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Vision
Recognised for inspiring and developing future leaders who solve society’s infrastructure challenges.

Mission
To inspire and lead the transformation of societies through the provision of world-class teaching, research and engagement.
I am very pleased to present to you our Department Annual Report. 2013 was an immensely successful year for our Department. Since its formation in 2011, we have continued to integrate and align the activities of our three disciplines to become a globally engaged and comprehensive research-intensive department focused on addressing the modern infrastructure challenges faced by society today.

With the Department’s five-year (2013-2017) strategic plan underway, we hope to cement our role and strengthen our influence in addressing society’s major social, economic and environmental challenges.

Combining Civil Engineering, Environmental Hydrology and Water Resources, and Geomatics expertise in one department provides us with a broad intellectual platform from which we can pursue unique opportunities. Our aspiration to provide leadership and influence directs our strategic plan. In 2013, our plan has supported the realisation of strong student numbers and new initiatives to foster greater symbiosis with industry and increased engagement with international colleagues and industries. These initiatives create opportunities for staff and students to benefit from valuable knowledge-transfer activities. In particular, with the establishment of the Department Engagement Committee, we envision further development in our engagement activities.

Significant engagement activities in 2013 include:

- Role of academic leader and involvement in setting up of the Australia Disaster Management Platform in collaboration with other departments, faculties across universities, and in partnership with IBM Australia;
- Hosting a new Centre for Disaster Management and Public Safety (CDMPS), a significant and strategic move supported by the University;
- As part of the first activity under the Centre, the University has signed a Memorandum of Understanding with the Association of Public Safety Communications Officials International to expand collaboration in disaster management research and training;
- Hosting visitors, ranging from industry stakeholders and academic experts from around the world, particularly large delegations from the University of California, and delegations from China, India and Malaysia, fostering new relations and building on knowledge sharing.

Our department continues to perform strongly on the research front and it gives me great pleasure to highlight some notable achievements below:

- Selected grants and awards including ARC grants for Assoc. Prof. Nelson Lam, Prof. Priyan Mendis and Dr Yongping Wei (Future Fellow), Victorian Fellow-

‘In 2014, our aim is to continue to work towards enhancing our new Infrastructure Engineering identity and to continue to improve our visibility and profile as an integrated discipline, both within the University community and also among our global peers.’
ship for Dr Meenakshi Arora, Dyason Fellowship for Dr Lihai Zhang, Early Career Research Grant for Dr Mohsen Kalantari;

• 55 research grants, including 29 new grants and 26 ongoing grants;
• Around 250 publications;
• A successful Endeavour Expo with IE contributing 37 project exhibitions;
• A successful Postgraduate Conference designed and conducted by our graduate society (GIES);
• Largest number of successful RHD (PhD and MsC);
• Record intake for Masters programs with 283 students enrolled in 2013
• Numerous awards recognising the work of both staff and students: Eureka Prize, Best Paper Awards, Victorian Spatial Excellence Award, Education and Professional Development Asia-Pacific Spatial Excellence Award by SSSI.

In terms of teaching and learning, we successfully completed the Engineers Australia Accreditation Review, and most of our Master of Engineering degrees boast full EA accreditation.

In 2014, our aim is to continue to work towards enhancing our new Infrastructure Engineering identity and to continue to improve our visibility and profile as an integrated discipline, both within the University community and also among our global peers. We will continue to provide a productive and inclusive environment for all staff and students so that we can continue to attract high-quality researchers, academic staff and students – the core of our Department.

The success of our Department is surely a reflection of the people and industries. We are ably supported and assisted in our vision by our International Advisory Group (IAG). They have helped us better understand and align our strategies with the market. We appreciate the IAG’s input and would like to thank them for their enthusiastic and insightful contribution and support. Particular thanks are due to Mr Tom Fricke who has served for the past three years as the Chair of IAG and who recently retired at the end of 2013. We wish him the very best in his future endeavours and welcome Mr Chris McRae as our new IAG Chair and Mr Gary Liddle as new Deputy Chair.

I would also like to acknowledge the contribution of all academic and research staff, professional colleagues, honorary colleagues and graduate students. In particular, Prof. Andrew Western (Deputy Head); all three Discipline Leaders for their leadership and hard work: for Civil Engineering – Prof. Priyan Mendis (outgoing at the end of May 2013), Assoc. Prof. Colin Duffield (incoming); For Geomatics – Prof. Stephan Winter; for Environmental and Hydrology Resources – Assoc. Prof. Mike Stewartson.

It is also particularly heartening when the contributions of our colleagues are recognised by the broader University community, as was the case with Prof. Ian Williamson, who received an Honorary Doctorate of Surveying from the University, and also was awarded the position of Emeritus Professor.

I would also like to acknowledge Ms Rose Macey and Ms Pauline Woolcock for their administration and executive support and also Ms Chris Charman and Ms Jenny Smith for their professional support. Without such dedicated and hardworking individuals, the operation of the Department would be nowhere as smooth, and events such as the IE Postgraduate Conference would not have been the success that it was. Thanks to our teaching and learning coordinators, Ms Bianca White and Ms Leonie Elder for their hard work and excellent teaching coordination, and also to Ms Pamela Chew for her assistance in contributing to our monthly newsletter and this report.

Lastly, special thanks to all professional colleagues and senior executives across the University and, in particular, the School of Engineering, for their ongoing support and contribution.

Abbas Rajabifard
Head of Department
The Department continues to benefit from the guidance of its Industry Advisory Committee, which meets three times a year. In 2013 our members were:

**Industry:**
- Tom Frick, GHD (Chair 2011-2013),
- Chris McRae, DTPLI (Incoming Chair 2014)
- Mark Allan, Billard Leece Partnership
- Clement Michel, Yarra Trams
- Peter Ryan, Leighton Contractors
- Gary Liddle, VicRoads
- Ian Rutherfurd, DEPI
- Alice O’Connor, Geomatic Technologies
- Glenn Cockerton, Spatial Vision Innovations
- Susanna Young, EPA Victoria
- Dominic Arcaro, CBRE
- Gary Nairn (The Hon), Former Federal MP, Consultant to AAM Group
- Joseph Correnza, Arup
- Rory Nathan, Sinclair Knight Merz (SKM)
- Dean McIntyre, (GHD rep. 2014)

**University:**
- Abbas Rajabifard, Head of Department
- Peter Scales, Deputy Dean, School of Engineering
- Andrew Western, Deputy Head of Department
- Colin Duffield, Incoming Discipline Leader, Civil Engineering
- Stephan Winter, Discipline Leader, Geomatics
- Michael Stewardson, Discipline Leader, Env Hydrology & Water Resources

**Secretary:** Pauline Woolcock
Leadership
Prof. Abbas Rajabifard, Head of Department
Prof. Andrew Western, Deputy Head of Department
Prof. Stephan Winter, Discipline Leader, Geomatics
Prof. Priyan Mendis, Discipline Leader, Civil (to June 2013)
Assoc. Prof. Colin Duffield, Discipline Leader, Civil (from June 2013)
Assoc. Prof. Michael Stewardson, Discipline Leader, Environmental Hydrology and Water Resources

Academic Staff (T&R and Research Only)

Civil
Assoc. Prof. Lu Aye
Assoc. Prof. Helen Goldsworthy
Dr Chris Hale
Prof. Ian Johnston
Assoc. Prof. Nelson Lam
Dr Guillermo Narsilio
Dr Cuong Nguyen (until July)
Dr Tuan Ngo
Assoc. Prof. Russell Thompson
Dr Jonathan Phuong Tran
Mr Yi Yang
Dr Sam Yuen
Dr Lihai Zhang

Environmental Hydrology & Water Resources
Dr Meenakshi Arora
Dr Justin Costelloe
Dr Siobhan De Little
Dr Biju George
Prof. Stanley Grant
Prof. Hector Malano
Dr Kim Miller
Assoc. Prof. Graham A Moore (Teaching Specialist)
Dr Murray Peel (Future Fellow)
Dr Tim Peterson
Mr Robert Pipunic
Dr Dongryeoel Ryu
Mr Lionel Siriwardena
Dr Dominic Skinner
Dr Chun-Hsu Su
Dr Yongping Wei (Future Fellow)
Mr Rodger Young

Geomatics
Dr Meenakshi Arora
Dr Justin Costelloe
Dr Siobhan De Little
Dr Biju George
Prof. Stanley Grant
Prof. Hector Malano
Dr Kim Miller
Assoc. Prof. Graham A Moore (Teaching Specialist)
Dr Murray Peel (Future Fellow)
Dr Tim Peterson
Mr Robert Pipunic
Dr Dongryeoel Ryu
Mr Lionel Siriwardena
Dr Dominic Skinner
Dr Chun-Hsu Su
Dr Yongping Wei (Future Fellow)
Mr Rodger Young

Emeritus Professors
Prof. Tom McMahon
Prof. Len Stevens
Prof. Ian Williamson

Professorial Fellows
Prof. Ian Bishop
Prof. Clive Fraser
Prof. Graham Hutchinson
Prof. John Langford

Senior Tutors
Dr Elisa Lumantarna
Dr Massoud Sofi
Mr Kenny Tan

Administration
Ms Rose Macey, Executive Assistant to Head of Department
Ms Pauline Woolcock, Executive Assistant to Deputy Head of Department
Ms Bianca White, Teaching Liaison Officer
Ms Leonie Elder, Teaching Liaison Officer
Ms Corine Skey Nankoo, Australia China Centre on Water Resources Research
Ms Chris Charman, Administration Assistant
Ms Jenny Smith, Administration Assistant
**University’s First Geothermal System**

In April, power at the Campus Sustainability Centre began generation at the University’s first shallow geothermal system. Direct geothermal energy systems use the earth as a heat source or sink to heat and cool buildings. They use considerably less electricity than conventional systems and, by reducing electricity demand, they can significantly reduce Australia’s electricity use and carbon footprint. The geothermal system is part of a bigger project in the geotechnical group at Infrastructure Engineering which is being funded by the Department of Primary Industries and supervised by Prof. Ian Johnston and Dr Guillermo Narsilio.

**ADMP and new Centre for Disaster Management and Public Safety (CDMPS)**

In March, Prof. Abbas Rajabifard, was announced as the academic lead for the Australia Disaster Management Platform (ADMP). ADMP is a cooperative venture between the University of Melbourne and IBM Australia.

In November, APCO International and the University of Melbourne entered an agreement to work cooperatively in the development of training, higher education, and research in the public safety realm. The University of Melbourne also approved the establishment of a Centre for Disaster Management and Public Safety which will be led by the Department of Infrastructure Engineering.

**3D Cadastre workshop at Victorian Spatial Summit**

In September, at the Victorian Spatial Summit, the 3D cadastre team led by Dr Mohsen Kalantari hosted a workshop. The session, titled ‘Positioning for the future from ePlan to 3D Cadastre’, was a collaborative workshop between the University of Melbourne, Department of Transport, Planning and Local Infrastructure (DTPLI), Geometri, and AAM. The workshop was chaired by Mr Brian Marwick, who is the industry adviser to the 3D cadastre team. PhD candidates who presented at the Summit received positive feedback from participants.
Steel Design Week 2013
Steel Design Week took place from 27 to 30 August. During this annual event, students undertook a steel-design exercise based on a real-life project as part of assessment tasks for the subject Structural Theory and Design 3. The Steel Design Week has always been a great success over the years, which is attributed to the contribution from URS Corporation; an engineering, design and construction firm which provides real-life projects, expertise and personnel every year.

Our thanks go to Mr Martin Hewitt and Mr Andrew Tshaikisky from URS Corporation, Prof. Priyan Mendis, Prof. Len Stevens and all other staff and tutors who have contributed to this event. Dr Elisa Lumantarna who takes an active role in the Steel Design Week says the positive attitudes of the students and the supervisory team are encouraging for the continued success of the event.
The 3rd IE Postgraduate Conference was held on November 15. It was opened by the Head of Department, Prof. Abbas Rajabifard and the Dean of MSE, Prof. Iven Mareels. Over 130 delegates enjoyed 90 presentations across nine streams. It was encouraging to see a great range of high-quality presentations, reflected in the positive feedback of the day. The conference is always a great opportunity to acknowledge excellence in research in the department. Congratulations to Yuan Li, Muneeb Ali and Jonathan Arundel for winning the Best Journal Paper Awards for 2013.

Also, congratulations to Ahmad Ridhwanuddin Tengku, Iain Lawrie, Harry Virahsawmy, Andrej Peisker, Camila Alvarez and Philip Christopher for winning the Best Presenter Awards, as voted by the audience on the day.

This year’s conference exemplified the diversity of research in IE, whilst also bringing together diverse research areas towards common goals. During the conference, we held an engaging forum on urban sustainability. It was wonderful to have an exchange of ideas amongst the different arms of research in IE which will hopefully lead to new research initiatives.

The day concluded with an enjoyable dinner at the Rydges Hotel. In light of typhoon Haiyan in the Philippines, we raised $385 to support RedR in delivering relief projects to the affected region.

Thanks are due to the graduate society, GIES, for its role as the organising committee and putting together another successful conference, and also to the taskforce comprising support staff who helped with preparations.
Promotions

Dr Lihai Zhang
Senior Lecturer

Dr Justin Costelloe
Senior Research Fellow

Appointments

Dr Meenakshi Arora
Lecturer in Infrastructure Engineering

Dr Russell Thompson
Associate Professor in Transport Engineering

Dr Nicole Ronald
Research Fellow in Collaborative Transportation

Mr Yi Yang
Research Fellow, NHMRC project grants (Bridging the gap between cartilage biology and osteoarthritis risk prediction)

Dr Yiqun (Benny) Chen
Research Fellow, Spatial Technology (Intelligent Disaster Decision Support System, Australian Urban Research Infrastructure Network)
Prof. Ian Williamson receives Honorary Doctorate

Professor Ian Williamson was awarded an Honorary Degree of Doctor of Surveying on 5th of August, an honour bestowed only three times before.

Prof. Williamson has had a long and illustrious career in surveying and spatial sciences and his contributions to the industry has been recognised at many levels both locally and internationally, including being elected as a Fellow of the Academy of Technological Sciences and Engineering Australia, and being appointed as a Member of the Order of Australia. He has also been awarded the Centenary Medal for service to Australian society in research and Geomatics engineering and surveying. He has served on different international spatial organisations and chaired committees for the United Nations and World Bank.

He has received numerous prizes and awards during his career including being appointed a Member of the Order of Australia and the Centenary Medal for service to Australian society in research and geomatics engineering and surveying. The award ceremony was followed by a dinner attended by his family, close friends, and colleagues from the University where again his great contribution was celebrated.
Dr Meenakshi Arora was awarded a Victoria Fellowship by Louise Asher, Victorian Minister for Innovation, Services and Small Business, at an awards presentation at Parliament House.

Mr Cliff Ogleby was awarded with the Education and Professional Development Asia-Pacific Spatial Excellence Award 2012. This award is conferred annually on a ‘practising academic who has substantially contributed, through teaching, research and publication or professional activities, to the study and promotion of surveying and spatial sciences, and to recognise and promote excellence for practising academics in the fields of surveying and spatial science’.

Dr Guillermo Narsilio was awarded the ISSMGE Outstanding Young Geotechnical Engineer Award of the International Society of Soil mechanics and Geotechnical Engineering (ISSMGE), the parent society in Geomechanics, which has over 20,000 members from over 130 countries. The award was presented in Paris, France, in September. Guillermo is the first ‘Australian’ (Argentinean) to receive this quadrennial award.

Dr Lihai Zhang was awarded the Dyason Fellowship in August 2013. This Fellowship assists University staff to undertake (or host) a short-term international visit that fosters significant and lasting research collaborations with leading international researchers, their academic networks and consortia.

Dr Maria Vasardani, Prof. Stephan Winter, Dr Martin Tomko (from Computing and Information Systems) and Dr Sabine Timpf (Germany) received the Best Paper award at the biennial conference on Spatial Information Theory (CO-SIT), a leading conference on spatial information science, for their paper ‘From Descriptions to Depictions’. The paper suggests a conceptual framework to automatically interpret a verbal place description into a configurational graph.

Assoc. Prof. Colin Duffield and Dr Chris Hale received the Australia Indonesia Research Award from the Victorian Government. This award recognised their feasibility study for the establishment of the Indonesian Centre for Infrastructure Policy Studies (3IDE).

Dr Mohsen Kalantari was awarded an Early Career Research Grant.

Prof. Stephan Winter won an ISPRS Scientific Initiative project (see http://www.isprs.org/), an initiative with Monika Sester (Hannover) and Alper Yilmaz (OSU).
Dr Mihai Tanase is a recipient of the 2013 Cornelius Regan Trust Award. Dr Tanase will undertake algorithm development work at Boston University under the supervision of Assoc. Prof. Robert Kennedy, one of the world leading experts in trajectory-based analysis.

Dr Tuan Ngo was presented with the Simon Perry Award for the best paper at the 10th International Conference on Shock and Impact Loads on Structures. The paper was also selected to be published in the next issue of the ASCE Journal of Performance of Constructed Facilities.

Dr Tuan Ngo and his team, comprising Prof. Priyan Mendis, PhD students Damith Mohotti and Eric Yang, research fellows Dr Jonathan Tran and Dr Raymond Lumantarna, won the prestigious Eureka Prize for Outstanding Science in Safeguarding Australia for their project on Armoured Vehicles for the Defence Materials Technology Centre.

Assoc. Prof. Allison Kealy was awarded the SSSI Educational Development Award at the 9th Annual Victorian Spatial Excellence Awards function. This is in recognition of Allison’s dedication and contribution to education and spatial industry.

Assoc. Prof. Michael Stewardson, Dr Kim Miller, Dr Siobhan de Little and Dr Angus Webb were the recipients of the award for Building Knowledge in Waterway Management at the inaugural River Basin Management Society Awards night. The award was presented by the Victorian Minister for Water, Hon. Peter Walsh, to all of the partners of the Victorian Environmental Flows Monitoring and Assessment Program (VEFMAP).

Dr Dongryeol Ryu is one of three recipients of the Modelling and Simulation Society of Australia and New Zealand Inc (MSSANZ) Early Career Research Excellence (ECRE) Award presented at the 20th International Congress on Modelling and Simulation in Adelaide in December.

Assoc. Prof. Nelson Lam received the Award for Teaching Excellence from the Structural Branch of Engineers Australia.
Congratulations to Civil Engineering graduate, **Jolan Price**, who has received a Cambridge Australia Scholarship (CAS Honorary Award – the Rae and Edith Bennett Travelling Scholarship) to study a Master of Philosophy in Engineering for Sustainable Development. Jolan graduated with a Bachelor of Civil Engineering last year.


Two of our PhD candidates, **Camila Alvarez** and **Danuta Kucharska**, won 2nd place at the MSSI Festival of Ideas competition on 2 October. Finalists were asked to ‘Imagine Australia in October 2033: the transition to a healthy, just, and sustainable post-carbon future is well underway and there is real hope that catastrophic climate change will be avoided. How did this happen? What were the key obstacles and how were they overcome?’

**Camilla Alvarez** won one of the best student presentation prizes at MODSIM in Adelaide in December for her paper ‘Impact of observation error structure on satellite soil moisture assimilation into a rainfall-runoff model’. There were over 800 papers presented there.

**Quynh Nguyen** won the Best Presentation and Paper Award at the 4th International Nanotechnology and Smart Materials Conference. Her paper was on ‘Use of Nanoclay as a Fire Retardant Material’ (for Composite Building Facades). This was especially impressive since world leaders (including two editors-in-chiefs of Materials journals with high impact factors) attended the conference.

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AWARDS – STUDENTS
The Endeavour teams from the Department of Infrastructure Engineering had the opportunity to pitch to industry representatives at the Endeavour Industry and Awards night in October. The following IE Student Projects were awarded the top three prizes:

**CVEN 32: Effect of catchment routing and snowmelt on peak streamflows**

Student: Matthew Scorah  
Supervisors: David Stephens, Rory Nathan

In modelling extreme flood events, catchment routing and snowmelt can have an appreciable impact on the timing and magnitude of peak flows. This project aims to explore the impact of these factors through the construction and validation of catchment models for the Mitta Mitta river area. The effect of separating routing into catchment and channel components is investigated through the construction of a Run-off Rooting Basic (RORB) model for combined routing and a Unified River Basin Simulator (URBS) model for split routing. Additionally, snowpack modelling will be undertaken in RORB to estimate the influence of snowmelt on peak flows.

**CVEN 1-1: Innovative, locally appropriate and sustainable decentralised infrastructure development in peri-urban areas**

Students: Jenny Butcher, Martin Kinsey, Bas Simpson, James Chesterfield  
Supervisor: Graham Moore

In developing countries, the dispersion of urban growth to the rural fringes of cities, ‘peri-urbanisation’, has given rise to many challenges for the provision of centralised infrastructure. Interestingly, this is not a phenomenon unique to the developing world; established cities in western countries are also dealing with challenges associated with urban sprawl and decentralised infrastructure provision. The goal of this project is to conduct a review of successful decentralised infrastructure projects in the developed world in order to compile useful ‘lessons learnt’ that may inform engineering projects in the world’s poorest peri-urban areas. The focus of the study will be on identifying innovative, locally appropriate, and sustainable solutions.

**CVEN 55: Assessment of production data for wind farms in the NEM**

Student: Elena Basic  
Supervisor: Christian Peake

Wind energy has experienced significant growth globally over the last decade and is likely to contribute the majority of renewable energy generated under Australia’s Renewable Energy Target (RET). The performance of a given wind farm depends on a number of factors including prevailing wind resources, turbine availability, and degree of grid congestion. This project uses publicly available wind and Australian Energy Market Operator (AEMO) dispatch data for selected wind farms to generate wind farm power curves, assess the performance of wind farms, and generate a wind farm production index for the NEM.
Chris Lester: Recipient of 2013 Thornton-Smith Medal

Chris Lester began his career as a cadastral surveyor in the Department of Crown Lands and Survey after graduating from the University of Melbourne in 1976 with a Bachelor of Surveying. He gained his registration as a Licensed Surveyor in 1978. Subsequently, after completing a Master of Environmental Studies degree in 1983, Chris worked for more than 12 years in coastal management and planning in the predecessors of the Department of Environment and Primary Industry.

At the end of 1997, Chris joined Land Victoria where initially he was heavily involved in project management, setting up the project management framework for various major projects, including Standard Parcel Identification and Valuation Best Practice. Chris undertook a review of the Geographic Place Names Act before it was implemented and he started the Reform of Land Surveying in Victoria Project in 1999.

Chris commenced work on the Electronic Conveyancing Project early in 2000. He took over the role of Project Manager in mid-2000 and led it through its formative years until early 2003.

Chris then managed LANDATA where he was responsible for retendering the data brokers’ contracts and improving the LANDATA products, its customer and stakeholder interfaces and its contract and IT management.

In November 2005, Chris became the Manager for SPEAR (Surveying and Planning through Electronic Applications and Referrals) in Land Victoria. The initial task was to finalise the pilot program for SPEAR and start its formal roll-out through all the applicant, council and Referral Authority organisations. This has now largely been achieved with nearly 150 surveying organisations, 200 surveyors, 76 of the 79 councils and over 50 Referral Authorities using SPEAR for electronically processing more than 95% of all subdivision applications.

SPEAR was extended in 2012 to allow surveyors to lodge applications, with surveying content for the Transfer of Land Act and for Crown land, with Land Victoria. The final major extension of SPEAR to allow lodging parties to compile and submit applications to Land Victoria under the Subdivision Act is now being planned.

In 2008, Chris became involved in the ePlan project and with others in Victoria and interstate has enabled the Intergovernmental Committee on Surveying and Mapping to finalise, in late 2010, the ePlan Protocol, which allows for uniform ePlans to be developed and lodged in all Australian jurisdictions. SPEAR has subsequently been enhanced in 2013 to allow ePlans to be lodged as the formal Plan of Subdivision and Land Victoria is now working with the surveying community and their software developers on the integration of the use of ePlans into the Victorian subdivision system.
The following students have successfully completed their graduate studies. Many of our PhD and Masters by Research students, together with a cohort of coursework Masters students, graduated at conferral ceremonies in 2013.

Completed
Ali Aien, PhD
Yiqun Chen, PhD
Glen Curry, MEngSc
Hamed Olfat, PhD
Kathryn Ackland, PhD
Kenny Tan, MGeom
Lucy Finger, PhD
Marcos Nino-Ruiz, PhD
Mohammad Fardipour, PhD
Paul Box, MAppSc
Mohammad Malana, PhD
Brian Marwick, MGeom
Nilofer Tambuwala, PhD
Muyiwa Agunbiade, PhD
Seona Candy, PhD
Yi Yang, PhD
Lin Jie Guan, PhD
Massoud Sofi, PhD
Jianlei Sun, PhD
US Student Delegation
The Department hosted a group of undergraduate students from various University of California campuses. This study tour was led by Prof. Stan Grant and was successful in engaging these young students in experiences in water research in Australia.

Malaysian Delegation
We hosted a high-level delegation from Malaysia, comprising 17 representatives across federal and state government departments including representatives from the Departments of Lands and Mines, Survey and Mapping and Finance; Malaysia’s Mass Rapid Transit Corporation and the Iskandar Development Region (Southern Malaysia). Representatives were mostly interested in learning more about the Department’s 3D Land and Property Management project as well as research on marine cadastres.
Chinese Delegation
The Department hosted 18 members of a trade delegation comprising government officials from the Ningxia Hui Autonomous Region in China. Their visit focused on relevant policies, regulations, and management systems of land and mining rights. CSDILA put together a seminar for the delegates and spoke on current land administration systems in Australia, electronic land administration systems and 3D cadastre, 3D land and property information visualisation, as well as the institutional aspects of 3D land and property information.

Alumni Visit
Fourteen alumni members from the 1963 Civil Engineering cohort (above) visited the Department. They were taken on a tour of Old Engineering and updated on research priorities and also shown the wet labs and structures lab. For many of them, this was the first time they have seen each other since graduating and they thoroughly enjoyed the return to campus and the afternoon tea.

Indian Delegation
A delegation of Indian federal parliamentarians visited the Department. The Australia-India Institute in collaboration with the Department of Foreign Affairs and Trade and the Australia India Council hosted their visit to Melbourne. The delegation included MPs from various states in India: Madhu Yakshi (Andhra Pradesh), Kalikesh Singh Deo (Odisha), Shivkumar Udasi (Karnataka), Dr Sanjay Jaiswal (Bihar), Simrat Kaur Badal (Punjab) and Ramesh Chandran (Centre for Policy Research). The visit included a tour of the stormwater harvesting site at Fitzroy Gardens hosted by the Melbourne City Council.
The Department was privileged to welcome the following visitors in 2013:

Prof. Stig Enemark, Aalborg University, Department of Development and Planning, Denmark

Dr Daniel Steudler, Swiss Federal Directorate for Cadastral Surveying, Switzerland

Prof. Dr. Sabine Timpf, University of Augsburg, Germany

Dr Dongsheng Gu, Assoc. Prof., School of Civil and Environment Engineering, Jiangnan University, Wuxi, China

Mr Arbaz Khan, Research Student, IIT Kanpur, India

Mr Shubham Jain, Research Student, IIT Bombay, India

Prof. Sudheer K P, Dept. of Civil Engineering, Indian Institute of Technology, Madras, India

Assoc. Prof. Wang Jing, Wuhan Polytechnical University, China

Prof. Mauricio Sánchez Silva, Department of Civil & Environmental Engineering, Universidad de Los Andes, Bogatá, Colombia

Assoc. Prof. T. Matthew Evans, School of Civil and Construction Engineering, Oregon State University, USA

Dr Guenther Retscher, Department of Geodesy and Geoinformation, Vienna University of Technology, Austria

Mr Kaighin McColl, Sinclair Knight Merz (SKM), USA

Assoc. Prof. Alexander Klippel, Geography, Penn State University, USA

Mr Gao Peng, Visiting Scholar, Chinese Academy of Science, Yangling, China

Assoc. Prof. Yonglan Xiong, Scientific Information Centre for Resources and Environment, Chinese Academy of Sciences, Lanzhou, China

Mr Vasco Diogo, Researcher and PhD student, SPINlab-Spatial Information Laboratory, Faculty of Economics and Business Administration, Brie Universteit, Amsterdham

Ms Alice Robinson, PhD Student in Environmental Engineering, University of California, Irvine, USA

Mr Lukas Bähler, University of Applied Sciences and Arts, Northwestern Switzerland FHNW, Muttenz

Mr Zhaokun Zhu, National University of Defense Technology, Changsha, Hunan province, China

Ms Weiwei He, Postgraduate, the Institute of Project Management and Construction Technology, Department of Hydraulic Engineering, Tsinghua University, China

Ms Karine Halbert, Engineering Student, Ecole Centrale de Nantes, France

Mr Lui Jia, School of Science & Technology, Jinan University, Guangdong, China

Prof. Antonio Krüger, German Research Center for Artificial Intelligence, Saarland University, Germany

Jing Wang, Qiaowen Lin, Zhixuan Yang

Antonio Krüger

Patrick Laube
Dr Patrick Laube, Geography, University of Zurich, Switzerland

Assoc. Prof. Wang Jing, Wuhan Polytechnical University, P.R. China

Ms Qiaowen Lin, Department of Land Administration, School of Public Administration, China University of Geosciences, Hubei Province, P.R. China

Dr Zhixuan Yang, Dongbei University of Finance & Economics, Dalian City, Liaoning Province, P.R. China

Ms Jill Urban-Karr, Executive Vice-President of Stewart Global Solutions, USA

Dr Swarna Subba Rao, Surveyor General of India

Mr CheeHai Teo, President, Federation de Geometres (FIG), Malaysia

Mr Michael Zwick, University of Applied Sciences and Arts, Northwestern Switzerland FHNW, Muttenz

Prof. Stéphane Roche, Laval University, Canada

Dr Kim Jin and Mr Lee Kil Jae, Spatial Information Research Institute Korea Cadastral Survey Corp, South Korea

Dato Sri Azemi Bin Kasim, Department General of Lands and Mines, Malaysia

Prof. Rajesh Dhakal, the University of Auckland

Mr Paul Glennie, UNEP-DHI, Denmark

Mr Guarav Sachdeva, SURGE Student, ITT Kanpur, India

Prof. Brian Uy, University of New South Wales, Australia

Prof. Emad Gad, Swinburne University, Australia

Dr Saman Fernando, Partner Investigator from Ajax Fasteners

Mr Dario Beccia, Partner Investigator from Orrcon Steel

Dr Olivia Mirza, University of Western Sydney

Prof. Jean Bogner, MERIT Visiting Scholar from the University of Illinois, Chicago

Dr Tatiana Delgado Fernandez, Industrial Engineering Faculty, CUJAE University, Cuba

Mr Daniel Langerenken, Cognitive Systems, University of Bremen, Germany

Dr John Stehle, Structural Engineering Leader in Laing O’Rourke’s Engineering Excellence Group, London

Mr Mark Cygan, Industry Solutions Manager, Esri, USA

Mr Majid Kiavarz, PhD Candidate, Khaje Nasir Toosi University, Iran

Mr Bertand Gauch, Business Development Manager, Esri, Australia

Dr Arzu Çöltekin, Senior Researcher and Lecturer, Department of Geography, University of Zurich, Switzerland

Assoc. Prof. Nakagawa Masafumi, Geoinformatics Lab, Shibaura Institute of Technology section, Department of Civil Engineering, College of Engineering, Tokyo, Japan

Mr Majid Kiavarz, PhD Candidate, Khaje Nasir Toosi University, Iran

Mr Bertand Gauch, Business Development Manager, Esri, Australia

Dr Abolghasem Sadeghi Niyaraki, Researcher, Inha University, South Korea
University of Melbourne enters collaboration with APCO International

On 19 November, the Association of Public Safety Communications Officials (APCO) International entered into a Memorandum of Understanding (MOU) with the University of Melbourne to work cooperatively in the development of training, higher education and research in the public safety realm.

Through the MOU, the two parties will work together to create a curriculum utilising each party’s expertise. The APCO International Institute is a worldwide leader in public safety communications training.

APCO International Immediate Past President and current Chair of the APCO Global Alliance Terry Hall signed the memorandum along with University of Melbourne officials while attending a symposium related to Next Generation Public Safety hosted by the University of Melbourne, which was conducted at the New York Academy of Sciences. The APCO Global Alliance consists of the associations of APCO International, APCO Australasia, APCO Canada and British APCO.

APCO International President Gigi Smith said, “APCO is pleased to have the opportunity to collaborate with the University of Melbourne to further advance the education and professional development of those in public safety communications and we believe this collaboration will benefit practitioners in many areas served by the APCO Global Alliance.”

Both the University of Melbourne and APCO International will each appoint a representative to identify projects of interest to both organisations and to facilitate the development of such projects. APCO Australasia’s Director of International Business Development and Strategy, Geoff Spring, said, “The partnership between APCO and the University of Melbourne marks a further step towards building the global research capability that the public safety communications sector needs, in order to capture the technical, operational and spatial benefits of next-generation, mission-critical broadband communications and provide personal development and career pathways for people working in this sector”.

“The collaboration between the APCO Partners and the University of Melbourne sees the partnership approach between higher education research and practitioners developing to provide a truly global perspective to the benefit of all our diverse communities,” said David Williams, APCO Australasia’s Director and Past President.

“British APCO is delighted to support the launch of this partnership,” said Sue Lampard, President of British APCO. “Training is an essential part of delivering effective public safety operations and often technical communication aspects are limited as far as input – or sometimes missed completely. I hope this will be the start of what could become a truly global initiative in enhancing knowledge of senior staff involved with public protection and disaster management.”

The Australian Disaster Management Platform (ADMP) is led by our Head of Department, Prof. Abbas Rajabifard. ADMP is a next generation open standards-based IT platform aimed at improving disaster management, protecting communities and saving lives. The Platform will facilitate informed decision-making by communicating information, via various channels and at appropriate levels of detail, to the wide spectrum of people involved in making emergency decisions – from central coordinating agencies that are charged with directing activities, to on-ground emergency services personnel, through to the local community.

The concept of the platform is central to the ADMP as it will draw on vast amounts of geo-spatial and infrastructure information from multiple data sets (including many sets already in existence), bring these together, facilitate discovery and then integrate and analyse the data to create real-time, practical information streams on disaster events and to develop simulation and optimisation models.

The ADMP is a collaborative project between the University of Melbourne and IBM, and offers an opportunity for many colleagues within the department and the wider university community as well as industry, to be involved.

The Melbourne Research Cluster on Urban Connectedness

The Melbourne Research Cluster on Urban Connectedness, MUC (http://www.eng.unimelb.edu.au/research/urban-connectedness/), led by Prof. Stephan Winter, is one of the Melbourne School of Engineering’s ‘Grand Challenges’ initiatives led by Infrastructure Engineering. A research cluster, generally, is a trans-disciplinary area of strength that is formed to foster collaboration, to exchange ideas and knowledge, and to gain profile by significant critical mass. It is also a first point of contact for significant industry and society collaboration.

This particular research cluster aims at the university’s strength in urban connectedness. Urban connectedness is enabling smart human interaction with the complex systems ‘city’ by real-time sensing, communication, data fusion and knowledge extraction, and interaction design — you may also call it urban informatics, or (information-wise) smart cities. Urban connectedness is essential for a sustainable and resilient city, and enables us to interact in a smart manner with layers like transport, energy, water, and health.
Strengthening Human Bones

Dr Lihai Zhang is applying his structural engineering skills in techniques to strengthen human bones.

Dr Zhang is leading the development of a state-of-the-art experimentally validated computational tool to predict early-stage healing outcomes of osteoporotic fracture. By collaborating with one of leading global medical device companies, SYNTHES, and the Epworth Hospital, the outcomes of this project could potentially allow surgeons to predict the likely fracture healing outcomes under various surgical treatments. The current project is currently supported by AOTrauma Asia Pacific Grant.

Dr Zhang has reached a Memorandum of Understanding agreement with Shen-Zhen Longgang Central Hospital and Bao’an Health Bureau (China). He was awarded The Ian Potter Foundation Travel Grant in September to deliver the keynote speech at the 5th Asia Pacific Congress on Computational Mechanics & 4th International Symposium on Computational Mechanics.

Intelligent Disaster Decision Support System (IDDSS)

This project develops a proof of concept of an intelligent disaster decision support system for urban disasters that integrates a smart geospatial platform with an advanced optimisation simulation engine. The smart geospatial platform will perform real-time collection, management, analysis, distribution, and visualisation of information for enhanced situation awareness. The smart platform will provide immediate relationships of a location to a disaster.

This real-time stream of critical information will populate the optimisation/simulation engine whose goal is to increase the cognitive abilities of decision makers when faced with an urban disaster of large magnitude and uncertainty. The use of decision support systems and a smart platform will increase the resilience of a society by reducing disaster disruption costs incurred by governments, businesses and citizens.

Water Productivity Blueprint Project

This blueprint project is a cross-faculty initiative led by Assoc. Prof. Michael Stewardson, but with many academics in the department and across the University are contributing their expertise and leadership.

The blueprint has drawn on very broad consultation across the water sector to identify innovation opportunities to improve regional water productivity. Four objectives are identified along with the innovation elements to achieve these objectives. A central part of the emerging agenda is the need or strong partnerships between research providers and both the public and private sector as a platform for innovation.

There are opportunities for innovation in environmental and agricultural water use, water distribution and markets and water planning and governance. The blueprint is a product of the Carlton Connect initiative.
Established in 2001, CSDILA provides a focus for research in spatial data infrastructures (SDIs), spatial enablement and land administration by building on ongoing research relationships and creating new links through extended collaboration at both national and international levels.

The activities of the Centre are based on a three-pillared approach: the development of a Research Program; a focused Postgraduate Training Program, and facilitated knowledge transfer including a Visiting Program. Research in the Centre is conducted by staff members of the University of Melbourne, research fellows, honorary affiliated national and international members, research higher degree students associated with the Centre, and international academic visitors and collaborators.

The Centre’s Advisory Board comprises distinguished Australian and overseas leaders in spatial science and related technologies from academia and industry. Meetings, reports and information dissemination ensure that the Advisory Board members are informed of the research achievements and directions. Advisory Board members also encourage the promotion of networking linkages and research opportunities between the Centre researchers and their own institutions and contact networks.

The Centre for Spatial Data Infrastructures and Land Administration has had an eventful year with several achievements worthy of mention.

Into its 12th year, the Centre and its members had a busy 2013 hosting visitors and also contributing in seminars and conferences overseas in its bid to facilitate the sharing of information among progressive industry experts and academics, and also to highlight the achievements of the Centre. In total, Centre members took 16 trips around the world, and hosted 15 researchers and scholars and many more visitors.

Highlights for the Centre include the official launch of the Australia Disaster Management Platform (ADMP) – a collaboration between the University of Melbourne and IBM – and also the setting up of a
new research centre, the Centre for Disaster Management and Public Safety.

The Centre is attracting top research talents from around the world and we are pleased to announce that in the last year, we have gained six PhD candidates who decided to further their research objectives with the Centre. The research undertaken in the Centre mainly uses the States of Victoria, New South Wales and Western Australia as working laboratories to obtain research data, and to test solutions and outcomes. International linkages with European and North American universities and the UN-supported Permanent Committee on GIS Infrastructure for Asia and the Pacific (PCGIAP) and Global SDI Association (GSDI) give the Centre a strong international foundation to build upon.

The Centre has been, and remains at the forefront, in the development of spatial enablement, SDI and land administration systems that facilitate decision making within the context of sustainable development objectives at local, state, national and multi-national levels.

For the Centre, it has been a successful year as summarised below:

1. 31 Publications in 2013 (books, book chapters, journal and conference papers and technical reports), with 5 under review
2. Progress with four ARC projects (ADMP, IDDSS, 3D Cadastres, AURIN & ANDS)
3. Contribution to professional and scientific associations and societies
4. Unique visitors to the Website increased by 300%.

This is a great achievement as it shows the reach of the Centre and the growth of its reputation. There were 37 personnel directly involved with the research in the Centre in 2013.

The Visiting Program has been a successful component of the Centre. In 2013, the Centre hosted 20 visits from international researchers and scholars of mutual benefit to the Centre and its research partners.

Advisory Committee
- Hon. Mr Gary Nairn (Chair of Advisory Committee)
  Consultant to AAM Group and Consultant in Business Development, Spatial Information and Property Matters
- Mr Greg Scott, Inter-Regional Adviser, Global Geospatial Information Management, UN Statistics Division, National Mapping and Information Group, Geoscience Australia
- Mr Ollie Hedberg, Chair Victorian Spatial Council
- Mr Paul Harcombe, Chief Surveyor, Land & Property Information New South Wales
- Mr John Tulloch, Surveyor General Victoria, Land Victoria, DSE
- Mr Jan Wandek, Managing Director, Emerg Pty Ltd
- Mr Ged Griffin, Detective Inspector, Crime Development, Victoria Police
- Prof. Stig Enemark (past FIG President), Prof. in Land Management- Aalborg University, Denmark
- Prof. Harlan Onsrud, Department of Spatial Information Science and Engineering, University of Maine, Executive Director of GSDI Association
- Prof. David Coleman, Dean, Faculty of Engineering, University of New Brunswick, Canada, President GSDI Association

Further information on the Centre is available at: www.csdila.unimelb.edu.au
The Centre for Disaster Management and Public Safety (CDMPS) is a new research centre established at the University of Melbourne focused on conducting multi-disciplinary research and training on disaster management and public safety both nationally and internationally.

Research at CDMPS focuses on themes associated with preparing for, responding to, recovering from, and mitigating against incidents across the all-hazards spectrum of emergency/disaster management.

Excellent Research is a critical component of CDMPS’s drive to understand and improve public safety. One of the key objectives of the research program is to use a multi-disciplinary approach to create a knowledge base that can be used to support further research activity, training and education programs. It is hoped that this knowledge base will also be used to support the development of better advice required for policy and decision making by public safety officials around the world, especially in terms of disaster management. Both theoretical and applied research will be used to advance this Research Agenda with a strong focus being placed on collaboration with other universities, researchers and practitioners.

Through consultation with key stakeholders and an analysis and review of studies conducted on major disasters, six key priority areas have been identified. These key areas reflect the research that is considered to be critical in enhancing disaster management practice and policy over the next three years.

Key goals of the Centre are to:

- Conduct world-recognised research into disaster/emergency management and public safety
- Encourage collaborative research projects with state and federal governments in Australia, the private sector, and leading overseas university stakeholders
- Create an open-standards initiative to develop interoperability architecture to test and develop models on multi-hazard disasters
- Disseminate research findings through academic publications, seminars, conferences and scholarly interchange
- Develop and enhance the knowledge base and research capabilities in emergency/disaster management through research, training and specific initiatives such as workshops, symposia and conferences
- Conduct short training programs in the fields of emergency/disaster management especially at the executive level for government agencies (both Australian and international), private sector bodies and other interested groups
- Develop and implement a Masters level course for disaster management and public safety.
Australia-China Joint Research Centre on River Basin Management

Background

The Australia-China Joint Research Centre on River Basin Management (Water Resources and Water Quality) builds on the existing Australia-China Centre on Water Resources Research (ACCWRR). The Australia-China Centre on Water Resources Research (ACCWRR) was launched in 2006 at the University of Melbourne, facilitated by the Australian Department of Innovation, Industry, Science and Research (DIISR), the Chinese Academy of Sciences (CAS) and the Ministry of Science and Technology of China (MOST).

The Centre’s chief objective was to link water researchers, policy-makers, managers, technology providers and users in a constructive exchange, addressing the common challenge of water scarcity facing Australia and China.

Major activities and achievements

- 17 successful projects over $4 million in research funding.
- Over 40 publications (More than 23 Journal papers, 2 book chapters, 9 refereed conference papers)
- 11 research partnerships
- 10 workshops
- 20 organisations receiving knowledge transfer through training, workshops and field visits (14 from China; 2 from Australia; 2 from India and 2 from South Africa)
- Visited 29 Chinese institutes and met 180 officers and scientists with multiple disciplinary backgrounds for building relations and joint-research activities
- Involved in or facilitated the hosting of 38 delegations, 260 people from 45 Chinese institutes who visited Australia, including 9 visiting scholars, and also facilitated 20 staff and post-graduate student exchange visits
- 396 network contacts from 46 Chinese universities, research organisations, government departments and water catchment authorities, widely distributed across China
- 40 network contacts within Australia and the USA, the UK, Spain, South Africa and India through collaborative projects
- Major scientific contributions in understanding the impact of climate change on water resources, improvement of irrigation use efficiency, water allocation and water trading, development of systemic and adaptive governance at catchment level, and enhancement of synergies and reduction of trade-offs between ecosystem services and sustainable livelihood.

DIISRTE Joint Research Centre on River Basin Management

The Australia-China Research Centre on River Basin Management will provide Australia and China with capacity to develop and transfer solutions for river basin management, creating improved economic gains while protecting water ecosystems. The Centre will be established under the Australia-China Science and Research Fund with each government providing a total of $5 million to support the six Centres. The Research Centre has ten Australian partners across government, water authorities, water industry, research and universities.

In Australia, the partners are The University of Melbourne (lead organisation), CSIRO through the Water for a Healthy Country Flagship National ICT Australia, Rubicon, Southern Rural Water, Victoria, Goulburn–Broken Catchment Management Authority, the Murray-Darling Basin Authority, the University of Western Sydney, the CRC for Spatial Information and DPI Victoria.

In China, there are over 10 partners including the Chinese Academy of Sciences, the Institute of Water Resources and Hydropower Research (Ministry of Water Resources), Tsinghua University, the Yel-
low River Conservation Committee and China Three Gorges Corporation. The overall partnership brings together research providers, water management and conservation authorities, development groups and infrastructure engineering companies.

Collaboration with the Chinese Academy of Sciences
The Chinese Academy of Sciences (CAS) was the supporter for the Australia-China Centre on Water Resources Research (ACCWRR) through the funding of designated staff appointments (2006-2012). The key node of the Centre in China was located at the Institute of Geographic Sciences and Natural Resources Research, CAS (IGSNRR). The Co-Director was Professor Xia Jun, Leading Professor on Hydrology and Water Resources.

The Centre’s chief objective was to link water researchers, policy-makers, managers, technology providers and users in a constructive exchange, addressing the mutual challenge of water scarcity facing both Australia and China. Through three joint research projects, six workshops, seven students/post-Doc exchanges and 14 journal publications, we have developed broad collaborations with the following institutes of CAS:

- Cold and Arid Region Environmental Engineering Research Institute, Chinese Academy of Sciences (CAREERI);
- Institute of Geography Science and Natural Resources Research, Chinese Academy of Sciences (IGSNRR);
- Institute of Soil Science, Chinese Academy of Sciences (ISS),
- Institute of Soil and Water Conservation, Chinese Academy of Sciences (ISWC),
- Research Centre of Eco-Environment Sciences, Chinese Academy of Sciences (RCEE).

The Chinese Academy of Sciences (CAS) is one of three Chinese key research partners for the Australia-China Research Centre on River Basin Management. We have developed the following partners within CAS:

- Institute of Applied Ecology, Chinese Academy of Sciences (RAE);
- Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences (RADI).
New Grants

A collaborative e-learning platform for design and simulation-based subjects, University of Melbourne Learning and Teaching Initiatives 2013, Tuan Ngo, Lu Aye and Graham Moore, 2013

Alternate Materials and Manufacturing for Next Generation Armoured Vehicles, Defence Material Technology Centre (DMTC), Tuan Ngo, Phuong Tran and Priyan Mendis, 2013-2014

Application of Environmental Offsets for Treated Wastewater Discharges and the Development of a Framework for the Victorian Water Industry, Carlton Connect Initiatives Fund awarded by the University of Melbourne, Kellar, Allinson, Arora, Long, Pettigrove, Grant, 2013-2014

Australia China Research Centre on River Basin Management (Water Resources and Water Quality, Australia China Science & Research Joint Research Centre) awarded by Department of Industry Innovation, Science, Research & Tertiary Education, Yongping Wei, 2013-2014

Automated groundwater level mapping: a tool for catchment scale estimation of aquifer storage changes, fluxes and hydrogeological properties, ARC Linkage Project, Western, Frost, Carrara, Cheng, McAuley, 2013-2016

Better Water Management Through More Focus on Ecological and Social Sciences (Future Fellowships) Awarded by Australian Research Council, Yongping Wei, 2013-2018

Carlton Connect Infrastructure Fund, Action Planning for Implementation of the Carlton Connect Water Theme Innovation Statement for Regional Water Productivity, Nettle, Stewardson, Farquharson, Cook, Godden, Western, 2013


Carlton Connect Infrastructure Fund, Producing, Distributing, Communicating and Presenting the Innovation Statement for Regional Water Productivity, Nettle, Stewardson, Farquharson, Cook, Godden, Western, 2013

Collapse Assessment of Reinforced Concrete Buildings in Regions of Lower Seismicity. Nelson Lam – Discovery Project DP140103350, Australian Research Council (ARC), Non-lead grant with Swinburne University of Technology, 2014-2016

Constructing and testing a multi-dimensional framework to assess and plan urban growth, Melbourne Sustainable Society Institute Seed Funding Scheme, Arora, Malano, Duffield, Sposito, March, Rajabifard, Yoshihisa, 2013-2014

Cost-Effective Mitigation Strategy Development for Building Related Earthquake Risk. Nelson Lam and Helen Goldsworthy in collaboration with University of Adelaide (leading), Swinburne University of Technology and Geoscience Australia, Bushfire and Natural Hazards CRC, 2014-2020


Developing reusable 3D, simulation-based learning environments, Institute for a Broadband-Enabled Society, Tuan Ngo and Kennedy Gregor, 2013


RESEARCH GRANTS

Dyason Fellowship, L. Zhang, 2013-2014

Enhancing resilience of critical road infrastructure: bridges, culverts and flood ways under natural hazards. Non-lead grant Bushfire and Natural Hazards CRC, Priyan Mendis and Tuan Ngo collaboration with RMIT University, 2014-2016

Establishing a State-level Systemic and Adaptive Water Governance Authority of Excellence in India (Asia Public Sector Linkages Program (PSLP), awarded by AUSAID, 2014


Integrated greenhouse gas measurement system (igms) for monitoring agricultural emissions at field to regional scales, ARC-Linkage Infrastructure Grant, Chen, Western, Grace, Griffith, Chung, Hacker, Ryu, Phillips, Eckard, Beringer, Dassanayake, Dennmead, 2013

Intelligent Disaster Decision Support System. Victorian Department of Justice Natural Disaster Resilience Grant Scheme, Abbas Rajabifard, Tuan Ngo, Priyan Mendis, Mohsen Kalantari, Serryn Eagleson with industry partners Australian Government, Department of Justice Victoria, VicRoads, Country Fire Authority, Association of Public Safety Communications Officials, Victoria Police, Fire Services Commissioner Victoria, Emerg, 2013-2014


Pre-disaster Multi-Hazard Damage and Economic Loss Estimation Model. Abbas Rajabifard, Nelson Lam, Mohsen Kalantari, Serryn Eagleson in collaboration with Deakin University and Asian Disaster Preparedness Centre, Bushfire and Natural Hazards CRC, 2014-2016

The Effects of Flexible Fixation on Bone Fracture Healing, Victorian Orthopaedic Research Trust, L. Zhang, M. Richardson, M. Pirpiris, 2014-2015

The Ian Potter Foundation Travel Grant, L. Zhang, 2013

The Influence of Bone-Plate Distance on the Mechanical Flexibility of the Locking Compression Plate Fixations, Synthes Australia Pty Ltd, L. Zhang, M. Richardson, M. Pirpiris, 2014-2015

Visions and Pathways 2050, CRC For Low Carbon Living, Tuan Ngo, Non-lead grant with ABP, 2013-2017

Ongoing Grants

A Game-based Learning System for Land Administration, Teaching and Learning Grants, The University of Melbourne, M. Kalantari, 2013

A holistic integrated design approach for building envelops incorporating sustainability, security and safety, ARC Linkage Project, Lu Aye and Tuan Ngo, 2012-2016

A Low-cost 3D Indoor Mapping System, Early Career Grant, M. Kalantari, 2014

A New Method for Identifying Actual Groundwater Contributions to Baseflow Using Both Streamflow and Groundwater Head
RESEARCH GRANTS

Data, ARC Discovery Project, Western and McDonnell, 2012-2014

A New Paradigm for Catchment Management: Detection, Forecasting and Management of Water Catchments with Multiple Steady States, ARC Linkage Project, Western, Peterson, Frost, Cheng, McAuley, 2009-2013


Advanced Protective Armour, Defence Material Technology Centre (DMTC), Tuan Ngo and Priyan Mendis, 2009-2015

An Integrated Investigation of Nutrient Generation and Delivery Processes and Pathways from Paddock to Small Catchment Scales, ARC Discovery Project, Western, Grace, White, McDonnell, 2009-2013

Effects of Inter-decadal Climate Variability on Rainfall-runoff Relationships in Australian Catchments, Saft, CSIRO Student Agreement, Western, Peel, Zhang, 2011-2014


Enhanced Automation of Close-Range Photogrammetry for Defence and National Security Applications. ARC Linkage Project LP0989375, Fraser, C.S. (CI) with linkage partner Defence Imagery & Geospatial Organisation, Dept. of Defence, 2009-2013


Hydrologic modelling for a changing world, ARC Future Fellowship (FT120100130), Peel, 2012-2016

Impact of Bushfires and Land Use Changes on Seasonal Stream Flows for Real-time Forecasting, Li, CSIRO Student Agreement, Ryu, Western, Robinson, Wang, 2010-2014

Integrating Mobility on Demand in Urban Transport Infrastructures. ARC Linkage Project, Winter, Duffield, Kulik, Kotagiri, Thompson, Wallace, Savelsbergh with industry partners Public Transport Victoria, VicRoads, Yarra Trams, Royal Automobile Club Victoria, and Haasz Technology, 2012-2014

Land and Property Information in 3D, ARC Linkage Project, Abbas Rajabifard, Ian Williamson, Tuan Ngo with industry partners Department of Transport, Planning and Local Infrastructure, Victoria, Land and Property Management Authority, NSW, Intergovernmental Committee on Surveying and Mapping, PSMA Australia Limited, Alexander Symonds Surveying Consultants, Fender Katsalidis Architects, Strata Community Australia, The AAM Group, 2012-2015

mSafe: Mobile Smart Applications for Evacuation. Marie Curie Action with the University of Bremen, the University of Zurich and La Trobe University (Schmid, Freksa, Richter, Winter, Weibel, Loke), 2011

Narrowing the Scatter and Assessing the Uncertainty of Climate Change Projections of Australian River Flows. ARC Linkage Project (LP100100756). (McMahon TA (CI), Karoly DJ (CI) & Peel MC) 2010-2012 finished in April of 2013

Rational Lateral Bracing Design for Steel-framed Domestic Structures, Gad, Lam, Wilson, ARC-Linkage Project and National Association of Steel-framed Housing with Swinburne University of Technology, 2011-2013

Systemic and adaptive water governance: Lessons for Australia from China and South Africa (Linkage Projects), awarded by Australian Research Council, Yongping Wei, 2010-2013


Towards Operational Monitoring of Key Climate Parameters for Synthetic Aperture Radar. ARC Super Science Fellowship FS100100040, Lowell, with Walker, Milne, Hacker, 2011-13 (extended to April 2014)

‘Transit for All’, Research Program on Station Design and Access Planning. University of Melbourne ‘Carlton Connect’ grant, led by C Hale. Project partners include: PTV, Vic Roads, Metro Trains Melbourne, City of Darebin, City of Yarra, City of Moreland, City of Hobsons Bay, Grimshaw Architects, Caldis Cook Group, Cox architects, MGS architects, 2013-2014

Understanding Cultural and Ecological Triggers for Policies against Water Catchment Degradation (Discovery Projects), awarded by Australian Research Council, Yongping Wei, 2012-2015
**A1 - Authored Research Books**

**A2 - Edited Books**


**B1 - Research Book Chapters**


Agunbiade M, Rajabifard A and Bennett R. 2013 Land Administration for Housing Production: An Approach for Assessment, Land Use Policy.


Berry RL, Livesley SJ & Aye L. 2013. Tree canopy shade impacts on solar irradiance received by building walls and their surface


Chapple DG, Miller KA, Kraus F & Thompson MB. 2013. Divergent introduction histories among invasive populations of the delicate skink (Lampropholis delicata): has the importance of genetic admixture in the success of biological invasions been overemphasized? Diversity and Distributions. 19 (2): 134-146.


Xu M, Duffield CF, Pelham N & Bradley M. 2013. When Do Mid-Project Reviews (MPRs) Deliver the Greatest Project Benefits? A


**C2 - Journal Articles Unrefereed**


**C5 - Other Refereed Contribution to Refereed Journals**


**D4 - Major Reference Works**


**F - Conference Proceedings**


**F1 - Full Written Papers Refereed**


Awrangjeb M, Fraser CS & Lu G. 2013. Integration of LiDAR data and orthoimage for automatic 3D building roof plane


F2 - Full Written Papers Unrefereed


G4 - Major Reports and Working Papers

PHOTO GALLERY