Summary of Successful Linkage - Projects Proposals for Funding to Commence in 2010 by State and Organisation

Victoria

Monash University

LP100200140 Dr Colleen J Bettles, Prof Barrington C Muddle, Dr Nick Birbilis, Prof Michael J Nicol, Mr Mauricio Chovar, Dr Alan D Stuart

Approved Project Title **Novel energy-efficient electrowinning anodes**

2010	$25,000.00
2011	$50,000.00
2012	$50,000.00
2013	$25,000.00
2014	
2015	

Primary FoR 0912 MATERIALS ENGINEERING

APAI 1

Partner/Collaborating Organisation(s)

BHP Billiton Ltd, ORIGMA PTY LTD

Administering Organisation Monash University

Project Summary

Developed nations rely extensively on metallic materials to sustain modern society. This places a significant importance on delivery of base metals, and that delivery must be as efficient and clean as possible. The first step in the delivery chain is extraction from the ore, and much of this technology is based on electrowinning (EW), where the behaviour of the anode is critical to overall process efficiency. This project will deliver advances in EW anodes which will lead to energy savings, which in turn, will result in a cleaner overall production cycle, major emission reductions and cost savings. The expected outcomes of this project are targeted at the development of new and advanced anode materials.

LP100200206 Prof Alan M Bond, Dr Michael B Esler

Approved Project Title **Rapid amperometric measurement of chemical oxygen demand in polluted water based on electrochemical and photocatalytic properties of nanoparticulates**

2010	$50,000.00
2011	$105,000.00
2012	$115,000.00
2013	$60,000.00
2014	
2015	

Primary FoR 0301 ANALYTICAL CHEMISTRY

Partner/Collaborating Organisation(s)

Aqua Diagnostic Pty Ltd

Administering Organisation Monash University

Project Summary

The project will enhance a newly developed technology for measuring aggregate organic pollution in wastewater. The conventional wet chemistry method is disadvantaged by being slow (2 hr) and requiring toxic heavy metal (mercury, chromium) and hazardous reagents. Aqua Diagnostic's method, by contrast, is rapid (5-10 minutes) and uses only safe chemical reagents. It will be further improved to facilitate unprecedented near-real-time (less than 1 minute) online pollution monitoring and greater analytical robustness. The project will directly benefit the wastewater management community, enrich Australian industry's expertise in nanotechnology applications and grow high-tech exports as this innovative technology continues to penetrate international markets.

Summary of Successful Linkage - Projects Proposals for Funding to Commence in 2010 by State and Organisation

LP100200579 Prof Xiao Dong Chen, Dr Cordelia Selomulya

Approved Project Title **Breakthrough technologies for energy-efficient manufacture of dairy powders**

2010	$55,000.00
2011	$105,000.00
2012	$105,000.00
2013	$55,000.00
2014	
2015	

Primary FoR 0908 FOOD SCIENCES

APAI 1

Partner/Collaborating Organisation(s)

Dairy Innovation Australia Ltd

Administering Organisation Monash University

Project Summary

The outcomes of this project will form a significant change for the dairy industry in Australia (as represented by Dairy Innovation Australia Ltd.). In particular, the enormous cost-saving and environmental benefits due to a more efficient drying process are attractive for the competitiveness of the industry internationally. The innovation gained is also applicable to food and pharmaceutical industries where spray drying and fluidised bed drying are integral parts of the manufacturing process. The project will train graduates to be able to make a high-level contribution to these industries.

LP100200865 A/Prof David L Dowe, Dr Tristan J Barnett , Mr Arun Khanna

Approved Project Title **Rating and ranking sports players and teams using minimum message length**

2010	$13,334.50
2011	$26,669.00
2012	$26,669.00
2013	$13,334.50
2014	
2015	

Primary FoR 0104 STATISTICS

APAI_IT 1

Partner/Collaborating Organisation(s)

Cadability Pty Ltd

Administering Organisation Monash University

Project Summary

All sorts of games and sports could use better systems for rating and ranking teams. This is as true in sports-mad Australia as any other country. Improved and more accessible rating systems across a variety of activities should encourage the general public to take a greater interest in the mathematics, statistics, information theory and machine learning behind the systems. With Cadability as our Australia-based international industry partner, the global use of these systems will be to Australia's economic advantage. Having a more accurate rating system which is wider-reaching both in the number of sports and games and the number of participants per sport and game should also encourage greater participation from the general public.

Summary of Successful Linkage - Projects Proposals for Funding to Commence in 2010 by State and Organisation

LP100200072 Prof Yuri S Estrin, Dr Rimma Y Lapovok, Prof Elena Ivanova, Mr Graham Johnson, Asst Prof Cornelia Kasper, Dr Terry C Lowe

Approved Project Title **Ultrafine grained titanium for bio-implant applications**

2010	$90,000.00
2011	$165,000.00
2012	$165,000.00
2013	$90,000.00
2014	
2015	

Primary FoR 0912 MATERIALS ENGINEERING

APAI 1

Partner/Collaborating Organisation(s)

Carpenter Technology Corporation, Cochlear Limited, Manhattan Scientifics, Incorporated

Administering Organisation Monash University

Project Summary

The project underpins the potential niche applications of ultrafine grained titanium for biomedical implants and establishes a knowledge base for expanding Australia's capacity for manufacturing titanium parts. The novel technology will lead to a broader usage of titanium by biomedical industry and promote the development of the titanium manufacturing industry in Australia. The development of ultrafine grained titanium specifically designed for bio-implants will increase Australia's competitiveness in the global market. The project targets at least three of the priority goals specified under National Research Priority breakthrough science, frontier technologies and advanced materials.

LP100200153 Dr Peter J Kelly, A/Prof Lyn M Harrison, Dr Annelies Kamp, Mr Stephen Cochrane

Approved Project Title **Capacity building and social enterprise: Individual and organisational transformation in transitional labour market programs**

2010	$32,500.00
2011	$65,500.00
2012	$67,000.00
2013	$34,000.00
2014	
2015	

Primary FoR 1608 SOCIOLOGY

APAI 1

Partner/Collaborating Organisation(s)

Mission Australia

Administering Organisation Monash University

Project Summary

This research will produce new knowledge about the sustainability of social enterprise based transitional labour market programs, and contribute to the development of such programs nationally and internationally. The study of the factors that shape the success, or otherwise, of the most vulnerable, marginalised young people's involvement in these programs will contribute new knowledge about young people's transitions into labour markets. Together, these innovative understandings of social enterprise, marginalisation and social inclusion/transition will make significant contributions to the National Research Priority goals strengthening Australia's social and economic fabric and promoting an innovation culture and economy.

Summary of Successful Linkage - Projects Proposals for Funding to Commence in 2010 by State and Organisation

LP100200417 A/Prof Shonali Krishnaswamy, Dr Mohamed M Gaber, Dr Shivkumar Kalyanaraman, Mr Deva Seetharam, Dr Dipanjan Chakraborty

Approved Project Title **Wattzup - a context-aware residential demand-response system for smart energy management**

2010	$25,950.00
2011	$51,900.00
2012	$55,241.50
2013	$29,291.50
2014	
2015	

Primary FoR 0805 DISTRIBUTED COMPUTING

APAI_IT 1

Partner/Collaborating Organisation(s)

IBM India Research Lab

Administering Organisation Monash University

Project Summary

This project falls within the National Research Priorities an environmentally sustainable australia and frontier technologies for building and transforming Australian industries. This project will develop an innovative context aware smart energy management system that will effectively reduce consumption and wastage in residential energy usage among individual homes. It will also be an important new technology that will be able to support the Australian utility industry in terms of incorporating context-sensitive demand-response strategies. The key innovation of the system will be to leverage a range of rich contextual information that is easily accessible and available for effective residential energy management.

LP100200387 Dr Michael Lenne, Dr Paul M Salmon, Prof Thomas J Triggs, Prof Neville A Stanton

Approved Project Title **Application of contemporary systems-based methods to reduce trauma at rail level crossings**

2010	$65,000.00
2011	$155,000.00
2012	$175,000.00
2013	$125,000.00
2014	$40,000.00
2015	

Primary FoR 1701 PSYCHOLOGY

APAI 1

Partner/Collaborating Organisation(s)

Department of Transport, Victoria, Public Transport Safety Victoria, Roads Corporation, Transport Accident Commission (TAC), VicTrack Access, V/Line Passenger Pty Ltd

Administering Organisation Monash University

Project Summary

Crashes at railway level crossings continue to cause significant trauma across Australia. Despite being a longstanding safety problem, the design and operation of level crossings has not changed considerably for decades. This research will provide an in-depth understanding of road user, environmental and infrastructure-related factors that influence safety and performance at rail level crossings. This will be used to develop a world-first model of the level crossing system that is needed to support the development of innovative countermeasures that will improve safety. Reductions in the levels of significant trauma at level crossings, and new public policy for level crossing upgrades, are the intended real-world outcomes.

Summary of Successful Linkage - Projects Proposals for Funding to Commence in 2010 by State and Organisation

LP100200685 Dr Jane G Muir, Prof Peter Gibson, Dr Dai A Suter, Dr Ferenc (Frank) Bekes

Approved Project Title **Development of novel cereal grain products for wheat and gluten intolerant Australians.**

2010	$45,000.00
2011	$90,000.00
2012	$90,000.00
2013	$45,000.00
2014	
2015	

Primary FoR 0703 CROP AND PASTURE PRODUCTION

Partner/Collaborating Organisation(s)

George Weston Foods Ltd

Administering Organisation Monash University

Project Summary

Many Australians claim to have wheat or gluten intolerances and this has led to the growing demand for wheat and gluten free grain products. The most common problems reported by individuals relate to gut symptoms and chronic fatigue. There are a number of dietary factors in cereal products that may be responsible for triggering these symptoms including the presence of poorly absorbed carbohydrates and wheat gluten itself. This partnership between Monash University and George Weston Foods will develop novel food products that will be better tolerated by Australians reporting wheat and gluten intolerances. This will help provide the cereal industry with a competitive edge and improve the sustainability of the Australian agriculture sector.

LP100200782 Prof Brian J Oldfield, A/Prof John B Dixon, Dr Joseph Raven

Approved Project Title **Use of an animal model to understand mechanisms underlying reductions in body weight associated with use of the laparoscopic adjustable gastric band**

2010	$45,000.00
2011	$90,000.00
2012	$45,000.00
2013	
2014	
2015	

Primary FoR 1109 NEUROSCIENCES

Partner/Collaborating Organisation(s)

Allergan Inc

Administering Organisation Monash University

Project Summary

At least one in ten Australians is classified as morbidly obese and as such are eligible for bariatric surgery. Those undergoing the surgery will achieve an average excess weight loss of up to 60 per cent, they will have reduced or eliminated diabetes and will appreciably improve their prospects of survival. These experiments aimed at understanding the mechanisms underpinning this success have the potential to further improve surgical approaches and outcomes and provide insights that will better enable weight loss therapies for all overweight and obese Australians.

Summary of Successful Linkage - Projects Proposals for Funding to Commence in 2010 by State and Organisation

LP100200500	Prof Chris J Porter, Dr Lisa M Kaminskas, Dr Benjamin J Boyd, Dr Elizabeth D Williams, Dr David J Owen
Approved Project Title	**Designing dendrimer-based lymphatic drug vectors as improved treatments for metastatic cancer**

2010	$75,000.00
2011	$140,000.00
2012	$130,000.00
2013	$65,000.00
2014	
2015	

Primary FoR	0303	MACROMOLECULAR AND MATERIALS CHEMISTRY

Partner/Collaborating Organisation(s)

Starpharma Ltd

Administering Organisation Monash University

Project Summary

This project builds on areas of research strength in Australia (nanotechnology and biotechnology/biomaterials) and will add considerably to the expanding Australian expertise-base in dendrimer technology (in which it is a world leader). The project will advance the fundamental science base that underpins dendrimer design and has the potential to deliver substantial benefits in improved drug delivery and therefore health outcomes for Australia. The interdisciplinary nature of this project will also result in a unique training program for the researchers involved. Such experience is in great demand in Australia where the developing biotechnology and nanotechnology industry is critically short of scientists with skills in drug delivery.

LP100200197	A/Prof Geoffrey Rose, Prof Roderick J McClure, A/Prof Marco Pierini, Ms Jill Earnshaw, Mr Peter Daly, Mr Rhys Griffiths, Ms Samantha Cockfield, Ms Fiona Calvert
Approved Project Title	**A systemic model to underpin enhanced management of powered-two-wheelers as part of a safe, sustainable transport system**

2010	$61,038.00
2011	$131,976.50
2012	$112,665.00
2013	$41,726.50
2014	
2015	

Primary FoR	1205	URBAN AND REGIONAL PLANNING

APAI	1

Partner/Collaborating Organisation(s)

Department of Transport, Victoria, FEDERAL CHAMBER OF AUTOMOTIVE INDUSTRIES, RACV, Roads Corporation, Transport Accident Commission (TAC)

Administering Organisation Monash University

Project Summary

Better management of motor scooters and motorbikes (Powered-2-wheelers or P2W) will deliver economic, environmental and social benefits. Road crashes involving P2Ws cost the Australian community in excess of $2 billion per annum. There are also the broader social impacts for crash victims, their families and communities from the potentially long-term pain, grief and debilitating injuries. This project will provide insight into how the incidence and costs associated with P2W crashes can be reduced. In addition, congestion costs in each of Australia's capital cities are on the order of $3 billion per annum and there is potential for P2W research to reduce not only that cost but also the broader environmental impacts of travel by providing an alternative to cars.

Summary of Successful Linkage - Projects Proposals for Funding to Commence in 2010 by State and Organisation

LP100200090 Prof John Sheridan, Prof Mark C Thompson, Prof Ivan Marusic, Dr Nicholas A Brown, Dr Jason P Monty, Dr Nicholas Hutchins, Dr David T Martin

Approved Project Title **Advancing unsteady bluff body aerodynamics: applications to elite cycling**

2010	$60,000.00
2011	$120,000.00
2012	$125,000.00
2013	$65,000.00
2014	
2015	

Primary FoR 0915 INTERDISCIPLINARY ENGINEERING

Partner/Collaborating Organisation(s)

Australian Institute of Sport

Administering Organisation Monash University

Project Summary

Delivering a better understanding of unsteady wakes has real potential to further our future capabilities of reducing bluff body parasitic drag. The national benefit derived from this project is the advancement of knowledge of a complex fluid mechanics problem, with secondary benefits arising from the specific and practical application to sports aerodynamics. By better understanding the wake structure and its interaction with a locally oscillating bluff body this knowledge can feed into the field of active flow control in the transport sector. The potential for emissions mitigation by lowering aerodynamic losses in the ground transportation section through active aerodynamic control is significant.

LP100200465 A/Prof Kiyonori Suzuki

Approved Project Title **Nanostructured magnetic materials for clean automotive technologies**

2010	$42,500.00
2011	$85,000.00
2012	$42,500.00
2013	
2014	
2015	

Primary FoR 0912 MATERIALS ENGINEERING

Partner/Collaborating Organisation(s)

TOYOTA MOTOR CORPORATION

Administering Organisation Monash University

Project Summary

Greater utilisation of the petrol-electric hybrid technology is an effective and realistic approach to the problem of increasing greenhouse gas emissions from transportation sources. Owing to the requirement of the temperature stability of the magnets used in the electric motors in the current hybrid vehicles, the magnets contain considerable amounts of costly rare-earth elements. This impedes the utilisation of the technology and hence alternative cost effective magnets with high temperature stability are needed. In this project we will exploit a range of alloy design strategies in manganese-bismuth/iron nanocomposite magnets, thereby realising a novel permanent magnet, free of costly rare-earth elements.

Summary of Successful Linkage - Projects Proposals for Funding to Commence in 2010 by State and Organisation

LP100200270 Prof Alistair S Thomson, A/Prof Katie B Holmes, Mr Kevin J Bradley, Dr Seamus P O'Hanlon, Dr Christina L Twomey, Dr Kerreen M Reiger, Ms Michelle C Rayner

Approved Project Title **Australian generations: life histories, generational change and Australian memory**

2010	$50,000.00
2011	$141,000.00
2012	$182,500.00
2013	$113,927.00
2014	$22,427.00
2015	

Primary FoR 2103 HISTORICAL STUDIES

APAI 2

Partner/Collaborating Organisation(s)

Australian Broadcasting Corporation, National Library of Australia

Administering Organisation Monash University

Project Summary

As the nation faces dramatic social and environmental change, understanding diverse experiences and memories of Australia's past becomes increasingly important. This project will strengthen Australia's social and economic fabric by explaining the experience, memory and significance of the past for different Australian generations. Sixty national radio programs will make the research widely accessible. Future researchers and educators will benefit from unprecedented online access to an immensely rich national oral history collection. The National Library, ABC, university partnership will ensure that professional innovation in radio history, oral history and digital archiving is cascaded to cultural institutions in Australia and abroad.

LP100200405 Prof Ingrid Zukerman, A/Prof Robin A Russell, Dr Gwyn Rees, A/Prof Ecosse L Lamoureux, Dr Jan Alexandersson

Approved Project Title **A progressive study of user and sensor models for monitoring and assisting elderly people, focusing on the visually impaired**

2010	$47,500.00
2011	$90,000.00
2012	$92,500.00
2013	$50,000.00
2014	
2015	

Primary FoR 0801 ARTIFICIAL INTELLIGENCE AND IMAGE PROCESSING

Partner/Collaborating Organisation(s)

Meticube, Lda, VicHealth

Administering Organisation Monash University

Project Summary

This research will contribute to the well-being of our ageing population by extending their independence, and hence their ability to remain safely in their homes. This will benefit them, their carers and the rest of society. The synergy between user modelling, language technology and sensor networks, grounded in psychological findings, will yield high quality, novel scientific advances. The deployed prototypes will provide proof of concept of an application that improves our daily living, creating commercialisation opportunities.