Infrastructure for a Better Future: A Forum for Vision, Leadership and Action

EVENT PROGRAM

www.isngi.org
Welcome address

On behalf of the ISNGI Organising Committee I am delighted to welcome delegates to the International Symposium for Next Generation Infrastructure 2016.

Now in its fourth year of existence, ISNGI represents a unique global partnership aimed at fostering an international dialogue on current issues and latest innovations in infrastructure research and policy.

Our mission is to share new knowledge, to propose best practice principles and to mentor the next generation of experts, who will have to design, implement or manage future infrastructure systems around the world.

This year our grand challenge is: “Beyond Utopia: Designing Infrastructure Systems as Collective Agents of Social Change”.

This challenge is concerned with infrastructure (such as transport, energy, water, waste, telecommunications, housing and social infrastructure) and the web of interdependencies and interconnections that collectively make up the physical, economic and social systems of cities and regions and how we can deliver more successful resilient outcomes.

I take this opportunity to thank our host partners, our presenters and participants for sharing their time and expertise. I trust you are challenged and inspired by the presentations and look forward to engaging with you over the coming two days.

Professor Pascal Perez
Director SMART Infrastructure Facility
University of Wollongong, Australia.

ISNGI Master of Ceremonies

Tania Brown is the Chief Operating Officer at the SMART Infrastructure Facility with responsibility for the day to day operations, stakeholder relations and investment attraction for this $62 million facility.

Prior to joining the University of Wollongong in 2009, Tania spent 13 years working for State and Federal Governments. Her role as a Senior Ministerial Policy Advisor saw her dealing with the development, implementation and communication of government policies in a range of areas.

Tania was appointed Chair of Destination Wollongong in 2015, having served as a Board Member since 2013. In 2016 Tania joined the Property Council of Australia’s, Illawarra Chapter Committee.

Join the conversation on Twitter with #ISNGI2016
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Plenary Group

WITH SPECIAL THANKS TO OUR IN KIND CONTRIBUTORS

[SDRC Logo]

SUSTAINABLE BUILDINGS RESEARCH CENTRE
UNIVERSITY OF WOLLONGONG
AUSTRALIA
# Program

## DAY 1 ISNGI - Policy Focus

**THURSDAY 1 SEPTEMBER 2016**  
**Novotel Wollongong Northbeach**

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<thead>
<tr>
<th>Time</th>
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<td>08:30</td>
<td>Registrations, Tea &amp; Coffee</td>
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| 09:00 | **Prof. Pascal Perez**           | Director, SMART Infrastructure Facility, University of Wollongong  
                                             Introduction and welcome                                                                                                           |
| 09:10 | **Prof. Brian Collins**          | Director, International Centre for Infrastructure Futures, University College London  
                                             Opening Address                                                                                                                   |
| 09:30 | **Panel 1: Infrastructure Systems: Collective agents of Social Change** | **Chair:** Dr Matt Ives  
                                             Infrastructure Systems Modeller, Environmental Change Institute, University of Oxford  
                                             **Mr Wienke Giezeman**  
                                             Initiator, The Things Network  
                                             **Dr Nicola Nelson**  
                                             Manager, Health, Environment & Asset Science, Sydney Water  
                                             **Dr WW ‘Wijnand’ Veeneman**  
                                             Scientific Director, Next Generation Infrastructures, Delft University of Technology                                                                 |
| 10:30 | Morning Tea                      |                                                                                                                                                |
| 11:00 | **Panel 2: In a utopian scenario, what would the perfect infrastructure project look like?** | **Chair:** Mr Brendan Lyon  
                                             Chief Executive Officer, Infrastructure Partnerships Australia  
                                             **Prof. Brian Collins**  
                                             Director, International Centre for Infrastructure Futures, University College London  
                                             **Prof. Chris Barrett**  
                                             Executive Director, Biocomplexity Institute, Virginia Tech  
                                             **Ms Jenny Davis**  
                                             Executive Director, Infrastructure NSW  
                                             **Dr Ricardo Peculis**  
                                             Senior Research Fellow, SMART Infrastructure Facility, University of Wollongong                                                                 |
| 12:00 | Lunch                            |                                                                                                                                                |
| 13:00 | **A/Prof. Rodney Clarke**        | Associate Fellow, SMART Infrastructure Facility, University of Wollongong  
                                             **Keynote Speaker:** Case studies and benefits of Industry/Research Collaborations                                                                 |
| 13:30 | **Dr Matt Ives**                | Infrastructure Systems Modeller, Environmental Change Institute, University of Oxford  
                                             **Keynote Speaker:** Evidence-based infrastructure development for building back better                                                                 |
| 14:00 | Afternoon Tea                    |                                                                                                                                                |
### Panel 3: Innovation in Academia and how this can support government decision making for infrastructure planning

<table>
<thead>
<tr>
<th>Chair:</th>
<th>Mr Michael Comninos</th>
<th>Prof. Amal Kumaraage</th>
<th>Prof. Peter Campbell</th>
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<td></td>
<td>Systems Engineer, Argonne National Laboratory</td>
<td>Senior Professor, Department of Transport and Logistics Management University of Moratua</td>
<td>Honorary Professorial Fellow, SMART Infrastructure Facility, University of Wollongong</td>
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### DAY 1 ISNGI - Dinner

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<tr>
<td>18:30</td>
<td>Pre-Dinner Drinks and Canapes</td>
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<tr>
<td>19:00</td>
<td><strong>Prof. Pascal Perez</strong> Director, SMART Infrastructure Facility, University of Wollongong</td>
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<tr>
<td></td>
<td>Introduction</td>
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<tr>
<td>19:10</td>
<td><strong>Prof. Paul Wellings CBE</strong> Vice Chancellor, University of Wollongong</td>
</tr>
<tr>
<td></td>
<td>Welcome</td>
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<tr>
<td>19:40</td>
<td><strong>Dr Ian Watt AO</strong> Chairman, SMART Advisory Council</td>
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<td></td>
<td>Introduction of Keynote Speaker</td>
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<td>19:45</td>
<td><strong>Dr Catherine Ball</strong> Managing Director, Elemental Strategy; CEO &amp; Founder, Remote Research Ranges</td>
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<td>Keynote Speaker: A tale of two cities: humans and drones</td>
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<tr>
<td>20:45</td>
<td><strong>Dr Richard Sharp</strong> Principal, Arup</td>
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<td>Vote of Thanks</td>
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<td>22:00</td>
<td>Formal Event Close</td>
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## DAY 2 ISNGI - Early Career Researcher Focus

**FRIDAY 2 SEPTEMBER 2016**  
**Novotel Wollongong Northbeach**

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</table>
| 08:50 | **Prof. Pascal Perez**  
Director, SMART Infrastructure Facility, University of Wollongong  
Introduction |
| 09:00 | **Pitching Session 1**                                              |
|       | **Panel:**                                                          |
|       | **Prof. Paul Cooper**  
Director, Sustainable Buildings Research Centre, University of Wollongong  
Ms Megan Clifford  
Deputy Director, Risk and Infrastructure Science Center, Argonne National Laboratory, USA.  
Dr WW ‘Wijnand’ Veeneman  
Scientific Director, Next Generation Infrastructures, Delft University of Technology |
|       | **Pitch 1**  
Dr Raymond Laine  
Senior Flood Engineer  
NSW Office of Environment and Heritage  
No More Town Hall Meetings |
|       | **Pitch 2**  
Dr Robert Ogie  
Associate Research Fellow, SMART Infrastructure Facility, University of Wollongong  
Managing hydrological infrastructure assets for improved flood mitigation in coastal mega-cities of developing nations: From data-starved to data-driven approach |
|       | **Pitch 3**  
Dr Thomas Dolan  
Research Associate, International Centre for Infrastructure Futures, University College London  
Aligning Societal Expectations with Infrastructure Decision Making to Enabling Systemic Benefits |
| 10:45 | **Prof. Paul Wellings CBE**  
Vice Chancellor, University of Wollongong  
Introduction of Keynote Speaker The Hon. Paul Fletcher MP |
| 10:45 | **The Hon. Paul Fletcher MP**  
Minister for Urban Infrastructure  
Keynote Speaker: The Right Policy Settings to Encourage Innovation In Infrastructure |
| 11:00 | **Dr Tim Williams**  
Chief Executive Officer, The Committee for Sydney  
Something Short of Utopia - The Infrastructure Challenge of Making Great Cities |
| 11:30 | **Mr Wienke Giezeman**  
Initiator, The Things Network  
Keynote Speaker: You are the Network. Lets Build Things Together |
| 12:15 | Lunch                                                                |
13:00 Pitching Session 2

Panel: Prof. Brian Collins
Director, International Centre for Infrastructure Futures,
University College London

Dr Nicola Nelson
Manager, Health, Environment & Asset Science, Sydney Water

Dr Matt Ives
Infrastructure Systems Modeller,
Environmental Change Institute,
University of Oxford

Pitch 1
Dr Ellie Cosgrave
Research Associate
University College London

Pitch 2
Dr Daniel Daly
Associate Research Fellow,
Sustainable Buildings Research Centre,
University of Wollongong

Pitch 3
Dr Massimo Fiorenti
Associate Research Fellow,
Sustainable Buildings Research Centre,
University of Wollongong

Choreographing the City
NSW Housing Stock Mapping and Housing Typologies
Smart buildings and precincts

14:15 Panel 4: Innovation and the Internet of Things

Chair: Mr Omar Khalifa
Chief Executive Officer,
iAccelerate,
University of Wollongong

Mr Wienke Giezeman
Initiator, The Things Network

Ms Catherine Caruana-McManus
Director, Giant Ideas Pty Ltd

Prof. Pascal Perez
Director, SMART Infrastructure Facility,
University of Wollongong

15:00 Panel 5: What does a Next Generation Early Career Researcher need in their toolkit?

Chair: Prof. Pascal Perez
Director, SMART Infrastructure Facility, University of Wollongong

Prof. Brian Collins
Director, International Centre for Infrastructure Futures,
University College London

Prof. Chris Barrett
Executive Director,
Biocomplexity Institute,
Virginia Tech

Dr Matt Ives
Infrastructure Systems Modeller,
Environmental Change Institute,
University of Oxford

15:30 Closing Remarks
Afternoon Tea and Networking
Contributors

Dr Catherine Ball

Managing Director, Elemental Strategy; CEO & Founder, Remote Research Ranges, Australia.

Inspired by a childhood love of the natural world, her breakthrough work focused on sending Remotely Piloted Aircraft Systems (RPAS) to remote areas of coastline to observe endangered turtle colonies.

Dr Ball is today at the absolute forefront of RPAS technology. Her work at engineering consultancy URS put Australia on the world stage. Exploring new ways RPAS can be used, her research is changing how business and government operate.

Since winning Telstra’s Queensland Business Woman of the Year and National Corporate and Private Award, she has advocated for diversity in many spheres of work and life.

As a tertiary mentor for The Smith Family for two university students, her social justice and humanitarian work is all important to her. She strongly advocates that environmental and human health are inextricably linked, and is a long-time champion for accessibility to science education for all ages, genders, and socio-economic backgrounds.

Dr Ball continues to help businesses make informed choices about the preservation of native species. She is an innovator, scientist, business woman, champion of change, and above all, a communicator.

Professor Chris Barrett

Executive Director, Biocomplexity Institute, Virginia Tech, USA.

Chris Barrett received a Ph.D. in Bioinformation Systems in 1985 and an MS in Engineering Science in 1983 from the California Institute of Technology. Prior to joining Biocomplexity Institute of Virginia Tech, he lead a research group at the Naval Air Development Center focused on the integration of machine and human intelligence in naval aircraft and later was leader of the Basic and Applied Simulation Science Group at the Los Alamos National Laboratory (LANL). At LANL Barrett built up a research group active in theoretical and applied research in complex systems, particularly those related to biological and social computation, interdependent societal infrastructures, computational epidemiology and synthetic information systems.

After retiring from LANL he established the Network Dynamics and Simulation Laboratory at Biocomplexity Institute. At Biocomplexity Institute he has extended the scope of informatics research in biosocial complex systems.

Dr Barrett has scientific experience in simulation, synthetic information systems, computational social and psychological science, scientific computation, algorithm theory and development, network science, system science and control, artificial intelligence, biosystems analysis, decision science, cognitive science. His research is largely devoted to the development and use of large-scale, high performance synthetic information systems. Dr. Barrett has received Distinguished Service Awards from the US Navy, Los Alamos National Laboratory, the Alliance for Transportation Research, the Royal Institute of Technology in Stockholm, was named a Jubilee Professor of Computer Science at Göteborg University in Sweden.

In 2014, Dr Barrett was named Executive Director of the Biocomplexity Institute at Virginia Tech.

Professor Peter Campbell

Honorary Professsional Fellow, SMART Infrastructure Facility, University of Wollongong, Australia; Member, SMART Scientific Advisory Committee.

Professor Peter Campbell is a world authority on agent-based modelling. He is the former Director, Advanced Computer Applications Center at Argonne National Laboratory in Chicago.

Professor Campbell has interdisciplinary modelling experience across the physical, biological and social domains that enable him to play a key role in shaping a strong interdisciplinary collaboration culture at SMART.

His experience in research and consulting management allows him to provide project leadership to SMART’s commissioned research projects.

Ms Catherine Caruana-McManus

Director, Giant Ideas Pty Ltd, Australia; Member, SMART Advisory Council.

Catherine Caruana-McManus is the founder of Giant Ideas, a digital transformation firm for smart cities and IoT and is a non-Executive Director of Meshed, an IoT integration company. Catherine has launched an independent global community on facebook called “Smartercities IoT” which promotes the advancement of smart cities, IoT and renewable energy. Prior to Giant Ideas, Catherine was the Director of IBM’s Smarter Cities business for ANZ.

As a serial disrupter, Catherine has launched many successful internet businesses such as Australia’s first real estate portal, whereis.com and whitepages.com.au. Recently, Catherine was recognised by Prime Minister Malcolm Turnbull’s Knowledge Nation initiative as one of Australia’s leading thinkers and innovators in big data and building Australia as a Smart Nation.

Catherine has years of planning and telecommunications major projects experience including the Sydney Olympic Park for the 2000 Sydney Olympics and Melbourne Docklands.

Catherine is a Member of the Technical Advisory Council for AURIN and recently appointed Chairperson of the Sectors & Industries Work Stream for the IoT Alliance. Catherine is an Ambassador for Whitelion Foundation – Youth at Risk as well as an advocate for STEM and Young Women mentorship.

Rodney Clarke

Associate Fellow, SMART Infrastructure Facility, University of Wollongong, Australia.

Rodney Clarke is the Manager of the Collaboration Laboratory (Co-Lab) at the SMART Infrastructure Facility it enables commerce-based reference disciplines, including operations, management, marketing and systems analysis, to be applied to a range of infrastructure analysis, design and usage problems.

Join the conversation on Twitter with #ISNGI2016
Ms Megan Clifford

Deputy Director, Risk and Infrastructure Science Center, Global Security Sciences, Argonne National Laboratory, USA.

Megan Clifford leads a team of experts delivering decision analysis and research, risk assessments, data analytics, modelling and GIS capabilities to federal programs critical to National Security. Megan oversees Argonne’s support to a variety of sponsors, including the Department of Homeland Security and Department of Energy.

Prior to joining Argonne, Megan worked for Booz Allen Hamilton, as Principal leading the firm’s support to the Federal Emergency Management Agency (FEMA). In that capacity, she supported the drafting of the first-ever National Preparedness Goal and implementation of Presidential Policy Directives.

She received a BA in International Business from The George Washington University and holds the PMI Program Management Professional (PMP), Certified Floodplain Manager (CFM), and Grants Management professional certifications.

Mr Michael Comninos

Executive Director, Infrastructure NSW, Australia.

Michael Comninos is an Executive Director at Infrastructure NSW, an independent statutory agency that provides specialist advice to the NSW Government on infrastructure investment and prioritisation.

Michael was a contributing author to the 2014 State Infrastructure Strategy Update and is working closely with the Education, Health, Housing and Justice sectors to implement infrastructure strategies to deliver essential services.

A policy and strategy specialist, Michael has spent the majority of his career working with the private and not-for-profit sectors to deliver government objectives.

Prior to joining Infrastructure NSW Michael held senior roles in the NSW public service spanning the transport, planning, treasury and housing portfolios.

Dr Ellie Cosgrave

Research Associate, University College London, UK.

Ellie is a Research Associate at UCL STeAmp. Her research for the City Leadership Initiative investigates how digital technology and the information economy challenge governance systems and structures in cities. Her work explores transformative approaches to policy making and governance of cities. Ellie undertook her Engineering Doctorate at the University of Bristol, sponsored by the Smart Cities team at Arup. Whilst at Arup she worked with London, Bristol, and Birmingham on their strategic planning around smart technology, as well as UK government and the C40 cities network.

Her thesis investigated the policy and governance implications of the Smart City agenda and devised a practical framework for local authorities attempting to invest in this area.

Dr Daniel Daly

Associate Research Fellow, Sustainable Buildings Research Centre, University of Wollongong, Australia.

Dr Daniel Daly is an Associate Research Fellow at the Sustainable Building Research Centre (SBRC) at the University of Wollongong. He has experience in the assessment of the energy performance and optimal upgrade strategies for educational, commercial and residential buildings.

Professor Brian Collins

Director, International Centre for Infrastructure Futures, University College London, UK.

Professor Collins took up the position of Director of the Centre of Engineering Policy at University College London (UCL) in August 2011. In this role he participates in and supports an international network of academics interested and active in research in infrastructure engineering and modernisation.

Prior to joining UCL, he was the Department for Transport’s (DfT) Chief Scientific Adviser (CSA) and CSA for the Department for Business Innovation and Skills (BIS).

Brian chairs an Engineering and Interdependency Expert Group for Infrastructure UK, led by Lord James Sassoon, Commercial Secretary in Her Majesty’s Treasury and was appointed as a visiting Professor to the SMART Infrastructure Facility in 2011.

Professor Collins is an elected Fellow of the Royal Academy of Engineering and was conferred the honour by Her Majesty the Queen of election to Companion of the Bath in the 2011 New Years Honours List.

Professor Paul Cooper

Director, Sustainable Buildings Research Centre, University of Wollongong, Australia.

Professor Paul Cooper is the Director of the University of Wollongong’s Sustainable Buildings Research Centre (SBRC). Paul has been involved in research on a wide variety of topics in energy systems, energy efficiency and fluid mechanics over the past twenty five years. He holds a Bachelor of Electrical Engineering, a Masters in Science and Technology Studies and a PhD in Heat Transfer, all from Imperial College London. Prior to joining UOW Paul was a research fellow in the Research in Building group at the University of Westminster. His research interests over the years have included the development of large solar heating schemes for municipal housing in London; modelling of energy and ventilation systems in buildings and renewable energy systems, including small scale wind and ocean wave energy. Paul was the Head of the School of Mechanical, Materials and Mechatronic Engineering at UOW until July 2010, when he took up his present appointment as Director of the SBRC.
His PhD research explored the best methods to improve the energy efficiency of lower quality office buildings, using extensive building energy simulation, qualitative analysis, and case study investigations. During his PhD research, Daniel was awarded the Endeavour Research Fellowship to spend time at the Energy Institute, at the University College, London. Daniel was also a core member of the UOW Solar Decathlon China 2013 competition winning team, which successfully demonstrated how to retrofit a typical Australian home to be a high-performance, net-zero energy home.

More recently, Daniel has been working on how to characterise and optimise residential buildings in Australia at a stock level. This has included work on aggregating buildings using dwelling typologies, the development of a housing stock map for key energy related characteristics, and work towards a range of building assessment tools and resources.

Ms Jenny Davis
Executive Director, Infrastructure NSW, Australia.

Jenny is an Executive Director at Infrastructure NSW, contributing to the development of infrastructure strategies for growth in NSW and for the Restart NSW Fund, the NSW Government’s initiative for recycling assets. Her career has spanned public works, energy and the telecommunications sectors in Australia and in Papua New Guinea and included international collaborations and business development.

Jenny is a member of a number of NSW Government project advisory boards and was a member of Committee for Economic Development of Australia’s Sustainability Leaders Round Table.

Jenny is a board member on the Heritage Council of NSW. Jenny is passionate about the value to our society of heritage places, buildings and other destination items and how they impact where we want to live and work.

Jenny holds a Bachelor Degree in Financial Administration and is a Graduate of the Australian Institute of Company Directors.

Dr Tom Dolan
Research Associate, International Centre for Infrastructure Futures, University College London, UK

Tom Dolan is Research Associate and Centre Co-ordinator for the International Centre for Infrastructure Futures (ICIF). Current research interests include infrastructure perception and conceptualisation, future scenarios, systems thinking, decision support, performance measurement and public policy.

Tom is currently editing the Conference Proceedings for ISNGI 2014 and is guest editor to a special issue ‘Next Generation Infrastructure: From Complex Technological Artefacts to Agents of Social Change’ of the International Journal of Complexity in Applied Science and Technology.

For his EngD, Tom undertook a four year multi-disciplinary research project to analyse the impact of European environmental, water and agricultural legislation on water company investment planning processes, member state regulators and other stakeholders.

Tom holds an Executive MBA and MSc Economics for Natural Resource and Environmental Management from Cranfield University.

Dr Massimo Fiorentini
Associate Research Fellow, Sustainable Buildings Research Centre, University of Wollongong, Australia.

Dr Massimo Fiorentini is a Research Fellow at the Sustainable Buildings Research Centre (SBRC) at University of Wollongong. He is a Mechanical Engineer; he obtained his Bachelors and Master’s Degree from Politecnico di Milano (Italy) and was then employed at ABB as a Product Manager in the Low Voltage Products division.

He then joined Prof Paul Cooper at SBRC to continue his studies and obtained his PhD from University of Wollongong. During his PhD, he was a core member of Team UOW, winner of the Solar Decathlon China 2013 competition.

Massimo’s PhD research focused on the development, of advanced control and optimization strategies for building energy management. He was also awarded an additional scholarship from CSIRO, and collaborated with research scientists from the CSIRO Energy Centre on his research.

Recently he has been working on the development and integration of advanced embedded sensing units and controllers for buildings.

Mr Wienke Giezeman

Wienke Giezeman is the founder of The Things Network. He is on a mission to provide the entire world with a free and open internet of things data network. He managed to provide the city of Amsterdam with coverage in six weeks, and he is now building a global IoT data network.

He started his career with KPN but soon after he left the corporate world and founded WappZapp, a video on demand platform providing curated...
free and paid video. Wappzapp was acquired by Sanoma Publishing at the end of 2014.

Wienke has been fighting for a free and open internet since he founded Startups for Net Neutrality. Together with a group of people he let the EU Parliament know how important net neutrality is for starting online businesses.

He is also the founder and CEO of The Smiths, an app agency, and he is mentor at Rockstart Accelerator. He talks about the Internet of Things, Startups, net neutrality and app development.

Dr Matt Ives
Infrastructure Systems Modeller, Environmental Change Institute, University of Oxford, UK.

Dr Matt Ives is a research scientist with extensive experience in systems modelling, environmental sustainability, economics, and information technology. He has experience in both the private and public sectors including modelling infrastructure adaptation in UK, assessing AusAID-funded sustainable infrastructure projects in China; working on sustainability indicators with the US Forest service; on fisheries assessment and population modelling in Australia; and in developing software systems for private enterprises.

Dr Ives is currently employed as an Infrastructure Systems Modeller at the Oxford University’s Environmental Change Institute where he is combining his passion for environmental sustainability with his years of experience in systems modelling. As a key member of the Oxford-led Infrastructure Transitions Research Consortium (ITRC) Dr Ives managed the development of the National Infrastructure Systems Model for long-term planning (NISMOD-LP).

Through collaborations with HM Treasury Infrastructure UK and the new National Infrastructure Commission Dr Ives has been applying the NISMOD-LP tool in the UK to help inform decisions around future infrastructure requirements and the implications of changing socio-economic and climatic conditions on our economic sustainability and prosperity.

Dr Ives is also currently working with the UN Office for Project Services (UNOPS) to develop international infrastructure modelling capabilities in post-disaster, post-conflict areas to help ensure that infrastructure is being "built back better" and that interdependencies between infrastructure sectors are incorporated into planning decisions.

Dr Ives holds an Honours degree in Economics and a PhD in fisheries systems modelling from the University of NSW, Australia as well as a Masters of Environmental Management from Portland State University, USA.

Mr Omar Khalifa
Chief Executive Officer, iAccelerate, University of Wollongong, Australia.

Omar’s background is diverse and includes working in many sectors undergoing transition and growth – from the space shuttle to bicycle advocacy; internet networks to online communities; energy saving to environmental sustainability; not-for-profit to revenues of $500 million; local to global.

Specialities: Specialising in defining, improving and building new organizations and businesses; creating great teams; delivering new products and services in digital and technology-driven sectors; enhancing environmental/ethical/social responsibility.

He recently joined the University as the CEO of iAccelerate.

Professor Amal Kumarage
Senior Professor, Department of Transport and Logistics Management, University of Moratuwa, Sri Lanka; Member, SMART Scientific Advisory Committee.

Amal is a Senior Professor at the Department of Transport and Logistics Management, University of Moratuwa, Sri Lanka. After visiting the University of Wollongong as an Endeavour Executive Fellow in 2014, Amal was invited to join the SMART team, where he is primarily conducting collaborative research.

Amal received his PhD from the University of Calgary, Canada in 1990. He is one of the eminent Sri Lankan academics working in the transport planning and logistics area. Amal has served as Chairman of the National Transport Commission of Sri Lanka, scientific adviser to the governments of Sri Lanka and the Maldives, and consultant to the World Bank and the Asian Development Bank.

Mr Brendan Lyon
Chief Executive Officer, Infrastructure Partnerships Australia ; Member, SMART Advisory Council, Australia.

Brendan Lyon is the Chief Executive of Infrastructure Partnerships Australia, the peak infrastructure policy partnership between Australia’s Commonwealth and state governments, and the business sector.

Joining IPA on its formation a decade ago, Brendan initially led the policy and research team, before being appointed CEO in early 2008.

Through strong, evidence-based ent programs and developing business and strategic plans. This experience has been gained working in various industry sectors including agribusiness, health, biotechnology, creative industries and most recently the water industry.

Dr Charles ‘Chick’ Macal
Systems Engineer, Argonne National Laboratory, USA.

Charles ‘Chick’ Macal is a senior systems engineer at Argonne National Laboratory. He specialises in a type of computer simulation called agent-based modeling, which calculates likely decisions for each “actor”— one person, for example — in a simulation and then sees what impact those have on other agents. He has applied agent-based modeling to simulate the spread of MRSA bacteria, to forecast economic panics and to predict consumer behaviour, among other projects.

Dr Nicola Nelson
Manager, Health, Environment & Asset Science, Sydney Water, Australia; Member, SMART Scientific Advisory Committee

Dr Nelson has extensive experience in the management of research and development. This includes an understanding of both the research and end-user perspectives, having completed a PhD in agricultural science, lead industry R&D programs and assisted private companies with commercialisation of R&D.

Dr Nelson has also held a number of

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Dr Nelson has also held a number of
management roles in both the public and private sector leading business development programs and developing business and strategic plans. This experience has been gained working in various industry sectors including agribusiness, health, biotechnology, creative industries and most recently the water industry.

Mr Robert Ogie
Associate Research Fellow, SMART Infrastructure Facility, University of Wollongong, Australia.

Robert is a Data Analyst and early career researcher at SMART Infrastructure Facility, University of Wollongong. Before joining SMART, Robert worked in both the IT banking industries. His areas of expertise include (but are not limited to) infrastructure network modelling and analysis, geospatial analysis and GIS applications, data analysis and data-driven innovations, cyber security and critical infrastructure, and knowledge sharing in cyber security.

His motivation in research is driven by a strong desire to systematically and creatively translate his expertise into a new stock of knowledge for enhancing the security and safety of people, and the infrastructure on which they depend. He holds a Bachelor’s degree in Electrical & Electronics Engineering from the Nnamdi Azikiwe University, Nigeria. In 2013, he was awarded a master’s degree in Information Systems from the University of New England, Australia. His ongoing PhD program is being undertaken on a part-time basis at the University of Wollongong. The research will provide new understanding of how to promote knowledge sharing in cyber security.

Professor Pascal Perez
Director, SMART Infrastructure Facility, University of Wollongong, Australia.

Professor Pascal Perez received his PhD in Environmental Studies from Montpellier University, France in 1994. Pascal is a specialist of integrative infrastructure modelling, using various computer simulation technologies to explore complex interactions between social and technological components of infrastructure systems. He has a 30-year experience in complex system modelling, first in France, then at the Australian National University and CSIRO. Pascal joined the University of Wollongong in 2011. He currently is the Director of the SMART Infrastructure Facility, University of Wollongong.

He is a Fellow of the Royal Society of NSW. He is also a member of the Modelling and Decision Support Division of Simulation Australasia and of the Modelling and Simulation Society of Australia and New Zealand (MSSANZ).

In 2002, he received an ARC-International Linkage Fellowship to develop social modelling research at the Australian National University. Professor Perez has published 148 refereed papers and book chapters. In 2006, he co-edited with his colleague David Batten the book ‘Complex Science for a Complex World’ (ANU E Press).

Prof. Perez is responsible for the management and delivery of all aspects of infrastructure modelling and simulation at the SMART Infrastructure Facility. As Director he is responsible for SMART’s academic governance and for establishing strategic scientific partnerships in Australia and beyond.

Dr Ricardo Peculis
Senior Research Fellow, SMART Infrastructure Facility, University of Wollongong, Australia.

Dr Ricardo Peculis is an engineer experienced in large software-intensive systems for defence and civil applications in Australia and abroad. Dr Peculis joined SMART Infrastructure Facility in 2016 as a Senior Research Fellow, a position which will see him apply the skills acquired throughout his career to the research being conducted at the Facility. Prior to joining SMART, Dr Peculis has had extensive experience working on major Australian defence projects both in Australia and the USA.

Ricardo was awarded PhD in Systems Engineering in 2012 by the University of South Australia. His thesis “A Framework for Steering Software-Intensive Acquisitions to Success” addressed socio-technical aspects of large software-intensive acquisitions and proposed ways to improve effectiveness of these complex enterprises. The research also applied Agent-Based Modelling and Simulation to explore, expand understanding and testing “what if scenarios” in the social-technical systems of large software-intensive projects.

Dr Richard Sharp
Principal, Arup; Member, SMART Advisory Council, Australia.

Dr Richard Sharp is a Principal of Arup, and leads its Management Consulting practice in Australasia. Richard has over 30 years’ experience in the infrastructure sector, working across road, rail, information technology, commercial office buildings, industrial and residential property, hotels and education facilities. He has worked for both Government and for the private sector, and has had extensive dealings at very senior levels of Defence and Government in Australia and the US.

Richard has led reviews of major capital works funding and delivery for the Federal Government, has led complex technical and commercial assessments of assets such as the Sydney Harbour Tunnel and Lane Cove Tunnel, undertaken extensive masterplanning work for universities, provided Project Diagnostic advice for rail operators, and developed Knowledge Management systems for State Road Authorities.

He is a member of Infrastructure Partnerships Australia's Transport Taskforce, a member of the Advisory Council for the Engineering Faculty at UTS, an accredited Gateway Reviewer, and a Fellow of the Australian Institute of Company Directors.

Dr WW ‘Wijnand’ Veeneman
Scientific Director, Next Generation Infrastructures, Delft University of Technology, The Netherlands.

Researching, educating and advising on infrastructure governance, with a focus on public transport organisation and management for both public transport authorities and operators.

Teaching and researching project management in large engineering projects in masters and executive programs of organisations like Delft University of Technology, Shell, Essent, Toptech and other technology companies.

Specialties: Comparative analysis of governance in infrastructures, governance models and strategies for clients, including tendering strategies: both preparing terms of reference from the principal perspective as well as bids from the agents perspective.

Currently, Wijnand is member of the committee...
Professor Paul Wellings joined the University of Wollongong as Vice-Chancellor in January 2012. Prior to his current role, Professor Wellings held the position of Vice-Chancellor of Lancaster University from 2002-2011.

Educated at the Universities of London, Durham and East Anglia, Professor Wellings began his career as a NERC Research Fellow and moved to Australia as a research scientist at the Commonwealth Scientific and Industrial Research Organisation (CSIRO), before moving to Australia as a research scientist at the CSIRO as Deputy Chief Executive. In 1999 he returned to the CSIRO as Deputy Chief Executive.

He is currently a board member of the University of Wollongong, Dubai, a Trustee of Guangdong University of Foreign Studies (GDUFS), China, and a Director of the Illawarra Health and Medical Research Institute (IHMRI). Professor Wellings also serves on the Australian Research Council (ARC) Advisory Committee, the Global Foundation Advisory Council and the Bundanon Trust Board.

Professor Wellings was appointed Commander of the British Empire (CBE) in the 2012 Queen’s Birthday Honours list for services to higher education. He received an Honorary DSc from Lancaster University in 2014.

Dr Ian J Watt AC
Chair, SMART Advisory Council, SMART Infrastructure Facility, University of Wollongong, Australia.

Dr Ian J Watt AC has had a long career as one of Australia’s most distinguished public servants, with nearly 20 years at the highest levels of the public service. His most recent and most senior appointment was as Secretary of the Department of the Prime Minister and Cabinet and head of the Australian Public Service, a position he held from 2011 until the end of 2014. Prior to that, he was Secretary of the Departments of Defence; Finance; and Communications, Information Technology and the Arts between 2001 and 2011. Before that, he was Deputy Secretary of the Department of the Prime Minister and Cabinet.

Dr Watt serves on the Boards of Citigroup Pty Ltd, Smartgroup Corporation, the Grattan Institute (University of Melbourne) and O’Connell Street Associates Pty Ltd, and is a Member of the Male Champions of Change. He is also Chair of the National Innovation and Science Agenda Implementation Committee and Chair of the International Centre for Democratic Partnerships.

Dr Tim Williams
Chief Executive Officer, The Committee for Sydney, Australia.

Dr Tim Williams is CEO of the Committee for Sydney which the Premier recently described as ‘a fantastic organisation, challenging the city to be great’. Before coming to Australia in late 2010, Tim was recognised as one of the UK’s thought-leaders in urban regeneration and economic development for his role in developing East London as CEO of the Thames Gateway London Partnership, where he helped secure the Olympics for Stratford. He has also served as a special advisor on urban development, governance, city strategy and planning to five successive UK cabinet ministers, and to the Mayor of London. He was a founding associate member of Tony Blair’s Prime Minister’s Delivery Unit and was MD of Navigant Consulting’s public services team in London.

His work for the Committee for Sydney focuses on the Big City policy issues in policy-making for Sydney – on how to ensure it flourishes and provides opportunities throughout Greater Sydney. The Committee is currently working with the NSW Government on the new Financial Services Knowledge Hub and on developing a strategy for Sydney as a Global Talent Hub. Tim has a PhD in history and is a qualified barrister. He is an adjunct professor at UTS Business School. Tim was raised in public housing in Old South Wales and is now on the board of Compass Housing, one of the biggest social housing providers in Australia.

Dr Jie ‘Jack’ Yang
Associate Research Fellow, SMART Infrastructure Facility, University of Wollongong, Australia.

Dr. Jie (Jack) Yang has extensive experience in machine learning and cloud computing. Prior to joining University of Wollongong, Jie completed his Master degree from Huazhong University of Science and Technology (HUST), China. He was awarded the “University Prize for Top Ten Students in Scientific Research” from HUST, and also received the second prize from “China National Mathematical Modelling” in 2007.

He was awarded his PhD in Spatial Modelling in 2013 from the University of Wollongong and has received 3 national awards related to his work.

At SMART, Dr. Yang is responsible for translating conceptual models into implementation programs and code prototyping (in particular, machine learning algorithms). Dr. Yang also assists with the migration of machine-based workflows to SMART’s new cloud computing facility.

His current work involves the development of a big data analytic framework for numerous applications, such as social media, public transportation, and user activity.

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About the SMART Infrastructure Facility

The University of Wollongong’s SMART Infrastructure Facility is one of the largest research institutions in the world dedicated to helping governments and business better plan for the future.

SMART aims to be internationally recognised as a leading provider of research and learning for smart infrastructure solutions. The facility provides a collaborative environment that delivers cutting edge research and analysis to create a step change in the universal quality of life.

The facility is committed to collaborating with industry to develop innovative solutions and technologies that deliver real impact.

Our dedicated team of researchers tackle infrastructure issues from an integrated and multi-disciplinary perspective, with a focus on how infrastructure and social behaviour intersect to ensure more liveable cities and regions.

This work is augmented by collaborations with experts across UOW’s faculties in infrastructure-related fields such as energy generation and storage, water sustainability, spatial geotechnics and environmental engineering.

Since opening in 2011 SMART has built an international profile working with government agencies in Australia and around the world, and has developed a strong network of global collaborators, as demonstrated by our ISNGI host partners. This global network has resulted in commissioned research from Indonesia, Vietnam and China.

SMART’s high-level advisory council, is led by Dr Ian Watt AO, and includes leaders of industry and finance, professional planners, former government infrastructure regulators and heads of government agencies.