



**Research Network for
a Secure Australia**
Protecting Australian Infrastructure

ARC Research Network for a Secure Australia (RNSA)

2008 Annual Report

www.secureaustralia.org

Convenor:

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Australian Government

Australian Research Council

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EXECUTIVE SUMMARY

The funding Agreement ARC Research Networks for funding commencing in 2004 requires administering organisations to provide annual report to ARC. This annual report of Research Network for a Secure Australia (RNSA) for the period 01/01/08 to 31/12/2008 is prepared to report and full fill the requirement to ARC.

THIS REPORT HAS GOT FOUR COMPONENTS:

Attachment 1 describes reporting requirements that are based on the Research Networks Funding Agreement, including a summary of the overall goals and objectives, programs and research priorities and any changes to these that may have occurred during the past year.

Attachment 2 is a menu of Performance Indicators that might assist Network Convenors/Administrators in providing their Annual Reports.

Attachment 3 is a Financial Statement Proforma. This must be completed and forwarded with the Annual Report.

Attachment 4 is a list of RNSA members as at 29 February 2008.

1. Attachment 1

Guidelines specified by ARC

The Annual Report should be set in the context of the Research Network's overall goals and objectives, programs and research priorities, performance indicators outlined in the application (or subsequently developed), activities and strategies. It should report on the operation of the Research Network in accordance with the Approved Proposal, the Funding Agreement and the Funding Rules for Research Networks for funding commencing in 2004.

The following information must be included in the Network's Annual Report:

1.1. Summary of the overall goals and objectives:

The overall goals and objectives, programs and research priorities for Research Network for a Secure Australia (RNSA) have not changed since the commencement of the RNSA in 2004/2005 (The network was officially launched in 2005 Feb by the Attorney-General in Parliament House, Canberra.). The RNSA remains committed to its original aim to create a multi-disciplinary collaboration to strengthen Australia's research capacity and enhance the protection of the nation's critical infrastructure from natural, human-caused, or accidental disasters, and terrorist acts.

The RNSA, in past few years, has been successful in achieving its networking goal in bringing together Australia's leading researchers, government and industry leaders involved in Critical Infrastructure Protection (CIP). This goal also includes some elements from other national priority areas, such as frontier technologies, advanced materials, smart information use, transformational defence technologies, and protecting Australia from terrorism and crime.

The RNSA has been able to bring together the majority of Australia's leading researchers, government and industry leaders involved in CIP. As well, the RNSA has been able to facilitate a knowledge-sharing network for research organisations, government and the private sector to develop research tools and methods to mitigate emerging safety and security issues relating to critical infrastructure. The network has also been able to integrate complementary, yet diverse research areas including physical and information infrastructure security, and surveillance and intelligent systems.

The Australian government has identified the need to secure critical infrastructure against potential natural or human-caused disasters including terrorism as a national priority. The RNSA has endeavoured since 2004/2005, to meet this important government requirement through providing research coordination in the areas of CIP.

The RNSA continues to receive strong support from key government organisations responsible for Australia's CIP and Counter-Terrorism (C-T) such as the Critical Infrastructure Advisory Council (CIAC), the Attorney-General's Department, Trusted Information Sharing Network (TISN) for Critical Infrastructure Protection, the Department of Prime Minister and Cabinet - National Science and Security Division (NSST Unit) and Emergency Management Australia (EMA).

The advisory board of RNSA consists of representatives of these organizations and industry.

1.2. The Present RNSA Advisory Board:

Chair:

- Mike Rothery* (Director, Critical Infrastructure Branch, Attorney-General's Dept.).

Members:

1. Dr. Richard Davis (Head, Dept. of Prime-Minister & Cabinet, NSST Unit); Chair from Jan 2009
2. Mr. Tony Pearce , Director General , Emergency Management Australia
3. Mr. Warwick Watkins (Director-General NSW Lands)
4. Dr. Lynn Booth (DSTO);
5. Mr. Bruce Howard (Engineers Australia, Security Commissioner);
6. Prof. Ed Dawson (QUT);
7. Prof. Peter Anderson (PICT, Macquarie University);
8. Mr. Jason Brown (General Manager, Thales);
9. Mr. Craig Sharkie (CSL Ltd);
10. Mr. Tony Sleigh (NSW Lands);
11. Prof Priyan Mendis (University of Melbourne, Convenor of RNSA);
12. Prof. Joseph Lai (ADFA);
13. Ms. Jennie Clothier (DSTO);
14. Mr. Terry Vincent (Australian Bomb Data Centre).
15. Prof. Hussein Abbass (ADFA)

Advisory Board Secretary:

- Mr. Athol Yates
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1.3. Meeting the Objectives of the Research Network

The objectives of the RNSA have been fully met with the inclusion of total of 460 (a further increase of 14% from 2008) of Australia's leading researchers in CIP from universities, government and industry. These researchers are currently involved in a wide ranging series of collaborative workshops, seminars and an annual conference program designed to achieve research collaboration, nationally and internationally.

The achievements of the Research Network, Network Participant contributions to the Research Network and other outputs achieved resulting from the use of the Funds including any advances in knowledge, relevant publications, or international collaboration. Networks should report on all aspects of importance to their particular area of research and environment, and may select from the menu of reporting items/performance indicators (Attachment 2) that may be relevant to their particular Network, noting that the menu list is not inclusive;

A number of significant contributions to the RNSA in the past year have been noted as follows.

1.3.1. The events organised by the RNSA:

The event organised or sponsored by the RNSA contributed to the RNSA mission statement of facilitating a knowledge-sharing network for research organisations, government and the private sector to develop research tools and methods to mitigate emerging safety and security issues. A number of excellent contacts were made between the participants and speakers.

The RNSA annual conference was concurrently held with the Safeguarding Australia Conference 2008 on 23rd and 24th July 2008 at Hotel Realm in Canberra on Wednesday 23 & Thursday 24 July 2008.. The key note speakers in Safeguarding Australia Conference were Attorney-General, The Hon Robert McClellan and Sidney Jones, Senior Adviser, Asia Program, International Crisis Group, Jakarta. The RNSA also organised the special forums on Social Implications of National Security, Blast Design and Modelling and the PhD National Security Workshop during the conference.

Significant Workshops and conferences:

1. 3rd RNSA Workshop on "Social Implications of National Security" -23rd and 24th July 2008

RNSA organized a workshop bringing together academics and practitioners from multiple disciplines including law, information technology, sociology, ethics, policy, medical, business, accounting and economics and addressed the application of evidence based policy in public administration. It specifically focused on the issue of new technologies in the form of product and process innovations rolled out in Australia since major international events (e.g. Sept 11, Boxing Day Tsunami, Avian Flu outbreak). These product and process innovations introduced for the 'common good' are usually mandated by government agencies, designed and implemented by private business, and obligatorily adopted by citizens in the name of national security.

18 participants from Government Departments, Industry and Academics attended the workshop in Canberra and Dr Katina Michael was the facilitator. A 200 pages workshop proceeding was also published on this workshop.

The workshop presentations for day 1 were started with welcome speech of the facilitator, Dr Katina Michael. Details of the presentations for the day 1 are given below:

- You are where you have been, by Roger Clarke and Marcus Wigan
- Privacy and national identity cards: A legal and technical study, by Steven R Clark
- National security and the misology-misanthropy paradox of technology, by George Mickhail
- The risk intelligence conundrum and its impact on governance, by Mark Loves
- Policy implications of convergence in the new security environment: An investigation into the symbiosis between risk management and intelligence, by Katina Michael and Mark Loves
- Technology in foreign policy and national security: a factor, a tool, and mediator, Lucy Resnyansky
- Using a RFID-University-based laboratory for homeland security applications testing, by Samuel Fosso Wamba
- Biometric data management: Challenges, policies and best practices, by Suzanne Lockhart
- What is trust online?, by Nigel Phair

The workshop presentations for day 2 were started with opening comment of the facilitator, Dr Katina Michael. Details of the presentations for the day 2 are given below:

- The enthusiasm for evidence: exploring the relationship between politics, policy and knowledge, by Robert Watts and Greg Marston
- Using the tools of evidence-based practice in making decisions on national security, by Chris Del Mar
- Governance and evidence based policy under a national security framework, by Marcus Wigan
- Profiting from personal information: Power, information privacy and evidence based policy, by Mark Burdon
- Questioning national security powers, by David Vaile
- The Future of the Social Implications of National Security
- Workshops: What We've Achieved and Where We are Headed, by Katina Michael
- Could terrorists acquire and detonate nuclear weapons? A Scenario, by Nick O'Brien
- User acceptance of location-based services for emergency management in Australia, by Anas Aloudat

2. PhD National Security Workshop – 23rd and 24th July 2008

The main aim of the workshop was to continue previous efforts by the RNSA to build a network of PhD researchers and match PhD researchers with national security staff who may be interested in their work. Professor Ross Babbage, Chairman of the Kokoda Foundation gave a special presentation titled "Opportunities in national security following PhD completion".

The event was free to attend and held over 2 mornings. Dr Raymond Choo was the facilitator. 15 people attended the event.

3. Blast Design and Modelling Forum – 24th July 2008

This workshop provided participants with a valuable overview of the research projects conducted in the area of "knowledge of modern protective structures" in Australia. The

leading researchers in Australia were presenting their research during the forum. There was a special presentation which allowed the participants an insight into the issues associated with load assessment, response analysis, available tools and factors that must be addressed in developing a successful blast resistant building design.

Prof. Andrew Whittaker, a leading researcher in USA discussed the present research related to blast resistant design in USA. 19 people attended the event and Professor Priyan Mendis was the facilitator of the workshop.

The details of the presentations are given below:

- Blast R&D in USA and performance of nuclear structures - Andrew Whittaker
- An Investigation of Impact and Blast Performance of Steel Sections with Infill Materials for Critical Infrastructure Protection - Alex Remennikov and Brian Uy
- Risk-based Optimisation of Protective Measures Against Terrorist Threats to Infrastructure - Mark G. Stewart
- Numerical Analysis of Fiber Reinforced polymer Composite Strengthened RC Walls with Anchorages Against Blast Loads - A. Mutalib and H. Hao
- Numerical Modelling of High-Speed Impact Tests of Concrete Material Properties - Hong Hao, Ziaoqing Zhou, Zhong-Xian Li
- Application of Distributed Nonlinearity for Progressive Collapse Analysis of Reinforced Concrete Frames - Hamid R. Valipour and Stephen J. Foster
- Polymer Reinforced Concrete Panels to Resist Blast Loads - Sudharshan Raman, Tuan Ngo and Priyan Mendis
- Façade and Structural Systems Project - Ken Dale
- Blast Resistance of FRP Retrofitted RC Slabs - Chenqing Wu, DJ Oehlers, M. Rebstrost, J. Leach, A. Whittaker
- Behaviour of Glass Façade Panels - Raymond Lumantarna, Harry Susiswo, Priyan Mendis and Tuan Ngo
- Challenges in High-Speed Impact Tests of Dynamic Concrete Material Properties - Yifei Hao, Hong Hao and Boris Tarasov
- An Improved Procedure for Progressive Collapse Analysis of RC Frames to Blast Loading - Yanchao Shi, Hong Hao and Zhong-Xian Li
- Behaviour of FRP Reinforced Concrete Panels - Ganchai Tanapornraweekit, N. Haritos, Priyan Mendis and Tuan Ngo

4. Advanced Technologies for Sustainability Workshop - Sept 25-26, 2008

RNSA hosted the Advanced Technologies for Sustainability (ATS) workshop in collaboration with National ICT Australia (NICTA), and the ARC Research Network on Intelligent Sensors, Sensor Networks and Information Processing (ISSNIP) at Woodward Conference Centre in Melbourne. There were 32 attendees.

The workshop aimed to build linkages between the academics and industry around opportunities in the use of information technology, such as monitoring and sensor networks, in furthering the goal of environmental sustainability in Australia.

The presentations of this workshop were:

- Michael Lees from Fosters presented "Improving Plant Performance with Real-time Intelligent System Technology"
 - Tony Morton from EConnect presented "The Value of Embedded Generation"
 - Larry Jordan from GM Holden presented "Drive for Sustainability – A New Automotive DNA"
 - Suzanne Moseley from Sinclair Knight Merz presented "Embedding Sustainable Development into Project Delivery and a Corporate Strategy"
 - Kristina Cockbill and Melis Senova-Tapp from Telstra presented "ICT: Opportunities and Challenges for Resource Conservation"
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- Lu Aye, Priyan Mendis and Tuan Ngo from the University of Melbourne presented “Sustainable Buildings: Building Energy Measurements”
 - Glenn Wightwick from IBM presented “The Instrumented Planet”
 - Michael Brear presented “Compressed Air, Distributed Power Generation Using Natural Gas”
 - Norbert Nimmervoll presented “Great Barrier Reef Environmental Sensor Networks”
 - Thas Nirmalathas presented “Smart Highways”
 - Saman Halgamuge from the University of Melbourne presented “Optimization in Hybrid Electric Vehicles and Distributed Energy Networks”
 - Athol Yates from Homeland Security Research presented the findings from the first day of the workshop
 - Iven Mareels from the University of Melbourne presented “Water Information Networks”

5. Smart Decision Making for Clean Skies (Modern Air Traffic Management and the Environment) – 2nd and 3rd July 2008.

RNSA organised this workshop together with Defence and Security Applications Research Centre (DSARC) and Airservices Australia, attracting attendees from government, defence and industry. Presentations described some of the new concepts and technologies now under development for the next generation of air traffic management systems, how these may contribute to both increased capacity and reduced emissions, and some of the research work now under way to validate these developments.

The conference was opened by the Deputy Rector, Prof. John Arnold, and the CEO of Airservices, Mr Greg Russell, closely followed by the first of the international presenters, Ken Jones and Thomas Graff from NASA with their talk on “ADS-B In-Trail Procedures: Improving Trajectories, Saving Fuel”. The second international speaker, Sgouris Sgouridis, from MIT, presented “Modelling the air transportation system under carbon constraints”. The conference dinner, held at Old Parliament House at the conclusion of day one, gave the attendees a chance to relax and informally chat. The other international presenter, Marc Brochard from Eurocontrol Paris, concluded the day two with his presentation on “ATM Automation Reality and Perspective”.

The Conference was a success with positive feedback from all attendees.

6. Operations Research in Australia. The Experts Speak! – 7th and 8th of July, 2008, Canberra, Australia

This conference was in collaboration with DSTO and the Canberra Chapter of the Australian Operations Research Society (ASOR). Prof John Baird, the Rector of UNSW@ADFA welcomed the 40 strong attendees followed by an opening speech from Dr Len Sciacca, Chief Operating Officer, DSTO.

The structure of the conference was to invite a range of OR professionals from different backgrounds to give their perspectives on “what OR is, what it can do and where it should be heading”. Four renown academics flew in from all parts of Australia. The DSTO presentations were given by renowned scientists from the Land Operations Division and the Joint Operations Division. The audience was given an excellent opportunity to hear from government with two featured talks given by Dr. Richard Davis, Office of National Security, Prime Minister & Cabinet Department on “Challenges for OR in the national security domain” and Russell Hay & Paul Trushell, Geoscience Australia and Attorney General Department on “CIPMA: A computational tool to support government & business decision making”.

Prof Natashia Boland from the University of Newcastle added to the day one programme with her presentation on “Progress and challenges in linear programming, integer programming and their applications”. This was followed by “Effective computational models for constrained path problems” from Prof Lou Cacetta from Curtin University.

After lunch break Monash’s Prof Amrik Sohal gave a presentation on “Applying Operations Research to Designing and Managing Supply Chains”. From DSTO, Dr. Jeremy Manton stressed “The need for OR in organisations”, while Prof. Neville Curtis gave a reality check with his talk on “Operations Research at the front end”. These hour long presentations commenced with an introduction to their specialist areas, discussing advanced concepts, challenges and open problems in their area. A 10 minute interactive question time concluded the presentations.

Day two of the Conference again saw some more thought provoking topics and attendees were particularly regaled by Prof Mosche Sniedovich from Melbourne University with his presentation, “Responsible decision-making in the face of severe uncertainty”. From DSTO, Drs Bruce Fairlie and Paul Whitebread presented the use of “Defence OR in the air domain” and “OR for command and control analysis” respectively.

The OR event was rounded off with a conference dinner on Day One. The venue, again at Old Parliament House, gave the attendees the opportunity to further discuss OR applications and chat informally with the practitioners and their counterparts.

1.3.2. The events sponsored by the RNSA:

Other key seminars/workshops/conferences partly sponsored by the RNSA include:

- The 13th Australasian Conference on Information Security and Privacy (ACISP 2008) – 7th to 9th July 2008
- Australian Earthquake Engineering Society (AEES 2008) Conference on 21 – 23 November 2008
- Anticipating Climate Change Risks, Costs and Opportunities for Infrastructure workshops

In addition to above conferences and seminars, RNSA sponsored and provided all costs of one of the international invited speakers, Prof Andrew Yao from USA for the “Asiacrypt - The 14th Annual International Conference on the Theory and Application of Cryptology & Information Security – 2008 which was held in Melbourne, Australia from December 7-11 2008.

1.3.3. The Phd Students and Visitors sponsored by the RNSA:

RNSA sponsored two PhD students, Russell Brewer and Lennon Chang from The Australian National University to attend “the Port & Maritime Security 2008 conference” as part of the RNSA Young Investigator Grant.

Through this Young Investigator Grant scheme, RNSA also sponsored another PhD student, Peter Lee from the University of Melbourne to attend and present the paper in the

International Conference on Security and Cryptography, SECRIPT 2009 which was held in Porto, Portugal on 26-29 July 2008.

RNSA also provided the sponsorship to Athol Yates to attend a workshop run by the US Department of Defence's Northern Command (NORTHCOM) in Colorado Springs from 22-24 June 2008. The purpose of the event was to explore the concept of developing an international Centre of Excellence in Homeland Defence. A number of excellent contacts were made between the participants and speakers at:

- Counter Terrorism, Ministry of Defence, UK
- Defence Force Command, Singapore
- Defense Threat Reduction Agency
- Asia Pacific Center for Security Studies
- Office of the Coordinator for Counterterrorism, Department of Homeland Security
- Center for Homeland Security, UCCS
- Center for Hemispheric Defense Studies

RNSA also provided another sponsorship to Athol Yates to visit USA for a further meeting on 20-21 October 2008 with the US Department of Defence's Northern Command (NORTHCOM) to develop the concept further.

RNSA partly sponsored the visit to US by Prof Saman Halgamuge. He visited the University of California at Berkeley and NASA Jet Propulsion Labs at Caltech in April 2008.

In addition to the sponsorship of several keynote speakers for conferences mentioned above, RNSA provided sponsorship of overseas researchers from various universities and institutions as follows:

- Prof. Andrew Whittaker from University of Buffalo, An expert on design of nuclear structures, also an expert on seismic design and blast design of structures
- A/Prof Subash Yaragal from National Institute of Technology Karnataka (NITK), India, a renown expert in Experimental Fluid Mechanics, Wind Tunnel Testing and Wind Engineering field.

1.3.4. Other key achievements of the RNSA and contributions to the Research Network:

RNSA continued to establish more international links during 2008 with USA, Europe, Canada, China, Singapore and India. The links were developed by events sponsored by RNSA such as organizing joint workshops, Australian academics (sponsored by RNSA) attending international conferences, special meetings organised by the network convener and Advisory board members making presentations on behalf of RNSA during overseas visits.

RNSA received continued support in 2008 (as in previous years) from the Attorney-General and his department officers in the Critical Infrastructure Protection Branch. This included chairing the RNSA Advisory Board, and access to the CIP Branch Newsletter, allowing articles reporting on RNSA activities to be published. This publication is circulated to all branches and levels of the Federal and State governments involved in CIP areas, and this has significantly raised the research profile and credibility of the RNSA professionally within Australian government and industry.

Information for two significant documents were collected in 2008.

National Security Researcher's Directory - The Directory of RNSA Members

The National Security Researcher's Directory is a consolidated listing of Australian research expertise in key areas of national security. It contains detailed information on nearly 100 RNSA members who are interested in collaborating on research projects with industry and government. These RNSA research members are from tertiary institutions, government organisations and industry.

The directory provides policy makers, practitioners and researchers in government and industry with a tool to rapidly identify leading edge researchers of relevance. The directory has an expertise index which enables experts to be located quickly. The listing for each researcher contains their areas of expertise, ARC/major project grants, and completed projects. The directory is available in the forms: hardcopy, softcopy and searchable online database.

National Security PhD Directory

The National Security PhD Directory provides a consolidated listing of PhDs currently under completion or recently completed in areas of national security. It contains detailed information on nearly 50 RNSA and non-RNSA student members.

The directory enables contacts to be developed between the PhD student and potential users of their research. This may lead to information sharing and collaboration. The directory has an expertise index which enables readers to rapidly identify those PhD researchers who are undertaking research of relevance. The listing for each PhD researchers contains the title and abstract of their PhD, their completion data and their supervisor's name. The directory is available in the forms: hardcopy, softcopy and searchable online database.

1.3.5. RNSA Planning for 2009:

It was announced recently that the extension of ARC funding for research networks beyond mid 2009 is not possible. However informally it was mentioned that a carry-over to 2010 is possible. Management committee decided to retain sufficient funding to continue the activities of the network with ARC funding until at least mid 2010.

As for previous year, RNSA spent time in 2008 planning for some events in 2009: However the uncertainty in the funding situation affected this process.

Several events have been planned for 2009. Some examples are given below.

Name	Date/Venue
The 4th RNSA Social Implications Workshop on Covert Policing	April 2009/Canberra
The 4th International Conference on Database Systems for Advanced Applications (DASFAA'09)	April 2009/Brisbane
The 14th Australasian Conference on Information Security and Privacy (ACISP 2009)	April 2009/Brisbane

The KPI's for RNSA 2008 are consistent with the ARC measures set out in Annual Reports and include such things as:

- Increase in active member participants by at least 15%
- Increase in number of article published by 25%
- Increase in the number of articles, presentation and resources from workshops, conferences etc on the RNSA website
- Increase in number of website hits
- Maintain the number of workshops/conferences/research conducted and attract more early career and post grad researchers
- Maintain governance effectiveness by maintaining meetings, reporting and key financial reports
- Improve mechanisms for communications amongst network members, via the secure website, newsletter or otherwise

Key Strategies to continue RNSA beyond the ARC funding stage are to be discussed in 2009 Management and Advisory committee meetings.

2. Attachment 2: Menu of Performance Indicators

A comparison of the performance indicators since 2005 are given below.

TYPE OF MEASURE	2005	2006	2007	2008
Number of (active) participants:	160	292	407	460
Number of proposals for Network activities funded:	32	40	40	30
Number of ECRs funded to do various activities:	12	18	40	40
Number of international visits, both by Network members in Australia to overseas destinations, international events, and short and long term visits by international researchers to Australia:	6	6	8	8
Number of workshops, conferences or seminars conducted:	24	16	16	17
Number of publications produced, and their impact factors:	1 Book	2 Books	2 Books	2 Books
Number of outreach activities including public lectures (or other forms of engagement with people outside the research forms community including schools, industry and government agencies):	5	5	6	6
Number of targeted activities: involving research interaction for postgraduate students:	3	3	5	5
Number of targeted activities: industry stakeholder interaction:	10	15	15	15
Number of universities receiving funding:	29	22	24	22
Number of Network web hits, articles downloaded:	3,847	10,707	14,000	15,400
Survey of Network participants to ascertain usefulness and user-friendliness of web site:	Yes	Yes	Yes	Yes
Number of opportunities for workshops to do interdisciplinary research	Difficult to Quantify	Difficult to Quantify	Difficult to Quantify	All the RNSA activities lead to interdisciplinary research, however difficult to quantify
Number of national competitive grants	Several submitted	Several submitted	Several submitted	Several submitted

applications and successful applications as a result of Network membership		-Difficult to quantify	- Difficult to quantify	- Difficult to quantify
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2.1.1. Qualitative

(Described, as appropriate, aspects of:)

How research undertaken by the Network is different to what might have occurred without the Network;

RNSA has organized many networking opportunities for researchers involved in CIP area. As described in previous reports, the main impact of the RNSA on research since 2004/2005 has been the wider acceptance of multidisciplinary approaches to CIP research and the industry uptake. Already RNSA has helped several researchers to collaborate in multi-disciplinary research and establish international links.

In 2008, RNSA also organised some networking meetings to discuss emerging issues such as the adaptation of critical infrastructure to climate change. Although there are forums organised related to general climate change research, RNSA forums had the involvement of CIP researchers working in different disciplines, which is very important for national security.

Governance processes in place;

The network convener (Prof. Priyan Mendis) continue to work in conjunction with three other executive members, Prof. Ed Dawson (QUT), Prof. Joseph Lai and Prof. Hussein Abbass (UNSW @ ADFA), who constitute the RNSA Management Committee. The Management Committee deals directly with the Network Participants. The members of the Management Committee have regular meetings All decisions are jointly made .

The Network Convenor regularly calls a meeting with the RNSA Advisory Board. The terms of reference for the Advisory Board are that it comprises representatives of government and business who can bring an independent view on the alignment of Safeguarding Australia National Research Priorities with the work of the RNSA.

The Advisory Board provides strategic advice to the RNSA's Convenor and Management Committee on topics such as: links with potential end-users; advice on the prioritisation of RNSA resources; advice on the relationship between the RNSA and other Australia government entities; advice on local and international developments in the CIP area; and advice on where gaps have been identified in Australia's CIP research activities.

The current membership of the Advisory Board is given in Page 2. Mr. Tony Pierce, Director-General, Emergency management Australia was invited to join the Advisory Board in 2008.

Most of the administration activities were transferred to outreach manager in 2007(Athol Yates and his office in Canberra). Athol Yates has acted as the Network Administrator (part-time) in 2008. This arrangement worked very effectively.

Different kinds of research generated - research building capacity, or removing impediments to research;

The RNSA's networking activities have succeeded in developing a number of new areas of research as presented in previous reports. Some examples are given below.

- Intelligent Building Airflow Systems Configuration, Detection and Response
- Social and Individual Issues in Terrorism and Criminality
- Plume & Dispersion Modeling for CBRN
- Smart Evacuation, Egress and Emergency Response
- Air Toxin Reduction via Scrubbing and Chemical Destruction/Neutralization
- Biometrix/Biomedical in Emergency Response Training and Evacuation
- Mobile/Wireless Device Security Systems
- Object Continuity Across Hetrogenous Distributed Sensor Networks (Object Tracking)
- Framework and Decision Support in Hetrogenous Networks and Applications to IED Detection
- Advanced SCADA Security Systems
- Low Cost Sensors for Toxic Materials
- 3D GIS Modeling (Modeling of Blast Events in Urban Environments)
- Development of Vulnerability analysis tools for building a "terrorism rating"
- Evidence via intelligence assessment: what are the relationship issues in law, jurisprudence and counterterrorism research
- Evacuation planning and modeling crowd behavior
- Identification of clustered targets, and mitigation.

Several papers relating to these areas have been presented in conferences sponsored by RNSA.

New projects are also emerging in research related to adaptation of critical infrastructure to climate change.

Breadth of Network - qualitative aspects;

The RNSA has 3 major areas and nodes; Physical Security, Information Security and Surveillance & Intelligent Systems. These broad areas include several disciplines such as information systems and security, electrical engineering, computer science, geomatics, civil and structural engineering, surveillance and security, social sciences, law, geographical information systems, economics, history, defence and security studies. Academics from Medical and Science faculties have also joined the network.

Increased boundary crossing (multidisciplinary collaboration);

As mentioned in the previous sections, the RNSA has created many networking opportunities for CIP researchers in different disciplines thus developing a wide cross-section of research interests, capacities and professional capabilities. Broadly, researchers working on issues related to physical infrastructure security, information security and surveillance had the opportunity to explore new research areas across these boundaries. These relationships have led to many ARC grant applications in multidisciplinary areas. However it is difficult to quantify them.

Increased or new collaboration and partnerships as a result of Network activities, and with different types of end users (e.g. industry, government and community groups):

RNSA is the leading forum in Australia bringing together Australia's leading researchers, government and industry leaders involved in Critical Infrastructure Protection (CIP). The RNSA has developed network relationships with the Federal and State governments and the industry. The AGs, Prime Minister and Cabinet, DSTO, EMA, Engineers Australia and industry (ADI and CSL) are represented on the RNSA Advisory Board. The RNSA also has a close relationship with Trusted Information Sharing Network (TISN) developed by the CIP branch of the Attorney-General's Dept. which includes industry stake holders. Representatives from many community organizations have also attended RNSA forums.

How the networks between researchers are being strengthened as a result of using web based and other technologies:

The RNSA website (<http://www.secureaustralia.org>) has continuously increased the number of web hits. The website attracts visitors from Australia and overseas. Only NPs (Network participants) get access to the protected area of the website. All the registered NPs are given usernames and passwords. Once they enter the member area, they have access to the secure forum. The forum provides a platform for communication. Further, participants are able to access workshop papers and summaries from this secure section.

Increased interest in Network, in Australia and overseas:

The RNSA continues to attract a great deal of interest overseas. This has been confirmed by the CIP researchers travelling overseas and prominent researchers attending RNSA sponsored conferences in Australia. They have also mentioned that similar networks dealing with CIP research do not exist in other countries.

What sort of additional funding was generated because of Network:

Although difficult to quantify, many researchers have received additional funding from different sources due to the contacts developed through the involvement in the RNSA activities.

As mentioned in the previous report, The RNSA has been significant in the development of the CRC-SAFE proposal. Although this proposal was not successful last round, discussions are underway to reapply in a future round. The links developed through this application have already led to grant applications in other schemes such as ARC linkage. RNSA was also invited to help to bring together the researchers interested in public safety research.

How the Network has added value to the sector:

As mentioned in the previous reports, the breadth of the network allows for a full understanding of both threats and vulnerabilities relating to Australia's critical infrastructure, as well as the consideration of a wide range of risk treatment alternatives. The Network has integrated well into the existing institutional arrangements created by the Australian Government, and act as a conduit between the research community and the agencies and businesses needing assistance. The Attorney-General's Department, Department of the Prime Minister and Cabinet, Emergency Management of Australia are

members of the Advisory Board for the Network. This ensures that the work of the Network remains in congruence with the priorities of the National Counter-Terrorist Committee and the Critical Infrastructure Advisory Council and various IAAG's (Infrastructure Advisory Assurance Groups)

What sort of different sharing /collaboration (research ideas, facilities etc) arose because of the Network;

Several discussions have been held among researchers on sharing of resources. The RNSA provided part sponsorship for these small group meetings. Already these collaborations have led to the development of common facilities (e.g. High Rate Testing System for Materials and Structures initiated by Swinburne University). The RNSA also facilitated the involvement of Australian researchers and industry participants in sharing resources (e.g. the Woomera blast trials). It is expected that some useful collaborations (e.g. sensor systems to detect CBRN threats) will emerge in 2009 as a result of the RNSA activities commenced in 2008.

What successes, if any, have occurred during the reporting period;

Researchers had the opportunity to meet government and industry representatives and also key international researchers working in areas related to CIP during the various activities and events sponsored by the RNSA. The conference (and the forums) held in July is an example. The PhD National Security Workshop was organized to continue previous efforts by the RNSA to build a network of PhD researchers and match PhD researchers with national security staff who may be interested in their work. In addition many Early career researchers (ECRs) have joined the network.

What disappointments, if any, occurred during the reporting period;

As reported in 2008, it is very difficult to get feedback (especially to quantify the output) from some NPs about the successes achieved through the involvement in the network.

How new skills have been acquired as a result of research technology;

As mentioned by the US-TSWG Group, the RNSA has helped to avoid duplication of research related to CIP in Australia and help to develop some high quality research projects. (US-TSWG is the main US agency funding and co-ordinating security related research.)

The outcomes from the initiatives introduced from 2005 to 2008, will be known in the next few years. The network has also helped to organise special industry/academic groups to be involved in testing (e.g explosion testing in Woomera in 2006 and 2007).

Any surveys carried out of members to ascertain any benefits gained from membership of the Network;

As mentioned in the previous report, the RNSA outreach manager has held numerous dialogues with the Network Participants (NPs) seeking feed back on the development of the RNSA. This also includes email contacts to current NPs.

The following SWOT analysis was prepared with the feedback received from the NPs (in 2007). NPs wanted to know the future of the network beyond mid 2009. This issue will be addressed in 2009.

2.1.2. Strengths, Weaknesses, Threats & Opportunities

Strengths:

- Comprehensive academic membership
- Strong advisory board
- Strong management team
- Good links with major security agencies

Opportunities:

- Broaden focus from CIP to any organisation with a security interest
- Broaden to cover all-hazards
- Broaden to include social science
- Deliver on developing links which bring research dollars
- Delivery on developing industry-government-researchers collaboration
- Engage the enthusiasm of champions to lead collaborative activities
- Increase multi-disciplinary activities

Weaknesses:

- Over-emphasis on counter-terrorism
- Lack of motivation for members to initiate action as no research income automatically comes
- Overdependence on few key staff
- Limited benefit of node structure
- Low industry involvement

Threats:

- Funding ends in 2008/2009.
- Alternative mechanisms appear to bring together researchers, industry and community
- Lack of interest in CIP (Researchers).

Outreach activities and how these may have been reported by the media:

The main communications tools for the RNSA's outreach contact (and media) are the RNSA webpage (www.secureaustralia.org) and the use of Australian Homeland Security Research Centre (AHSRC) to develop and enable industry contact with the RNSA. The RNSA outreach manager also regularly provides event reports for the AG's Dept. CIP Newsletter (<http://www.tisn.gov.au>). As well, the AHSRC maintains both a webpage (www.homelandsecurity.org.au), a data-base and email list of Australia's homeland security professionals, which is also distributed to media outlets. This carries RNSA updates and news. As for other years, some Individual members of RNSA have appeared in radio and television interviews and newspaper articles related to CIP.

Collaborations between Networks in Australia:

A very successful workshop on Advanced Technologies for Sustainability was organized in September. in collaboration with the ARC Research Network on Intelligent Sensors, Sensor Networks and Information Processing (ISSNIP) and National ICT Australia (NICTA). Regular contacts with the other networks have been maintained through e-mail.

Linkages with international Research Networks

As mentioned in previous sections, the RNSA is the only research network in the world dealing with CIP. Although there are no formal international networks, the funding will help the individual researchers to strengthen links with world leaders in research areas related to CIP.

Development of tools, software, databases. .

The background work required to produce the “National Security Researcher’s Directory” has been completed. The response has been encouraging. The National Security Researcher’s Directory is a consolidated listing of Australian research expertise in key areas of national security. As mentioned earlier, the directory provides policy makers, practitioners and researchers in government and industry with a tool to rapidly identify leading edge researchers of relevance. The directory will be available in the forms: hardcopy, softcopy and searchable online database.

The information collection for the National Security PhD Directory was also completed in 2008. The National Security PhD Directory provides a consolidated listing of PhDs currently under completion or recently completed in areas of national security. The listing for each PhD researchers contains the title and abstract of their PhD, their completion data and their supervisor’s name. The directory is available in the forms: hardcopy, softcopy and searchable online database.

As mentioned in previous reports, the RNSA has also completed the following:

- Development of RNSA webpage.
 - Development of electronic database of Network Participant members, academic profiles, and contact information using PHP and MySQL.
 - Assistance in preparation of the transport security expert directory.
 - Databases (Research Projects and Researchers in Australia) for Transport Security and CBRN research.
-

Attachment 3**Financial Statement****Financial Statement****ARC Research Network Name: Research Network for Secure Australia (RNSA)****Administering Organisation: The University of Melbourne****Jan 08 to Dec 08****Funding Details:****Sources of Funding**

	Amount	
	Cash	In-kind
ARC Network Grant for 2008	\$422,251.00	
ARC Network Grant Carried forward from 2007	\$139,450.31	
Contributing Organisations (cash and in-kind contributions by each organisation)	\$150,138.40	\$580,000.00
Total Available Funding	\$711,839.71	\$580,000.00

List of Expenditures**Description****Personal Salaries and On-costs**

Network Convenor

Research Associates, Professional Officers,
Technicians, Laboratory Attendants,
Administrations and Organisers

\$64,872.12

Specialist Professional Staff Located with Major
Facilities and Other Appropriate Settings

\$57,359.77

Shared Research Resources

\$80,000.00

Social Survey

Software Tools

Databases

\$13,489.12

Trial Instrumentation and Equipment Charges

\$4,750.00

Bringing People Together

\$140,000.00

Workshops

\$11,828.03

\$2,036.75

Meetings

\$6,219.04

\$3,000.00

Seminars

\$4,159.97

\$3,000.00

Conferences

\$120,000.00

Travel

\$22,700.78

\$4,040.00

Other

\$20,680.43

\$1,963.25

Planning, Coordination Activities

\$30,000.00

Travel & Accomodation

\$11,918.01

\$10,000

Purchase of Specific Assets or Intellectual
Properties

\$4,706.85

Other Expenditures

\$60,000.00

Not Falling Under the Specified Expenditure
Heading Above

\$1,521.54

Total Expenditure**\$228,245.66****\$150,138.40****\$580,000.00****Carry Over Amount (As at December 2008)****\$333,455.65**

Provide the reason for carryover in the column below:

The network was officially launched in Feb. 2005 (the funding commenced in mid 2004). Recently it was announced that the extension of funding beyond mid 2009 is not possible, however a carry-over to 2010 is possible (informally). Management committee decided to retain sufficient funding to continue the activities of the network with ARC funding at least until mid 2010. Therefore a significant carry-over amount appears. Some invoices (about \$30,000) were paid after December 31st for activities conducted in 2008. Also the Network Convenor's payments (for 2008) are not included here (This will appear in next report). Therefore the actual carry over should be smaller than the reported carry over figure.

(signed)

Research Network Convenor or Delegate:
Prof. Priyan Mendis (Research Network Convenor)

Attachment 4

List of Members as at 31st March 2009

(included only in the ARC submission)
