

Summary of Discovery Projects Proposals for Funding to Commence in 2008

South Australia

University of South Australia

DP0880928 Prof J Billington; Dr K Dogancay

Approved Project Title **Aggregating Generalised Stochastic Petri Nets for improved Performance Analysis**

2008 : \$ 55,000

2009 : \$ 50,000

2010 : \$ 50,000

Primary RFCD 2804 COMPUTATION THEORY AND MATHEMATICS

Administering Organisation University of South Australia

Project Summary

Australia's economy is very dependent on the operation of complex man-made systems. Important examples are telecommunication networks and services (e.g. the Internet), manufacturing plants, organisational processes, military logistics and transport systems (e.g. air traffic control). The performance of these systems is critical to their success. Thus being able to predict performance before systems are implemented is very important in their design. This project will develop leading-edge performance analysis techniques and tools for an important class of practical systems. There is potential to commercialise the resulting tools and methodology and to transfer the expertise to industry.

DP0879007 A/Prof MF Dollard; Prof AH Winefield; A/Prof AD LaMontagne; A/Prof AW Taylor; Prof Dr A Bakker; Prof C Mustard

Approved Project Title **Working wounded or engaged? Australian work conditions and consequences through the lens of the Job Demands- Resources Model**

2008 : \$ 29,000

2009 : \$ 180,000

2010 : \$ 35,000

2011 : \$ 180,000

Primary RFCD 3801 PSYCHOLOGY

Administering Organisation University of South Australia

Project Summary

Australian researchers will participate in high quality theory driven longitudinal research of crucial practical importance nationally and of theoretical importance internationally. Specifically the study will assist in understanding workplace health and productivity in terms of job conditions, demands and resources. It will underscore costly consequences of stressful jobs e.g. depression related workplace productivity loss in dollar terms. Australian governments, unions, and OHS organisations will have access to high quality evidence to: design and evaluate OHS interventions; inform prevention campaigns, policies and practice; benchmark progress at national levels; monitor changing trends; and develop national standards.

DP0878138 Dr JR Foster

Approved Project Title **Distributional Consequences of Mass-Market Higher Education in Business**

2008 : \$ 36,400

2009 : \$ 27,140

2010 : \$ 26,200

Primary RFCD 3404 ECONOMETRICS

Administering Organisation University of South Australia

Project Summary

Increased access to tertiary education has not been evaluated for its effects on the full spectrum of individuals served by the tertiary sector. Using longitudinal data on entire student populations at university business faculties, this project will provide the first Australian evidence on the trade-offs amongst the educational success of students with different levels of preparation that occur when those with poorer preparation are added to classrooms. Short-term performance and medium-term attrition, a recent educational policy focus, will be evaluated. Theoretically grounded recommendations will result for undergraduate program design to suit a student population with varying levels of university preparation.

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DP0880223 Prof AJ Grant; Dr T Chan

Approved Project Title **Efficient Data Transport using Network Coding**

2008 : \$ 114,729
2009 : \$ 105,209
2010 : \$ 109,390
2011 : \$ 150,000
2012 : \$ 40,000

Primary RFCID 2805 DATA FORMAT

Administering Organisation University of South Australia

Project Summary

Large-scale content distribution is driving the evolution of future Internet, cellular and wireless data networks. This project develops theory and practice underpinning entirely new modes of content distribution. This presents the ICT industry with new and profitable markets, contributing to wealth creation, employment and exports. Immediate benefits to Australia are: Contribution to the growing knowledge base and fundamental capabilities in the important area of telecommunication networks; Creation and commercialisation of intellectual property; Education of future Australian academic leaders and industrial innovators; Raising the international profile of Australian research in communications and information technology.

DP0881254 Prof HJ Griesser; Dr B Thierry; Prof CA Prestidge; Dr MP Brown; Prof M Tabrizian

Approved Project Title **Advanced Nanostructured Biointerfaces for Cell Capture**

2008 : \$ 150,000
2009 : \$ 130,000
2010 : \$ 130,000
2011 : \$ 125,000

Primary RFCID 2915 BIOMEDICAL ENGINEERING

Administering Organisation University of South Australia

Project Summary

The expected outcomes of this interdisciplinary project, which apply the most recent advances in nanotechnology and biophysics to cancer research, will enhance Australia's capacity in Frontier Technology and build strength in Nanobiotechnology. They will bring competitive advantages to the Australian biotechnology and biomedical community for further developments and applications in the multi-billion dollar field of biodiagnostics. These innovative biodiagnostic strategies will potentially achieve a significant step in the direction of the once elusive goal of early detection and improved understanding of cancer.

DP0877901 Prof B Guerin; Dr PB Guerin; Ms DJ Tedmanson; Ms YL Clark

Approved Project Title **Indigenous mental health in remote communities: Applying a contextual model of community research and intervention**

2008 : \$ 45,000
2009 : \$ 45,000
2010 : \$ 25,000

Primary RFCID 3212 PUBLIC HEALTH AND HEALTH SERVICES

Administering Organisation University of South Australia

Project Summary

This project will make an international advance in understanding indigenous mental health that will be of interest to many groups around the world. The main specifically national benefit will flow from contextual knowledge on how to improve mental health for remote indigenous communities that also allows strengthening of communities and their economic and social enterprises. We will also build capacity in the communities for research skills, documentation skills, and writing skills. The types of contextual information collected will provide recommendations to mental health service providers about how to incorporate local forms of knowledge when dealing with issues of well-being.

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DP0880796 Dr Z Lu; Prof J Chen

Approved Project Title **A new look at modelling population heterogeneity in econometric study**

2008 : \$ 37,361

2009 : \$ 33,361

2010 : \$ 37,361

Primary RFCD 3404 ECONOMETRICS

Administering Organisation University of South Australia

Project Summary

This research will advance existing quantitative techniques in economic study. New theoretical results will help enhance Australian research reputations. The innovative techniques developed in this project will be demonstrated to study labour force participation of people with disabilities in Australia. Findings of the empirical study will help governments in providing financial assistance to affected families and addressing the issue of labour shortage in Australia. Furthermore the participation of a high profile international researcher will benefit the local research community and provide a research training opportunity for local postgraduate students.

DP0881160 Prof LK Rasmussen; Dr A Guillen i Fabregas

Approved Project Title **Adaptive Broadband Wireless Communication**

2008 : \$ 136,335

2009 : \$ 126,335

2010 : \$ 128,188

Primary RFCD 2805 DATA FORMAT

Administering Organisation University of South Australia

Project Summary

The contribution of Information and Communications Technologies to the National Economy has been widely recognized. ICT enables wealth creation, employment and exports, and underpins many innovation processes. Immediate project benefits will be: Contribution to the knowledge base and fundamental capabilities in broadband wireless communication; Education of future Australian academic and industrial innovators; Raising the international profile of Australian research in the area of information technology. Applied development of the outcomes will lead to valuable intellectual property with potential for commercial exploitation. Close links to Australian industry ensures Australian ICT companies stand to gain commercial advantage.

DP0881338 Dr GD Roach; Dr J Dorrian

Approved Project Title **The prediction of sleep/wake behaviour based on physiological and social factors.**

2008 : \$ 70,000

2009 : \$ 70,000

2010 : \$ 70,000

Primary RFCD 3899 OTHER BEHAVIOURAL AND COGNITIVE SCIENCES

Administering Organisation University of South Australia

Project Summary

The prevalence of shiftwork has increased in Australia over the last few decades. Shiftworkers obtain less sleep, have greater difficulty maintaining good relationships, have poorer health, and are more likely to be injured at work than others. Using the largest dataset of its kind, we will substantially contribute to understanding the relationships between work hours, sleep, performance and safety. Ultimately, the project will answer a question critical to workplace safety - how much time off between shifts is needed to be alert and safe at work? The project will also produce tools to help industry design fatigue-friendly rosters, improving the safety, productivity and general well-being of shiftworkers in Australia and overseas.

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DP0877833 Prof DA Scott; Prof CF Humphreys; Dr FM Arney; Dr LM Bromfield; Dr DJ Higgins

Approved Project Title **Research Utilisation in Child Protection Policy: Understanding and Conceptualising the Role of Research in Social Policy Development**

2008 : \$ 70,292

Primary RFCD 3702 SOCIAL WORK

Administering Organisation University of South Australia

Project Summary

The findings of this project will have significant benefits for vulnerable children and families by enhancing the capacity for research-informed policy in child protection. In this way, the project will also have significant flow-on economic benefits for Local, State and Federal Governments by decreasing the social and economic costs associated with child abuse and neglect. Research funding will have a greater impact by the increased understanding this study will provide about how research can be more effectively used in policy.

DP0879364 Prof R Sharp; A/Prof R Broomhill; Prof J Brodie

Approved Project Title **Restructuring the male breadwinner model: New challenges for a rapidly changing Australia.**

2008 : \$ 38,300

2009 : \$ 47,000

2010 : \$ 46,000

Primary RFCD 3799 OTHER STUDIES IN HUMAN SOCIETY

Administering Organisation University of South Australia

Project Summary

This project investigates changes to the Australian male breadwinner gender order in the key spheres of labour markets, households and public policies. Gender arrangements in these spheres play a key role in economic development reflecting the intertwining of economic and social processes in a country's well-being. Increased understanding of the implications of current changes affecting the gender order and social reproduction will enhance economic well-being for both individuals and society in Australia. The impact of these changes are vital policy issues. This international collaboration will develop a conceptual framework for identifying policy reform to strengthen Australia's social and economic sustainability.

DP0879344 Dr J Slay

Approved Project Title **Voice over Internet Protocol: Privacy and Electronic Evidence Implications**

2008 : \$ 25,118

2009 : \$ 25,118

2010 : \$ 25,118

Primary RFCD 3904 LAW ENFORCEMENT

Administering Organisation University of South Australia

Project Summary

Consumers currently use the traditional technology of the Public Switched Telephone Network system without fear of eavesdropping. Law Enforcement has a legal right to intercept phone calls under prescribed conditions. This project offers support to policy makers and users in providing strategic advice in the secure transition of telecommunications to next generation networks. It provides a software solution to the threat to user privacy that may also feasibly be used to provide electronic evidence for law enforcement and intelligence agencies who increasingly have to look to means other than traditional telecommunications interception for evidence gathering from VoIP telephony.

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DP0881854 Prof M Stumptner; Prof F Wotawa
Approved Project Title **Model-based error location in concurrent software**
2008 : \$ 80,000
2009 : \$ 80,000
2010 : \$ 76,000
Primary RFCD 2803 COMPUTER SOFTWARE
Administering Organisation University of South Australia

Project Summary

The construction of modern software requires extensive testing and debugging in addition to using appropriate specification, design, and verification techniques. Testing and debugging are very time-consuming and costly, drawing - according to recent articles - ``typically 50% or more of the resources for software projects". By extending the power of a new, flexible debugging approach, this project offers the potential of significant cost savings, highly beneficial to any industry with a significant ICT component, e.g., defense. Lessons learned from the demonstration prototype, can be directly carried over into commercial tool development. The project strengthens links to high quality European research laboratories.

DP0879497 Prof AH Winefield; A/Prof PH Delfabbro; A/Prof MF Dollard; Prof HR Winefield; A/Prof JC Metzger; Dr A Hammarstrom
Approved Project Title **Transition from school to work: A 10-year longitudinal study of unemployment, underemployment, social exclusion, and mental health in young people**
2008 : \$ 104,915
2009 : \$ 100,456
2010 : \$ 128,800
2011 : \$ 82,129
2012 : \$ 79,271
Primary RFCD 3801 PSYCHOLOGY
Administering Organisation University of South Australia

Project Summary

This project will provide detailed insights into the early identification of young people most likely to experience poorer outcomes in later years of school, higher education and the workforce. The findings have implications for State and National policies relating to the healthy development of young Australians, the enhancement of school completion/retention rates, and strategies to facilitate young people's transition to the workforce and management of unfavourable work experiences. The study will further gain comparative insights into the higher education and work outcomes of students from coeducational and single-sex environments, private and public schools, and from regional and metropolitan areas.