what NZ software is used by leading international DJs? Or what industry here is working with unmanned drones? I do – now.

Note: an NZCSRSC presentation does not preclude the same paper being submitted elsewhere. The proceedings are not published, either on the web or on paper. Attendees receive everything on a memory stick, and papers typically include this rubric: This paper is intended for private use only. It is intended to be distributed only to delegates of NZCSRSC'13; under no circumstances should it be further distributed in any way without explicit permission from the author(s). This is a conference that you can't read about afterwards: you have to be there!

We are hoping that NZCSRSC'14 will be held at the University of Canterbury.

Ian H. Witten

NCEA and Computer Science

In 2013 the new Programming and Computer Science standards rolled out for level 3 (year 13), which means that we will start to see better-prepared students arriving at universities in 2014. Computer Science HODs have been discussing how to encourage students in CS at school, and departments are preparing for the new cohort. Google have once again awarded a grant for Canterbury and Victoria to run the third CS4HS (Computer Science for High Schools) event, which will be a three-day event in December to help teachers prepare to teach CS in our high schools. This year it will be a time for consolidation, as many schools will have had three years' experience teaching the new standards, while others will be waiting to learn from their experience!

Tim Bell



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Otago CS

News

The Department is running "Learn to Program" courses for school children aged 9-15 (school years 5-10). These use Lego NXT robots and are held in our own Owheo building. Classes are run by senior CS students under the supervision of Professional Practice Fellow **Sandy Garner**.

Appointments

Michael Albert became Head of Department in January.

Anthony Robins and Michael Albert have been promoted to full Professorships. Michael's inaugural Professorial lecture was given on 16 April.

Awards

Computer Science Honours students **Nicky Crawford** and **Caitlin Miller** were undergraduate finalists for the 2012 Google Anita Borg Memorial Scholarship. Last November **Caitlin** also won a Google internship.

Seminars

Angrosh Mandya, Department of Information Science Enhancing Citation Context based Information Services through Sentence Context Identification

Derick Weis, Monash University

Computer-Aided Molecular Design of Ionic Liquids: Prediction of Melting Point

Rafal Rzepka, Hokkaido University

Toward a Moral Judgement Algorithm Based on the Experiences of a Crowd

Mark Klein, MIT Sloan School of Management Protocols for Complex Negotiation

Cristina Botella, Department of Basic and Clinical Psychology and Psychobiology, University Jaume I, Spain The Concept and the Measure of Presence in Virtual Reality and Augmented Reality Environments

David Eyers, Department of Computer Science Security within Cloud Computing: Initial research trajectories

Visitors

Martin Takac, Comenius University, Bratislava, Slovakia.

December. Visited Ali Knott and Lubica Benuskova to work on neural network models of sensorimotor cognition and natural language syntax.

Robert Pollock

Victoria

News

Paul Teal, a Senior Lecturer in the School of Engineering and

Computer Science, is part of an international research team that has won an award from the European Commission that under the Framework Programme for Research.

Scholarships

Victoria PhD / Doctoral Scholarships

David Harrison Isidro Alvarez Daniel Akinyele Evgeny Patrikeev Summera Nosheen

Appointments

J.P. Lewis joined as an Associate Professor. Prior to April 2013 he was also a research lead at Weta Digital. His research interests include computer vision and machine learning for computer graphics, character animation, and aesthetics and perceptual research in graphics.

David Streader joined as senior lecturer in software engineering. David's research interests are centred around helping software engineers make better use of formal mathematical techniques as the discipline matures.

Ciaran Moore came as lecturer in electronics and computer systems engineering. His research interests include Nanophotonics, particularly the near-field effects, subwavelength resolution and the plasmonic interactions of metals.

Aaron Chen joined as senior lecturer in network engineering. His research interests include various aspects of distributed systems, including multi-agent systems and peer-to-peer overlay networks.

Awards

PhD Student **Masood Mansoori** was awarded best student paper at the Australasian Information Security Conference held in Adelaide in January on how to scan networks in order to allow the automated creation of a network of "honeypots".

Seminars

John Lewis, Victoria University of Wellington Non-Parametric Shape and Motion Synthesis for Computer Animation

Vivek Sakar, Rice University

Improved Programmability and Performance with Structured Parallelism

Tulay Adali, University of Maryland Baltimore County *ICA and IVA: Theory, Connections, and Applications*

Paley Li, Victoria University of Wellington Sheep Cloning with Ownership Types

Fred Baker, Cisco

Buffer Bloat!

George Allan, Victoria University of Wellington Improving Student Engagement



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Ken Anjyo, OLM Digital

Techniques for Art-Directed Animation

Simon Spacey, University of Waikato

OpenPAT: Analysing Programs the Easy Way

David Wilson, AUT

Rapid Proto-Typing with MATLAB: Getting Fast Results with Minimal Coding

Wenyu Jin, Victoria University of Wellington

Spatial Multizone Soundfield Reproduction Design

Neal Glew, Intel Labs

Relaxed Memory Models

Soha Ahmed, Victoria University of Wellington Genetic Programming for Mass Spectrometry Data Analysis

Jason McEwen, University College, London

Radio Interferometric Imaging with Compressive Sensing

Fatih Ustok

Interference Alignment with Imperfect Channel State Information

Jeff Patton Comakers LLC

What I Wish Universities Taught about Software Development

Dino Ienco, Irstea Institute, Montpellier

Mining Moving Objects: Challenges and Directions

Neil Dodgson, University of Cambridge

Mind-Reading Machines: Inferring Mental State from Facial Expression

Philip Yu, University of Illinois

On Mining Big Data

Chengqi Zhang, University of Technology, Sydney *Research Centre Development and Experience*

Daniel Hafiz Abdullah

Secure Data Aggregation for Smart Metering Networks

Jonathan Scott, University of Waikato

Threshold Concept Theory: Things Every Teacher and Course Designer should know

Normalia Samian, Victoria University of Wellington
Quantifying Cooperative Effort in Wireless Multihop
Networks

PhD Theses

Stephen Nelson—Profiling Initialisation Behaviour in Java

David Friggens—On the Use of Model Checking for the Bounded and Unbounded Verification of Nonblocking Concurrent Data Structures

Madhi Setayeshbarhaghi — Particle Swarm Optimisation for Edge Detection in Noisy Images

MSc Theses

Aun Iqbal—Development of OSIX – A Peering point in a Box

Buddika Talwatta—The Implementation of a hierarchical navigation system for a mobile robotic vehicle

Wei-Chuan Lin—Exploiting Radio Irregularity in Wireless Networks for Automated People Counting

Hugh Davenport—Implementation and Evaluation of Security Protocols in E-Commerce Applications

Dayna-Maree Kivell—Microstructural Control of ZnO Films Deposited by RF Magnetron Sputtering for Ultrasound Transducers

Abigail Rajendran—Determining the viability of the use of magneto-rheological fluid in a low cost stroke rehabilitation device

Amanda Holdaway

Canterbury

News

Computer Science Club

The computer science club for Year 7–10 school students we piloted last year has expanded into four clubs. Students learn programming, but there is also a focus on broader CS topics and a badge system to recognize achievements, with an emphasis on communication skills to encourage them to have a broader background. This helps make the club scalable, as experienced students mentor new ones. We are documenting the club so that others can run their own versions.

More info: http://www.cosc.canterbury.ac.nz/csclub/

Software Engineering

In December Canterbury's new B.Eng. in Software Engineering degree was approved, and this year students have been able to enrol in the degree.

Appointment

Matthias Galster joined the Department as a Lecturer in January. He is from the Software Engineering and Architecture group at the University of Groningen, Netherlands, and his research is in Software Engineering.

Visitors

Helena Szczerbicka, University of Hanover, Germany, is currently visiting on an Erskine fellowship.

Yongbai Lee, Korea, is working with **Tim Bell** and his CS Education research group.

Awards

Andy Cockburn was awarded the College of Engineering Research Award.

Tim Bell received the ABZ "Ehrenmedaille" (medal of honour) from ETH University in Switzerland for his "fundamental contribution to computer science education" through the Computer Science Unplugged project (joint with Mike Fellows and Ian Witten). The presentation was part of the Swiss Day for teaching informatics.

More info: http://www.abz.inf.ethz.ch/abz-ehrungen



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PhD student **Philip Buchanan** received the Best Poster award at the Image and Vision Conference NZ 2012 held at Dunedin in November.

Computer Science PhD student **Stephen Fitchett** will receive a Best Paper Award and **Joey Scarr** an Honourable Mention award at CHI 2013 in Paris in May.

PhD Thesis

Moffat Mathews—Multiple adaptable pedagogical strategies in intelligent Tutoring Systems

Gillian Clinton

Waikato

News

Code Camp helps train a new batch of Code Avengers

About 48 Year 9 and 10 students learnt computer programming basics at the three-day Code Camp 2012, run at University of Waikato by Computer Science PhD student **Michael Walmsley**.

More info: www.codeavengers.com

Road safety bear gets phone app

Ruben the Road Safety Bear now has his own Android phone app, thanks to work by a group of CS students. **Jamie Killen, Lifu Sun, Nigel, Pirikahu, Ashish Mathi** and **Wanying Yang** produced a set of simple Android-based games for kids. They are now available from the Google Playstore.

Students create app to print photos from your phone

Another group of senior CS students has developed a phone-based photo printing app for the US pharmacy chain Walgreens, thanks to support from MEA Mobile, one of New Zealand's top mobile application developers.

Flax Language Learning - Chinese and English videos

A series of videos in Chinese and English has been launched on YouTube and the Chinese video-hosting service Youku as part of the innovative FLAX language learning tool being developed by the Digital Libraries group at the University of Waikato.

More info: Youtube channel called FLAXLanguageLearning http://www.youku.com/playlist_show/id_18115224.html.

Pre-release versions of OpenPAT version 3 were released on www.OpenPAT.org in April and have already been downloaded around the globe. Further releases are expected soon.

Appointments

Bernhard Pfahringer was appointed Chair of Department from January.

Ryan Ko joined the Computer Science Department in December as a Senior Lecturer.

Tomás Garcia Ferrari joined the Computer Graphics Design staff in November as a Senior Lecturer.

Simon Spacey joined the Computer Science Department in November as a Senior Lecturer.

Grants

The IT4SE (IT for Smart Energy Generation and Use) project has gained funding for a second two-year term from the German Federal Ministry of Education and Research (BMBF). During the first two years we hosted Masters and PhD students from the University of Augsburg. We also hosted a number of workshops at Waikato and Germany.

Awards

Steve Reeves has joined the editorial board for Innovations in Systems and Software Engineering: A NASA Journal.

Mark Apperley received the John Hughes Distinguished Service Award, presented biennially by the Computing Research and Education Association of Australasia (CORE), at the ASCW conference in Adelaide in February.

Seminars

Sam Sarjant, Research Fellow, UoW.

Policy Search Based Relational Reinforcement Learning using the Cross-Entropy Method

Sahar Mohajerani, Chalmers University, Sweden.

On Compositional Supervisor Synthesis for Discrete Event Systems

Helen Lynch, UoW Library.

What is an ORCID and why should I get one?

David Pearce, Victoria University, Wellington.

The Whiley Programming Language: Design & Implementation

Gian Perrone, PhD, University of Copenhagen, Denmark.

Bigraphical reactive systems for domain-specific modelling languages

Dino Uenco, Irstea Institute, Pompellier

Mining Moving Objects: Challenges and Directions

Simon Spacey, University of Waikato.

OpenPAT: Analysing Programs the Easy Way

Carlos Soares, University do Porto, Portugal.

Predicting the rankings of financial analysts: an application of label ranking methods

Michail Vlachos, IBM Research Zurich.

How difficult is a foreign-language document?

Alyona Medelyan, Pingar, Auckland.

A research-driven start-up: A story by an ex-Waikato PhD student



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Visitors

Jennifer Whisler, Fulbright Scholar from US, is working with the Greenstone and FLAX projects in the Digital Library Lab from March-December.

Carlos Soares, University of Porto. February.

Dino Ienco, University of Montpellier. February-April.

Michail Vlachos, IBM Research Zurich. December.

Xipeng Qiu, Fudan University, China. November.

PhD Theses

Azmi bin Mohd Yusof—Supporting focus and context awareness in 3D Modeling using multi-layered displays

Edmond Yiwen Zhang—Improving bag of words model for object categorization

MSc Thesis

Chris Deaker—Adaptive interfaces for massively multiplayer online games

Massey

News

The IT group at the Albany campus has joined the School of Engineering and Advanced Technology and is now part of the CSIT cluster within the school.

Appointments

Henning Koehler has joined the CSIT cluster.

Ruili Wang has moved from Palmerston North to Albany to join the IT group there.

Two new staff members, **Arno Leist** and **Teo Susnjak**, have joined the IT group at Albany, while **Henning Koehler** has joined the CSIT cluster in Palmerston North.

Visitors

Manfred Meyer, Westfalische Hochschule, University of Applied Sciences in Bocholt, visited during January–February. He contributed to a student project and started collaboration with Jens Dietrich.

Tom Gallagher, visiting from the Department of Applied Computing & Electronics at the University of Montana in Missoula, has started research collaborations with staff from SEAT and the Health Informatics group in the College of Business. He is also teaching part of one of our papers while at Massey.

PhD Thesis

Graham Jensen —A study of software component system evolution

Hans Guesgen

Lincoln

News

Lincoln is proposing a hefty institutional Qualifications Reform. The implications are yet to be fully realised, or CUAP approved, but the effects on the Department of Applied Computing are doubtlessly substantial. Gone will be the B Software & IT and related qualifications. Discussions between faculties and the Department are ongoing regarding IT majors in the few remaining focussed degrees. The University aims to implement reforms from 2014.

Mohammad Daradkeh presented a paper "Supporting Informed Decision-Making under Uncertainty and Risk through Interactive Visualisation" at the Australasian User Interface Conference 2013 in Adelaide. Co-authored with **Clare Churcher** and **Alan McKinnon**, the paper is published in *Australian Computer Science Communications*, Vol 35(5), pp. 23-32.

Scholarship

Mark Churcher was awarded a Summer Scholarship from NZ Agriseeds and worked to develop a seed counting solution using image processing techniques. Mark was supervised by Keith Unsworth and Stuart Charters.

Internship

Arnaud Chen-Yen-Su will join the Department as an intern from the end of May 2013. Arnaud is a student on Reunion Island and will be working on a project with our RoboTable and a Raspberry Pi, with **Keith Unsworth** and **Stuart Charters.**

PhD Theses

Yanbo Deng—Designing a framework for end user applications

Nassiriah Shaari—Customisation of Web Content for Desktop and Mobile Devices

MS & IT Thesis

Leshi Chen—Supporting distributed multiplayer Robotable games

Sharon Long

Auckland

News

Student numbers are up again this year with 12% growth overall. There is ongoing development of the new Masters of Professional Studies programme with a launch planned in 2014 of Digital Security, and Computational Cognitive



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Systems. We are introducing a new accelerated pathway course for those doing NCEA Level Three in the new computing and programming achievement standards. A review was held on, and changes made to, the PhD provisional year assessment within the Department. A new student computing club has been established—CS@AU. Our Timeline Corridor (display) has been demolished but a replacement location has been identified in the renovated building.

Successes

Patrice Delmas has signed a contract between the IVS lab and the Special Military School of Saint-Cyr St Syr-Coetquidan to supply an embedded real-time 3D vision system for outdoor scene representation.

Giovanni Russello has been selected for SAVVY, a 2-day training session in media and communication skills for scientists.

Beryl Plimmer's student **Paul Schmieder** has been awarded a Microsoft Research Beijing internship.

Jim Goodman won the ASPLOS (Architectural Support for Programming Languages and Operating Systems) 2013 Most Influential Paper Award for "Transactional lock-free execution of lock-based programs".

Appointments

We welcome Emily Chen, Flavio Pileggi and Bok Suk Shin as postdoctoral fellows.

Events and Seminars

PhD candidate **Jinglin Zhang**, INSA Rennes
Implementation of Stereo Matching Using A High Level
Compiler for Parallel Computing Acceleration

Henri Prade, National Center for Scientific Research (CNRS) and Institut de Recherche en Informatique de Toulouse (IRIT), France

From (ana)logical proportions to IQ tests

Manuel Ujaldon, Nvidia CUDA Fellow

Programming GPUs with CUDA (full-day workshop)

David A. Wood, University of Wisconsin, Madison Scalable Cores and Caches for Power-Constrained CMPs

Andreas Rausch, Software Systems Engineering at the Technische University Clausthal

Case Studies in Model-Based software engineering

Cameron McLean, University of Auckland

A Pattern Language for Sharing Laboratory Science Practice

Ludwig Staiger, Martin-Luther-University Halle-Wittenberg *Oscillation-free epsilon-random sequences*

Maria A. Wimmer, University of Koblenz-Landau, Germany Concepts and solutions for pan-European interoperability in public procurement: the case of virtual company dossier

Sudheendra Kumar Pulla, University of Auckland

An Adaptive UI Automation System

Mark Titchener, University of Auckland

PERTECS, a Programmable Environment for Real-Time Emulation of Continuous Systems

Benny Chor, Tel-Aviv University

CS1001.py: A Topics Based Introduction to Computer Science

Brian Trammell, CSG, ETH Zürich The Open Internet Under Threat

Visitors

Georgianne Griffiths (Marie Curie Fellowship), University of Exeter, UK, visiting **Alexei Dru**

Amelie Cordier, LIRIS Laboratory, Lyon University, France, visiting **Ian Watson**

Noam Greenberg, VUW Wellington, visiting Andre Nies

Theodore Slaman, UC Berkeley, visiting Andre Nies

Henri Prade, University Paul Sabatier / IRIT, Toulouse, visiting **Sebastian Link**

Robert (Bob) Owen, School of Civil Engineering and Built Environment, Brisbane, visiting **Robert Amor**

Rossella Lupacchini, University of Bologna, visiting Cris Calude

Florent Lafarge, Geometrica Research Group, INRIA (France), visiting Georgy Gimel'farb

Damien Desfontaines, Ecole Normale Superieure, France, visiting **Cris Calude**

Brian Trammell, ETH Zurich, visiting Nevil Brownlee

Xu Zezhong Changzhou Inst. of Technology, China, visiting Reinhard Klette

Marc Jeanmougin, Ecole Normale Superieure, Paris, visiting Clark Thomborson

Himanshu Upreti, Indian Institute of Technology Guwhati, visiting **Cris Calude**

Mathieu Barnachon, LIRIS Laboratory, Lyon University, France, visiting Patrice Delmas

Yoran Le Bagousse, ENSICAEN (National Engineering School), Caen, France, visiting **Patrice Delmas**

PhD Theses

Yun-Bum Kim—Distributed Algorithms in Membrane Systems

Alexander Melnikov—Computability and Structure Mehwish Riaz—Maintainability Prediction for Database-Driven Software Applications

Sandino Morales Chavez — Vision-Based Driver

Muhammad Sulayman—Software Process Improvement for Medium and Small Software Development Organisations

Xiaofan (Emily) Chen—Extracting and Visualising traceability links between documents and source code

Reyhaneh Reyhani—Strategic Manipulation in Voting Systems

Muhammad Shaban Jokhio - Semantic Web Services

Heather Armstrong



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AUT

James P. Cross, Associate Provost & Senior International Officer, Champlain College

Saide Lo

News

AUT Space Station App wins NASA Challenge

An AUT University computer science team has won New Zealand's NASA Space Apps Challenge with a mobile phone application that allows users to share their sightings of the International Space Station.

New Zealand and the Beginnings of Radio Astronomy – A Process of Discovery

The Institute for Radio Astronomy and Space Research (IRASR) hosted a two-day conference in Orewa at the end of January.

Treat malware as biology to know it better – *New Scientist* (February issue)

Classifying different kinds of malware is notoriously hard, but crucial if computer defences are to keep up with the ever-evolving ecosystem of malicious programs. Treating computer viruses as biological puzzle could help computer scientists get a better handle on the wide world of malware. **Ajit Narayanan** and **Yi Chen**, converted the signatures of 120 worms and viruses into an amino acid representation.

Upcoming Conference

Australasian Computer Science Week is a multi-conference event with a collection of some 14 different conferences and workshops aimed at supporting educators and researchers in the region and gathering high-quality contributions to the several computing research sub-disciplines.

More info: http://www.aut.ac.nz/acsw2014.

Appointments

Weiqi Yan, Jiamou Liu and Quan Bai have been promoted to Senior Lecturer.

Award

Nathan Scott has received a Vice Chancellor's award.

Visitors

Vu Hai Quan, University of Science, VNU-HCM, Vietnam Tran Minh Tuan, University of Science, VNU-HCM, Vietnam

Julong Pan, China Jiliang University, China
Xiangping Wu, China Jiliang University, China
Kangjian Wang, China Jiliang University, China
Daniela Damian, University of Victoria, Canada
Didar Zowghi, University of Technology, Sydney, Australia
Martin Shepperd, Brunel University
Carolyn Mair, University of the Art London
Roisin Donohoe, Director for International Development

from Telecom SudParis