Research management professionals – supporting and enabling research collaboration

Dr Bryony Wakefield, University of Melbourne
ARMS Fellow and Board Member
Research management/administration defined by RAAAP (Research Administration As A Profession)

A research administrator (research manager in some countries) is defined as someone whose role (or a significant part of it) is devoted to support some part of the research lifecycle, including, but not limited to:

- identifying funding sources and customers
- preparing proposals, costing, pricing and submitting funding proposals
- drafting, negotiating and accepting contracts
- dealing with project finance
- employing staff on research contracts
- reporting to funders
- advising on research impact, knowledge exchange, technology transfer
- supporting short courses, postgraduate research student administration
- research strategy and policy
- research assessment
- ethics and governance
- information systems
- audit, statutory returns
- research office management

Research administrators mostly work in universities and research institutes but many also work in hospitals, charities, government and funders.

https://raaapworldwide.wordpress.com/research-administration
What role do you play in ensuring a successful research collaboration?

Whether the collaboration is within your institution, local, national or international, research administrators can play an important role in ensuring both the effective and efficient management of research.
Building Research Collaboration Networks - An Interpersonal Perspective for Research Capacity Building

Jun Song Huang, PhD, National Institute of Education, Singapore, *Journal of Research Administration*, Volume XLV, Number 2, Fall, 2014. Published by Society of Research Administrators International

The author argues that of two hypothetical institutes (Figure 1), Institute B’s intentional connections provide greater opportunity for research collaboration than does Institute A wherein the researchers work in isolation. The author further claims that Institute B has higher research capacity as compared to Institute A.

*Figure 1. Comparison of Institute A and Institute B*
…research capacity building constitutes building capacities at individual, interpersonal, organizational and inter-organizational levels.”

What is the research administrators role in building research collaborations?

Goal alignment?
Analysis of networks/collaborations?

Figure 4. A holistic perspective on research capacity building
Quick Facts

Motto

Postera Crescam Laude
"We grow in the esteem of future generations"

Year established
1853

Chancellor
Allan J. Myers AC QC

Vice-Chancellor
Professor Glyn Davis AC

Main campus location
Parkville, Victoria, Australia

Affiliations
- Group of Eight
- Universitas 21
- Association of Pacific Rim Universities

No. 1
Research university in Australia

$850m
Annual research expenditure

47,000
Students

6,500
Staff

9
Undergraduate degrees

400+
Graduate courses
“Like people, research collaborations are integral to the research endeavour. Their importance is evident in multi-authored research publications, research grants and sponsored research. Research collaborations, whether small or large, provide benefits for our researchers and their research partners.”
• Researcher-to-researcher collaborations
• Institution-level research collaboration
• Research precincts
• Enabling collaboration and supporting our researchers
The Melbourne Interdisciplinary Research Institutes focus on three key themes: understanding our place and purpose; fostering health and well-being; and supporting sustainability and resilience.
**Melbourne Energy Institute**
An access point for industry, government and community groups seeking to work with leading researchers on **innovative energy solutions**

**Melbourne Networked Society Institute**
Undertake interdisciplinary research on the connectivity between people, places and things to **solve the problems facing the networked society**

**Melbourne Neuroscience Institute**
Draws on the astounding breadth of neuroscience research activity in the University and is charged with **bringing together cross-disciplinary research in neurosciences**

**Melbourne Social Equity Institute**
Supports interdisciplinary research on social equity issues across the **full spectrum of social life** including health, law, education, housing, work and transport.

**Melbourne Sustainable Society Institute**
Facilitates and enables research linkages, projects and conversations leading to **increased understanding of sustainability** and resilience trends, challenges and solutions.
The Melbourne Sustainable Society Institute (MSSI)

Established in 2009, MSSI aims to facilitate and enable research linkages, projects and conversations leading to increased understanding of sustainability and resilience trends, challenges and solutions.

Goals: To enable and support

1. University of Melbourne, Australian and international research linkages and partnerships

2. Development and implementation of interdisciplinary research projects

3. Production and dissemination of high impact publications and research findings

4. Post graduate research and learning

5. Public engagement and debate
MSSI supports a diverse range of interdisciplinary research projects:

- The Climate Reality Project
- New Urban Levers to Address Homelessness
- Australian Coal Transitions: Economic and Social Perspectives
- Sustainable Consumption Beyond the Growth Economy
- Social Sustainability
- Australian Bushfire Prevention
- International Climate Negotiations
- Visions + Pathways 2040
- Habitat III
- Southern Cities Research Centre
- Australian Stocks & Flows Framework
Publications

It is important to us that our research is readily accessible to both the public and the broader research community. All MSSI publications are available for download without charge.

FEATURE PUBLICATION

DOUBLE INDEMNITY URBANISM
Melbourne Sustainable Society Institute Organisational Chart 2016

**MSSI ADVISORY BOARD**
17 experts and leaders in sustainability, plus Chair, Prof Kate Auty

**ASSOCIATES OF MSSI**
24 eminent sustainability researchers and leaders external to the University

**DEPUTY VICE-CHANCELLOR (RESEARCH)** Prof James McCluskey
**PRO VICE-CHANCELLOR (RESEARCH COLLABORATION AND INFRASTRUCTURE)** Prof Liz Sonenberg

**MSSI CORE STAFF**
**MSSI Director** Prof Brendan Gleeson
**MSSI Deputy Director** Prof John Wiseman
**Executive Officer** Craig Prebble
**Executive Assistant** Maria Lawlor (until June), Kate Chilley (from July)
**Communications and Events Coordinator** Claire Denby
**Administrative Officer** Simone Robinson

**MSSI PROJECT STAFF**
Prof Don Henry, Cathy Alexander, Dr Ben Parr, Dr Samuel Alexander,
Dr Fjalard de Haan, A/Prof Janet Stanley, Dr Paul Read

**MSSI HONORARY STAFF**
Prof Jim Falk, Prof Tim Flannery, A/Prof Boris Frankel, Carl Obst

**MSSI EXECUTIVE COMMITTEE**
20 University of Melbourne researchers, plus Chair, Prof Brendan Gleeson and Executive Officer, Craig Prebble
HALLMARK RESEARCH INITIATIVES

With distinct interdisciplinary emphasis, these initiatives provide support for priority areas of research to facilitate the maturing of focused research communities and promote collaboration with external partners.
Research Alliance to End Violence against Women and their Children
- operating under the auspices of the Melbourne Social Equity Institute (MSEI)

Data, Systems and Society Research Network (DSSRN)
- operating under the auspices of the Melbourne Networked Society Institute (MNSI)
Connecting researchers - examples and approaches where research administrators can enable collaboration
Networks as enablers of academic research careers and performance

Caroline Northwood, Monique O’Callaghan, Fraser Rogers, Alice Boland

Both networks are led by academicians for academics with support from professional staff and university structures. Networks are a valuable way for professional staff to deliver tailored support to specific cohorts and leverage cohort expertise and experience in a broad range of research management activities. In doing so, networks contribute to supporting research excellence and growth.

Advantages for researchers
- Enables researchers to work as a cohort
- Enables opportunities for research collaboration
- Provides opportunities to develop professional skills
- Provides support through peer mentoring and coaching
- Provides broader exposure to university structures and decision-making mechanisms
- Supports development of cohort-tailored events and activities

Advantages for research managers
- Provides mechanisms to understand cohort issues/metrics
- Supports targeted communication with cohorts
- Enables delivery of targeted support activities and initiatives
- Facilitates communication between researchers and professional staff
- Enables administrative support to be provided at scale to a specific cohort

Objectives of a researcher network
- Support researchers to achieve research excellence
- Advocate for change in policy, practice and behaviour
- Foster a flourishing and supportive environment
- Connect the university to a wider understanding of cohort issues
- Connect the cohort to university structures and facilitate communication
- Support new collaborative opportunities and knowledge transfer

Challenges/solutions
Time investment of time from network leaders and professional support staff. Commitment from enthusiastic professional staff and network leaders is needed to do what it takes to support and lead the network.

Buy-in from organisational leaders: persistent lobbying may be necessary to push the idea and gain buy-in from senior executives. Engagement of champions is invaluable.

Funding: getting the executive level on board is essential to soliciting funding for network activities. The DVC R&I is a member of the WIN and provided funding to support various activities. The ICR Network is funded by the Faculty Associate Dean, Research.

Success factors
- Flexible inclusive membership
- Academic-led networks with strong governance models from representative steering committees
- Regular events and communication, dedicated social media and websites
- Administrative support and financial resources
- Well connected with other similar purpose networks across the states and externally

Activities
- MGIC ICR Network
  - ECR symposium, a full day event with keynote speakers and ECR oral and poster presentations
  - Perfect Pitch Grant Mentoring, to enable ECRs to develop competitive NHMRC applications with assistance from senior colleagues
  - No-Bill Prize – ECRs describe their research in non-academic language
- RMIT WIN
  - Research Leadership workshop – 2 day workshop for small group of early-mid career academics
  - Participation in ICR/ICR – enabling blended mentoring and coaching for career advancement of a small number of women academics
  - Professional development events – including advice to my younger self panel session and seminar by external guests
  - Annual Symposium – a one day event with presentations from keynote speakers and WIN members on the theme ‘Research: Impact, Engagement and Translation’
  - End of Year Celebrations – a networking cocktail function at which members reflect on what has been achieved and plan for the following year.
Advantages for researcher

- Empowers researchers to work as a cohort
- Enables opportunities for research collaboration
- Provides opportunities to develop professional skills
- Provides support through peer mentoring and coaching
- Provides broader exposure to university structures and decision-making mechanisms
- Supports development of cohort tailored events and activities

Advantages for researcher administrators

- Provides mechanisms to understand cohort issues/priorities
- Supports targeted communication with cohorts
- Enables delivery of targeted support activities and initiatives
- Facilitates communication between researchers and professional staff
- Enables administrative support
The University of Melbourne has long standing links with the University of Birmingham.

Both are founder members of the U21 network and the past few years have seen the strengthening of collaboration and engagement across a number of areas.

This Collaborative Fund will grant awards for short-term visits between the universities that seed and extend collaborative links in research as well as teaching and learning.

Visits can be inbound, outbound or a combination of both. The standard award is $5,000, although in exceptional circumstances additional funding may be awarded.
RESEARCHER LED, PROFESSIONAL STAFF ENABLED

Sue Ryan1, Monique O’Callaghan1, Elicit Marston2, Bryony Wakefield3

1Faculty of Medicine, Dentistry and Health Sciences, The University of Melbourne
2College of Medicine and Dental Sciences, The University of Birmingham

Collaboration is the result of numerous productive interactions and a significant investment in time that evolve into an intellectual engagement with shared research visions and goals. While research collaboration is a declaration and the path leading to it requires developing new networks and ongoing interactions, it can be difficult to start and progress down this path from initial networking meetings to discuss ideas and progress this into sustainable interactions and research with mutual benefit, such as joint publications and generation of preliminary data for inclusion in grant proposals.

INITIAL NETWORKING
Talking to people, discussing ideas and identifying key people

ONGOING INTERACTION
Engaging in research activities and exchanging resources for each other with mutual benefit

SUSTAINABLE COLLABORATION
Research endeavour with intellectual engagement towards a shared research vision and goals

While all researchers are faced with these challenges, early career researchers can be faced with additional hurdles to overcome when it comes to establishing networks and actively pursuing interactions. ECRs are usually yet to establish themselves and their external profile, which may not only make it relatively more difficult to attract and forge new active research interactions, but also to network effectively. They are still developing their networks, and may only have a network or active interactions initiated from their thesis supervisors or post docs/ lab leaders.

FACILITATED RESEARCH MATCHMAKING

The University of Melbourne (UniMelb) and University of Birmingham (UniB) are working together to assist ECRs by offering facilitated research matchmaking; the opportunity to tap into the already established international professional staff networks and their respective links with researchers, to help broker an introduction and initial idea exchange between researchers at each university. We suggest that researchers participating in this exercise who are keen to progress their ideas into active research interactions could apply for funding from a newly-established cross university travel award.
Both UoB and UoM use this information to reach out and attract engagement from ECRs.

UoB and UoM exchange summaries of what their university has to offer.

ECRs provide their professional research support staff with a profile summary of their research needs and what they can offer.

Professional research support staff bridge international boundaries by facilitating an initial introduction, and enabling subsequent idea exchange and discussion between researchers. Researchers are encouraged to leverage this experience and apply for the cross university travel award.
The role or research management in supporting successful collaboration
The Research Collaboration and Funding Portfolio plays a key role in supporting the Faculty’s research activities. Working with the Associate Dean (Research) and Director, Research Development, staff provide support across the research funding life cycle including development for major funding schemes, promoting funding opportunities, coordinating internal grant and fellowship schemes, awards and prizes, research infrastructure strategy and contribution to research strategic planning and development.

Staff work closely with the Grants & Contracts Consultants in Faculty Finance.

Support and Services Overview

- Coordinate the Dean’s Grant Review Panel; this panel has been established to support and assist grant applicants. It is comprised of academics with knowledge of grant writing; full proposals, in particular, research plans for NHMRI and ARC schemes, are reviewed from a generalist point of view. Applicants can submit their proposal for review to mfps-grants@unimelb.edu.au.

- With colleagues within the Faculty and in Research, Innovation and Commercialisation (RIC, University Services), plan for major research centres and high profile funding programs and industry engagement. Facilitate increased faculty participation in multidisciplinary, thematic and cross-faculty funding proposals.

- Coordinate seminars and workshops focusing on grant writing and proposal strategy.

- Provide support to researchers to prepare for research funding interviews. With colleagues in RIC, set-up mock interviews.

- Coordinate faculty participation in University/Faculty internal grant schemes.

- Coordinate and administer Faculty Trust Research Fellowships.

- Support the coordination of research collaboration activities, including membership, events and communications.

- Manage faculty level approvals for internal and external grant schemes (categories 1–4) where applications require financial support and/or sign-off at the Faculty level.

- Coordinate the NHMRI Large Equipment Grant Scheme.

- Respond to requests for analysis of research funding related data (including research income), preparation of reports, briefing papers and other documentation on key issues for the Faculty.

- Promote research collaboration and funding news, events, awards, prizes and opportunities.

Contacts

Monique O’Callaghan
Associate Director, Research Collaboration & Funding
E: mosal@unimelb.edu.au
T: 8344 2089

Anna Cross
Research Collaboration & Funding Coordinator
E: crossa@unimelb.edu.au
T: 8348 0062
Work days: Mon-Thurs

Dr David Lane
Research Collaboration & Funding Coordinator
E: david.lane@unimelb.edu.au
T: 8348 3447

Dr Suzy Ryan
Senior Research Initiatives Coordinator
E: ryan.s@unimelb.edu.au
T: 8344 7188
The role or research administration in supporting successful collaboration – University of Maryland – Division of Research

BRAKE Faculty (from left to right) Dennis Paffrath, Denise Clark, Beth Brittan-Powell, and Ann Holmes in Johannesburg, South Africa, May 2017
University of Maryland – Division of Research
Borderless Research Administration Knowledge Exchange (BRAKE)

1. Engages international institutions as strategic cohorts concentrated on building expertise and collaboration in the management and oversight of U.S federal funding

2. Taking a proactive approach to overcoming barriers to enhancing international partnerships by dedicating valuable resources to streamlining administrative functions

3. Facilitate research collaborations by reducing administrative obstacles for researchers and strengthening their position as a top tier global research institution by encouraging joint proposal endeavours, research administration, and research exchange programs.
Provide face-to-face training in:

1. U.S. Compliance – What is the thing called Uniform Guidance, and how does it impact International institutions?

2. Responsible Conduct of Research (RCR) – The Foreign View

3. Research Administration Organization

4. Foreign Applications to NIH

*UMD BRAKE faculty can meet with administrative colleagues of the host institution and provide an in-depth assessment of the host institutions’ administrative infrastructure to ensure a culture of compliance with all federal regulations.*
Research Administration As A Profession (RAAAP)

RAAAP WORLDWIDE
RESEARCH ADMINISTRATION AS A PROFESSION WORLDWIDE

Project

Research Administration As A Profession (RAAAP) aims to find out the key skills, attitudes and behaviours of successful research administration leaders. This knowledge will better enable those appointing new research administrators to select the most promising candidates. It will also enable junior staff already in post to accelerate their career progression.

The project will also provide a snapshot of the current profile of the profession internationally.

https://raaapworldwide.wordpress.com
RAAAP – Advisory Group

PI – Simon Kerridge
• Director, Research Services, University of Kent (UK)

Co-PI – Stephanie Scott
• Director, Policy and Research Development, Columbia University (US)

Advisory Group
• Patrice Ajai-Ajabe, Programme Officer, ACU (UK)
• Jan Andersen, Senior Executive Advisor, TUD; past president EARMA (DK)
• Janice Besch, Managing Director, Alzheimer's Australia NHMRC; President, ARMS (AU)
• Cindy Kiel, EAVC for Research at UC Davis; President, SRA International, (US)
• Susi Poli, University of Bolgna; EARMA Board Member (IT)
• Deborah Zornes, Director, Research Services, Royal Roads University; President, CARA (CA)
RAAAP – Who to

• We contacted most INORMS associations
  • And some others, trying to get good international coverage

• All agreed to take part!
RAAAP: Questionnaire Overview

Section A: About your role

Section B: Skills

Section C: Demographics

RAAAPworldwide.wordpress.com
RAAAP – Responses

2,552 valid responses
139 missing

Region of Employment:
- Canada: 243 (9.52%)
- Europe (excl UK): 391 (15.32%)
- Oceania: 339 (13.28%)
- UK: 453 (17.75%)
- USA: 941 (36.87%)
- Rest of World: 185 (7.25%)

RAAAPworldwide.wordpress.com
RAAAP – What we found out

Valid: 231 374 322 174 442 897 (2,440)

Valid: 242 390 332 182 450 935 (2,531)

RAAAPworldwide.wordpress.com
RAAAP: Where do RMAs work

RAAAPworldwide.wordpress.com
RAAAP: Areas that Leaders* work in

We are looking for your *level of responsibility* (not necessarily job title) in each of these main areas of *research support and administration*.
The following graphs focus on two key areas:

• Proposal development skills
• Collaboration skills

These graphs show the responses from all respondents who are involved in proposal development.
RAAAP: Proposal Preparation Skills / Collaboration Skills

Note: percentage difference in charts

RAAAPworldwide.wordpress.com
RAAAP: Proposal Preparation Skills / Collaboration Skills

Note: percentage difference in charts

RAAAPworldwide.wordpress.com
RAAAP: Proposal Preparation Skills / Collaboration Skills

By region

Note: percentage difference in charts

RAAAPworldwide.wordpress.com
RAAAP: Proposal Preparation Skills / Collaboration Skills

By region

[Bar charts showing the level of proposal preparation and collaboration skills by region]

RAAAPworldwide.wordpress.com
RAAAP – What we found out
Text analysis

• Previous work developed the skills

• Position developed as I took it on

• Experiential learning

• Developed while in the role – through mentorship, conferences, network, formal education, learning on the job

• Skills developed through PhD lend themselves well to the role

• I report to a very strong Director who has coached me and allowed me to interact with those in senior positions

RAAAPworldwide.wordpress.com
RAAAP: DRAFT Results

Data cleansing now complete
Analyses still to be developed
Plan agreed by Advisory Group

MORE TO COME

RAAAPworldwide.wordpress.com
Skills needed for RMA Leadership

• *DRAFT* analyses suggest
  • Technical Skills needed at operational and managerial
  • “Soft” Skills more important for managerial & leadership
    • Communication
    • Collaboration
    • ...
  • Can enter the profession at any level
    • But, also, can work your way up... have a career
    • In this case, plan your professional development
  • North America is the most “mature” region for RMA
    • Still a Gender imbalance at leadership levels

RAAAPworldwide.wordpress.com
Disclaimer

*These data are still under review*
- Data cleansing and Analyses are still being conducted
- Statistical significance testing has not yet been done

However
- We are relatively confident that the broad picture portrayed is a reasonable representation of the responses provided to our survey

BUT
- Please do not assume that anything presented herein will remain the same in the final analysis

RAAAPworldwide.wordpress.com
DRAFT Conclusions

• RMA *is* a profession

• The skills, knowledge and experience needed are:
  • Wide and varied
  • Often underappreciated
  • Well known
  • Can be certificated
  • Generic skills also needed (more for leadership)

• More detailed analyses to come

• Data available early 2018

• *Potential for a longitudinal survey (perhaps run through INORMS)*

RAAAPworldwide.wordpress.com
Utilising research management societies to enhance your experience in supporting the research collaborations

Australasian Research Management Society

www.researchmanagement.org.au
Over 2,800 members

3% membership from the Singapore chapter

Largest membership is in Victoria chapter, at 25%

9 Chapters

4 standing committees:
- Member Services
- Education and Professional Development
- Governance, Finance and Audit
- Conferences and Major Events

2 networks:
- Australasian Research Training Network (ATN)
- Australasian Ethics Network (AEN)

Accreditation program:
- Foundation level (10 Singaporean members graduated in 2017)
- Professional level

6 special interest groups:
- Research Office Directors
- Directors of Higher Degree Research
- Ethics & Integrity
- International Research Collaboration
- Research Development
- Research Information Management Systems
ARMS International Engagement

Fellowship program in association with NCURA (U.S. National Council of University Research Administrators)

- An opportunity for ARMS members to travel to an NCURA host institution across the globe where they will immerse themselves in a program of mutual learning and knowledge exchange

UK study tour in association with ARMA (U.K. Association of Research Managers and Administrators)

- UK Engagement and Impact Study tour commenced on June 5, 2017 at the annual ARMA UK Conference in Liverpool

US Study Tour of the West Coast in Association with SRAI (Society of Research Administrators International)

- Engaging with Industry study tour of institutions on the west coast of the USA in commenced on October 8th, finishing with the SRAI Annual Meeting in Vancouver
INORMS brings together research management societies and associations from across the globe. Its purpose is to enable interactions, share good practice, and coordinate activities between the member societies, to the benefit of their individual membership.

**INORMS Objectives**

1. To internationalise the body of knowledge on research management

2. To exchange best practice

3. To develop international approaches to supporting the research enterprise
Promoting Global Research Management, Supporting Global Research Challenges –
conference themes:

<table>
<thead>
<tr>
<th>Developing research proposals</th>
<th>Research impact and public engagement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Managing research projects</td>
<td>Researcher development</td>
</tr>
<tr>
<td>Open data and open access</td>
<td>Research policy and strategy</td>
</tr>
<tr>
<td>Research integrity and ethics</td>
<td>Leadership and professional development</td>
</tr>
<tr>
<td>Conference themes (abstract call opens Jan/Feb 2018)</td>
<td></td>
</tr>
<tr>
<td>-----------------------------------------------------</td>
<td>---</td>
</tr>
<tr>
<td>HDR Matters</td>
<td>Collaboration &amp; Multidisciplinary Projects</td>
</tr>
<tr>
<td>Research Funding</td>
<td>Creating, Recording and Communicating</td>
</tr>
<tr>
<td>Ethics &amp; Integrity</td>
<td>Engagement &amp; Impact</td>
</tr>
<tr>
<td>Data /Systems Support /e-Research /e-Data</td>
<td>Global Future, Local Needs</td>
</tr>
<tr>
<td>Working with Regional, Rural, Remote &amp; Indigenous Communities</td>
<td>Investing in Research’s Future</td>
</tr>
</tbody>
</table>
This unique colloquium will be held in conjunction with NTU.

The aim of this meeting is to define the framework for development of research management professionals in the Asia-Pacific region and to discuss the factors which will promote best practice in international research collaboration.
Acknowledgements

Barbara Slattery, Manager, Research Analytics and Reporting, Research Development, Faculty of Medicine, Dentistry and Health Sciences, The University of Melbourne

Caroline Northwood, Monique O’Callaghan, Fraser Rogerson, Alice Boland and Tania Tambiah, Networks as Enablers of Academic Research Careers and Performance, Poster, ARMS 2017

Denise Clark and colleagues, University of Maryland Division of Research

Khor Khiam Aik, Director, Research Support Office and Bibliometrics Analysis, Nanyang Technological University and Convenor, ARMS Singapore Chapter

Krista Levey, Executive Assistant, Research Development, Faculty of Medicine, Dentistry and Health Sciences, The University of Melbourne

Maria Zollo and Kirsty de Ruyter, Executive Office, Australasian Research Management Society

Monique O’Callaghan, Suzy Ryan, Anna Cross and David Lane, Collaboration and Funding portfolio, Research Development, Faculty of Medicine, Dentistry and Health Sciences, The University of Melbourne

Paul Cohen, Chief Operation Officer, Faculty of Medicine, Dentistry and Health Sciences, The University of Melbourne

Simon Kerridge, Stephanie Scott and RAAAP Advisory Group, Research Administration As A Profession

Suzy Ryan, Monique O’Callaghan, Elliot Marston, Researcher Led, Professional Staff Enabled, Poster, INORMS 2016

Yennie Kadarusman, Assistant Director, Research Support Office, Nanyang Technological University