

Annual Report, 2014

This report provides a summary of the activities of Melbourne Networked Society Institute (MNSI), formerly known as the Institute for a Broadband-Enabled Society (IBES) focusing on research capacity, linkage creation and partnerships, and knowledge transfer for the 2014 calendar year. It includes additional information that is not included in the IBES Annual Report 2013–4, which covers the period 1 July 2013 to 30 June 2014.

Professor Thas A Nirmalathas was officially appointed Institute Director in August 2014. Under Thas' leadership, the Institute has developed a new Strategic Plan informing the operations of the Institute for the next 5 years. The plan was approved by the University in early 2015 and resulted in the Institute changing its name to the Melbourne Networked Society Institute.

Research Capacity

Since its inception in 2009, the Institute has invested \$3.84 million in research to support 93 research projects. 287 researchers from the University of Melbourne and 97 external collaborators have contributed to the IBES research projects. 34 research projects have attracted \$11.6 million in additional funding to the University and total external funding secured from all sources is in excess of \$25m with a current Return on Investment of \$3.74 for every \$1 invested. IBES has supported the next generation of scholars by providing 25 PhD Scholarships to students. Research outcomes include over 200 research publications from IBES researchers.

In 2014 the Institute supported 110 researchers from 31 departments across the University of Melbourne and 62 external collaborators have contributed to the Institute's research program. These in-kind researcher contributions have been captured through the provision of timesheets. A full list of researchers and collaborators is available on pages **58-59** of the IBES Annual Report 2013-4.

In 2014 the Institute provided seed-funding for 5 new projects:

- Culturally and Linguistically Diverse Ethics and Research resources (The CALDER Pilot Study, Prof. David Story, \$31,554)
- Colourimetric sensor chips for lab-on-a-smartphone, Prof Kenneth Crozier, \$34,621
- Domestic 3D Printing Research Initiative – domestic and commercial models of use for additive manufacture, Dr Bjorn Nansen, \$33,360
- "Super-Participation" and Everyday Political Talk Online: A Comparative Analysis, Dr Scott Wright, \$45,108.76
- New Generation EEG Devices for Regional and Remote Health Care, Prof Stan Skafidas, \$49,420

Additional project details are available in the IBES Annual Report 2013-4.

The MNSI Executive Committee shapes the research direction of the Institute. Details of the committee are included in Appendix A.

Seed funded projects have resulted in funding from external bodies. These are outlined in Table 1 below.

Table 1: Seed funded projects that resulted in external funding in 2014

Funding Body	Title	Chief Investigator	Cash funding
Commonwealth Dept of Health	Evaluation partners in the 2013-2014 Commonwealth Department of Health NBN Enabled Telehealth pilots program project.	Dr Kathleen Gray	\$110,000
ARC Discovery Grant	<i>Digital Commemoration:</i> investigates the interrelated commemorative practices, technology platforms, and social formations associated with digital commemoration.	Dr Michael Arnold	\$256,000
Dept of Business & Innovation	Establishment and operation of the Microsoft Research Centre for Social Natural User Interfaces (SocialNUI)	Prof Frank Vetere	\$3,000,000
Total			\$3,366,000

The Institute is supporting the next-generation of researchers through the provision of top-up scholarships and Strategic APAs. IBES awarded 4 PhD Top-up Scholarships 2014 and 1 STRAPA in 2014, bringing the total number of students supported since establishment to 25. The 2014 students are:

- Andrea La Nauze, *Tell Me Something I Don't Already Know: Consumer (un)informedness and the impact of new technologies on residential energy consumption*
- Behnaz Rostami Yeganeh, *Video Conferencing for Domestic Social Interactions*
- Ibrahim AL-Mahdi, *An evaluation of Online Medical Consultation, examining theory, practice, sustainability challenges and consumer perspective*
- Tshepo M Rasekaba, *Telemedicine for Insulin Treated Gestational Diabetes Mellitus*
- Estelle Boyle (STRAPA), *Mediating social exclusion: ICT access in Australian refugee communities*

The Institute's lab, has continued to support the researcher agenda and foster collaboration between researchers and industry. The lab has been responsible for supporting the training of students with 10 Master of Information Technology (MIT) and Master of Information Systems (MIS) students undertaking internships to work on a variety of research projects.

A list of publications and conference presentations relating to the Institute's projects is included on pages 62-63 of the IBES Annual Report 2013-4. Additional presentations and publications are included in Appendix E of this report.

The Institute continues to support the Centre for Energy-Efficient Telecommunications, the Health and Biomedical Informatics Centre and the Microsoft Centre for Social Natural User Interfaces.

Linkage creation and partnerships

The Institute actively assists in creating connections between University of Melbourne researchers and industry, through regular activities. In 2014 the Institute partnered with industry on a number of research projects aimed at solution development, including:

- The Microsoft Research Centre for Social Natural User Interfaces supported by Microsoft, the Victorian Government and the University of Melbourne
- Working with Alcatel-Lucent's on their *ng connect* program in Australia.

The Institute continues to benefit from the input of its Advisory Board, comprising high profile business leaders. Appendix B lists the members of the IBES Advisory Board, and the meeting dates.

The Institute leadership actively engages with a range of organisations to build partnership opportunities and collaborations. Details of executive engagement are contained on page 64 of the IBES Annual Report 2013-14. Additional engagement activities are contained in Appendix C of this report.

Knowledge transfer and profile building

The Institute's profile continues to grow through active engagement with industry and government. The Institute has attracted a number of high profile speakers to the University and has hosted national and international delegations. Details of the events in the past year are highlighted on pages 5-6 of the IBES Annual Report 2013-4. Additional events in the second half of 2014 include:

- August 2014: "The Future of Mobile" public lecture by Rick Costanzo, Executive Vice President and General Manager of Global Mobility Solutions, SAP
- September 2014: Public lecture by Mark Scott, Managing Director, ABC
- October 2014: Discussion/Seminar with Genevieve Bell from Intel Labs on *User Interaction in a Connected World*
- December 2014: Workshop with the *Defence Science Institute* by Stuart D. Milner, Research Professor and Director, Center for Networking of Infrastructure Sensors, University of Maryland

A list of media articles covering research associated with IBES is listed on pages 60-1 of the IBES Annual Report 2013-4. Additional coverage is included in Appendix D of this report. Media coverage of the Institute's activities has reduced from previous years. This is due to the Institute transitioning from the Institute for a Broadband-Enabled Society to the Melbourne Networked Society Institute.

In 2014 IBES produced a number of publications for general audiences. These include the IBES Annual Report 2013-4 and 5 research publications arising from the Institute's research projects. The following research publications were produced in 2014:

- *Framing the NBN: Public perceptions and media representations*, January 2014
- *Telling Our Stories: Aboriginal young people in Victoria and Digital Storytelling*, February 2014
- *SeeCare IPTV: Broadband Technology for Improved Health Literacy*, March 2014
- *Participatory Sensing: Enabling interactive local governance through citizen engagement*, November 2014
- *Paediatric Teledentistry: delivering oral health services to rural and regional children*,

Appendix A: IBES Executive Committee Membership and Meetings

Member	School/Department
Thas Nirmalathas	IBES
Fernando Martin-Sanchez	Health and Biomedical Informatics Centre
Scott McQuire	Culture and Communication
Frank Vetere	Computing and Information Systems (from August 2014)
Nick Reynolds	Melbourne Graduate School of Education
Simon Bell	Department of Management & Marketing
Elizabeth Ozanne	Social Work
Jason Bosland	Melbourne Law School
Departures	
Emma Dawson	Executive Director, IBES (July to November 2014)
Andrew Kenyon	Melbourne Law School
Lynda Ball	Melbourne Graduate School of Education (leave July to October 2014)

The IBES Executive Committee meets once a month, unless otherwise agreed, for 1 hour. Additionally, the Executive Committee have participated in the IBES annual planning day.

The meeting dates for 2014 are as follows:

31 March	25 August
28 April	8 September (Seed Funding Assessment)
26 May	22 September (Planning Day)
30 June	27 October
28 July	24 November

Appendix B: Advisory Board Membership and Meetings

Member	Organisation
Steve Wood	New Wave Ventures
Genevieve Bell	Intel Corporation
Chris Hancock	AARNet Pty Ltd
Mark Ablett	Juniper (Resigned December 2014)
Cathie Steele	Monash University
Kevin Bloch	Cisco (Resigned June 2014)

Meeting Dates 2014

13 March 2014
18 June 2014
9 October 2014
26 November 2014

Each meeting was for two hours.

The IBES Advisory Board operates according to its Charter, which has been developed by the Institute.

Appendix C: Engagement

Meetings

Institute representatives had meetings with the following organisations:

- AARNet
- Alun Davies, Digital Economy Coordinator & Regional Communications Advocate, New England
- Buzz Products
- Digital Learning and Teaching Victoria (DLTV)
- Ericsson
- Federation Square
- Global Community Resourcing Worldwide
- Google Australia
- HITNet
- Huawei
- Hydrix
- Intel
- Junpier
- MediaLinks
- Our Say
- Polycom
- Pricewaterhouse Coopers
- Real Visual
- Samsung
- State Government of Victoria
- Telstra
- Vui
- Warren & Brown

Presentations: Thas Nirmalathas

NBN Cost Benefit Review Panel – Department of Communications, Sydney, 15 April 2014

The OptoElectronics and Communication Conference and Australian Conference on Optical Fibre Technology 2014 (OECC/ACOFT), Melbourne, 6-10 July 2014

Advanced Photonics for Communications 2014, San Diego, 13-16 July 2014

Progress in Electromagnetics Research Symposium (PIERS), Guangzhou (Canton), CHINA 25-28 August 2014

Huawei ICT Roadshow, Melbourne, 9 September 2014

FTTH Asia Pacific Council, Melbourne Workshop, Melbourne, 29 September 2014

FTTN Council Asia-Pacific, Melbourne 10 October 2014

2014 IEEE Photonics Conference, San Diego, California, 12-16 October 2014

Internet of Things Forum, Chicago, 14-16 October 2014

Appendix D: Media (July to December 2014)

Press Release

The bumpy road of broadcasting, Monday 13 October 2014

Coverage

L Heemsbergen, 'Say Ello to the new privacy debate on social media' *The Conversation*, 29 September 2014

R Pearce, 'Cloud technologies to help ABC find savings, says Mark Scott' *Computerworld*, 14 October 2014

C Taylor, 'Work flexibility: how much is too much?' *HC Online*, 17 October 2014

R Beeby, 'Patients in remote areas to get virtual dental checks' *Research Professional*, 16 July 2014

Price asks listeners for their reaction in regard to the major budget cuts to the ABC, 2GB Radio, Sydney, 13 October 2014

M Knott, 'Abbott risks political pain with cuts to ABC, warns Scott' *Sydney Morning Herald*, 14 October 2014

M Bodey, 'Mid-deal funding cuts very rare: Scott' *The Australian*, 14 October 2014

Mark Scott ABC cuts story, ABC News Breakfast, *ABC News 24*, 14 October 2014

Mark Scott ABC cuts story, *666 ABC Canberra*, 14 October 2014

Mark Scott ABC cuts story, *891 ABC Adelaide*, 14 October 2014

Mark Scott ABC cuts story, *936 ABC Hobart*, 14 October 2014

AAP, 'Cuts to hit ABC services' *Canberra Times*, 14 October 2014

Iain Gillespie, 'High-speed broadband backers expect benefits to flow' *The Age*, 29 October 2014

Appendix E: Publications and conference presentations

Publications

L Hopkins, G Wadley, F Vetere, M Fong, J Green (2014) 'Utilising technology to connect the hospital and the classroom: maintaining connections using tablet computers and a "Presence" App' *Australian Journal of Education*

Marino R, Clarke K, Manton D, Hallett K, Collman R, Borda A, 'Teleconsultation and telediagnosis for oral health assessment: an Australian perspective', Chapter 10, pp101-112, in 'Teledentistry' book, ISBN 978-3319089720, published by Springer, September 2014.

Mariño R, Tonmukayakul U, Marwaha P, Collmann R, Hopcraft M, Manton D, Stranieri A, Clarke K. Teleconsultation/telediagnosis using teledentistry technology: a pilot feasibility study. *International Journal on Advances in Life Sciences*, v 6 n 3&4, 291-299. Dec 2014.

Kathleen Gray, Ken Clarke, et al 'Internet protocol television (IPTV) for personalised home-based health information: design-based research on a diabetes education system' *JMIR Res Protoc* 2014 (Mar 10); 3(1):e13.

F. Al-Dirini, F. M. Hossain, A. Nirmalathas, and E. Skafidas, "All-Graphene Planar Self-Switching MISFEDs, Metal-Insulator-Semiconductor Field-Effect Diodes," *Scientific Reports*, vol. 4, Feb 5 2014.

F. Al-Dirini, F. M. Hossain, A. Nirmalathas, and E. Skafidas, "Asymmetrically-gated graphene self-switching diodes as negative differential resistance devices," *Nanoscale*, vol. 6, pp. 7628-7634, 2014.

C. Jayasundara, M. Zukerman, T. A. Nirmalathas, E. Wong, and C. Ranaweera, "Improving Scalability of VoD Systems by Optimal Exploitation of Storage and Multicast," *Ieee Transactions on Circuits and Systems for Video Technology*, vol. 24, pp. 489-503, Mar 2014.

C. Ranaweera, E. Wong, C. Lim, A. Nirmalathas, and C. Jayasundara, "An Efficient Resource Allocation Mechanism for LTE-GEAPON Converged Networks," *Journal of Network and Systems Management*, vol. 22, pp. 437-461, Jul 2014.

K. Wang, A. Nirmalathas, C. Lim, E. Skafidas, and K. Alameh, "Experimental demonstration of free-space based 120 Gb/s reconfigurable card-to-card optical interconnects," *Optics Letters*, vol. 39, pp. 5717-5720, Oct 1 2014.

Y. Z. Yang, C. Lim, and A. Nirmalathas, "Investigation on Transport Schemes for Efficient High-Frequency Broadband OFDM Transmission in Fibre-Wireless Links," *Journal of Lightwave Technology*, vol. 32, pp. 267-274, Jan 15 2014.

Conference Papers

R Chenhall, 'Cosmopolitan Anthropologies' *Combined ASAAANZ/AAS Conference 2014*, Queenstown, New Zealand, 10-13 November 2014.

H Davis, Waycott, J., Warr, D., & Edmonds, F. (2014) Sharing Housebound Experiences via Online Videos: Opportunities to Enhance Wellbeing? Paper presented at the *Smart Health and Body in Design Workshop, OzCHI 2014*, 2 December.

A Dattakumar, 'An Open Research Initiative to Improve the Evaluation of Australian Telehealth Implementations' *Australasian Telehealth Conference (ATC)*, Melbourne, 19-20 June 2014.

S McQuire, K Smith 'Surveying the Technology Frontier and How Industry and Government are Taking Advanced Ideas to the Market' *Carlton Connect Conference 2014: Challenges, Partnerships, Solutions*, Carlton, September 2014.

R Mariño, Marwaha P, Collmann R, Stanieri A, Hopcraft M, Manton D, Clarke K 'Field testing of remote teledentistry technology.' *eTELEMED 2014, The Sixth International Conference on eHealth, Telemedicine, and Social Medicine*. March 2014. Barcelona Spain.

R Mariño, Clarke K., et al, 'Field testing of Teledentistry in residential aged-care facilities: opportunities and challenges', poster presentation *5th ASSCID Gerodontology and Special Needs Conference*, Nov 2014, Newcastle, NSW

I. Akhter, C. Ranaweera, C. Lim, A. Nirmalathas, and E. Wong, "Small-Cell Network Site Planning: A Framework Based on Terrain Effects and Urban Geography Characteristics," *2014 Optoelectronics and Communications Conference and Australian Conference on Optical Fibre Technology (Oecc/Acoft 2014)*, pp. 422-424, 2014.

F. Al-Dirini, F. M. Hossain, A. Nirmalathas, and E. Skafidas, "All-Graphene Planar Self-Switching MISFEDs, Metal-Insulator-Semiconductor Field-Effect Diodes," *Scientific Reports*, vol. 4, Feb 5 2014.

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B. J. Gouhier, K. L. Lee, A. Nirmalathas, C. Lim, and E. Skafidas, "Investigation on the Performance of a 20 GHz Electro-Optic Probing Scheme Using Balanced Heterodyne Detection," *2014 Optoelectronics and Communications Conference and Australian Conference on Optical Fibre Technology (Oecc/Acoft 2014)*, pp. 100-102, 2014.

C. Jayasundara, M. Zukerman, T. A. Nirmalathas, E. Wong, and C. Ranaweera, "Improving Scalability of VoD Systems by Optimal Exploitation of Storage and Multicast," *Ieee Transactions on Circuits and Systems for Video Technology*, vol. 24, pp. 489-503, Mar 2014.

C. Lim, Y. H. Yang, and A. Nirmalathas, "Transport Strategies for Broadband Wireless Signals Distribution in Fiber-Wireless Links," *2014 Optoelectronics and Communications Conference and Australian Conference on Optical Fibre Technology (Oecc/Acoft 2014)*, pp. 123-125, 2014.

C. Ranaweera, E. Wong, C. Lim, A. Nirmalathas, and C. Jayasundara, "An Efficient Resource Allocation Mechanism for LTE-GEPON Converged Networks," *Journal of Network and Systems Management*, vol. 22, pp. 437-461, Jul 2014.

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Y. Z. Yang, C. Lim, and A. Nirmalathas, "Investigation on Transport Schemes for Efficient High-Frequency Broadband OFDM Transmission in Fibre-Wireless Links," *Journal of Lightwave Technology*, vol. 32, pp. 267-274, Jan 15 2014.