

# Summary of Linkage Projects Proposals for Funding to Commence in 2009

## LINKAGE PROJECTS 2008 ROUND 2 FUNDING TO COMMENCE IN JULY 2009

### MELBOURNE SCHOOL OF ENGINEERING

**LP0989900** A/Prof R Buyya

**Approved Project Title** **Service Level Agreement (SLA)-oriented Resource Allocation for Data Centers and Cloud Computing Systems**

**2009 :** \$ 65,000

**2010 :** \$ 65,000

**2011 :** \$ 65,000

**Primary RFCD** 2803 COMPUTER SOFTWARE

**Collaborating/Partner Organisation(s)**

Platform Computing Singapore Pte Ltd

#### Project Summary

In the next 20 years, service-oriented computing will play an important role in shaping the industry and the way business is conducted and services are delivered and managed. This paradigm will have major impact on service economy, which contributes significantly towards Australia's GDP. The service sector, which includes health, financial, and government services, involves significant interaction between clients and providers. With increasing dependency on ICT technologies in their realization, major advances are required in service-driven allocation of resources to competing applications. This project develops technologies for Service Level Agreement (SLA)-based allocation of Data Center/Cloud computing system resources to applications.

**LP0989375** Prof CS Fraser

**Approved Project Title** **Enhanced Automation of Close-Range Photogrammetry for Defence and National Security Applications**

**2009 :** \$ 99,000

**2010 :** \$ 95,000

**2011 :** \$ 90,000

**Primary RFCD** 2910 GEOMATIC ENGINEERING

APA(I) Award(s): 1

**Collaborating/Partner Organisation(s)**

Defence Imagery & Geospatial Organisation

#### Project Summary

The project, which falls under the National Research Priority of safeguarding Australia, will be of significant national and community benefit. The research outcomes will advance close-range photogrammetry (CRP) technology, especially in the critical areas of defence and national security. It will lower the cost base of CRP and expand its commercial potential in new application domains, thus promoting business activity in the broader Australian spatial information industry. Also, community oriented benefits will be seen through the improved prospects for new public-good applications of CRP, ranging for example from cultural heritage recording through to homeland security and forensic measurement for crime scene analysis.

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**LP0989892** Prof DA Gray; Prof W Moran; Dr MR Morelande; Dr C McCarroll; Dr PT May; Prof DJ McLaughlin; Adj/Prof BD Bates  
**Approved Project Title** **Towards Distributed Phased Array Radar for High Resolution Weather Monitoring**  
**2009 :** \$ 250,000  
**2010 :** \$ 260,000  
**2011 :** \$ 210,000  
**Primary RFCD** 2909 ELECTRICAL AND ELECTRONIC ENGINEERING  
**APA(l) Award(s):** 2  
**Collaborating/Partner Organisation(s)**  
Raytheon Australia

## Project Summary

Several recent reports on climate change by leading international and national bodies forecast that the rate of weather hazards such as storms and wind-shear, and of weather-associated phenomena such as bush fires will increase over the next 40 years. The current technology for monitoring weather events, and effects like wind-shift, which has a serious impact on dangers associated with bush fires, has significant weaknesses. We will deliver considerable improvements in monitoring capability by developing the technology for using a network of small phased array radars. We aim to place monitoring resources where end-user needs are greatest.

**LP0989575** A/Prof SE Kentish; Prof GW Stevens  
**Approved Project Title** **The Treatment Of Galvanizing Wastewater: Delivering An Environmentally And Economically Sustainable Approach.**  
**2009 :** \$ 46,000  
**2010 :** \$ 35,000  
**2011 :** \$ 40,000  
**Primary RFCD** 2906 CHEMICAL ENGINEERING  
**APA(l) Award(s):** 1  
**Collaborating/Partner Organisation(s)**  
Industrial Galvanizers

## Project Summary

This project will investigate a process to treat wastewater from industrial galvanizing sites around Australia. When implemented, the process will substantially reduce the consumption of acid and fresh water at these sites. Further, the process will recover the zinc content of the wastewater in a saleable form and can also generate ferric chloride for sale as a water treatment chemical. The quantity of heavy metals disposed to landfill will also be dramatically reduced. Scientific knowledge of multicomponent liquid-liquid equilibria will be of value to a wider range of solvent extraction processes including zinc and copper metal refining.

# Summary of Linkage Projects Proposals for Funding to Commence in 2009

**LP0989733** Prof PJ Scales; Dr M Rudman

**Approved Project Title** **Thickener operation optimisation and design for the minerals industry**

**2009 :** \$ 145,000

**2010 :** \$ 137,000

**2011 :** \$ 115,000

**Primary RFCD** 2907 RESOURCES ENGINEERING

APA(l) Award(s): 1

**Collaborating/Partner Organisation(s)**

AMIRA International Ltd

## **Project Summary**

Thickening is the main process used in the minerals industry for recovery and recycling of water and the environmental management of waste products. This project will provide simple but fundamental experimental and modelling tools to enhance thickener design and operations. The result will be improved water recovery, reduced waste volumes, environmentally sustainable options for waste tailings disposal and significant cost reductions through improved device design at a large number of sites both in Australia and overseas. An additional benefit will be an integrated design and operational approach to thickener utilisation in the minerals industry.

**LP0989441** A/Prof JP Walker; Mr RC Pipunic; Dr MF McCabe; Dr M Abuzar; Dr DM Whitfield

**Approved Project Title** **A new paradigm for improved water resource management using innovative water modelling techniques.**

**2009 :** \$ 150,000

**2010 :** \$ 150,000

**2011 :** \$ 120,000

**Primary RFCD** 2605 HYDROLOGY

APA(l) Award(s): 1

**Collaborating/Partner Organisation(s)**

Department of Primary Industries, Victoria

## **Project Summary**

The threat of climate change and Australia's arid environment makes accurate water resource planning essential for sustainable water management. This is particularly relevant in rural Australian catchments with competing needs for scarce water resources, including irrigation to sustain farming communities, maintaining adequate flows for river health, and seasonal flooding for fragile eco-systems. Accurately predicting key water balance components across catchments is crucial for improved water resource planning. Continuously constraining model predictions with time series of spatial data can identify weaknesses in model physics for correction and make model scenario testing more reliable so better water management decisions can be made.

# Summary of Linkage Projects Proposals for Funding to Commence in 2009

**LP0989497** A/Prof E Weyer; A/Prof MW Cantoni; Dr PM Dower; Prof IM Mareels

**Approved Project Title** **Managing Australia's water resources: Automated demand scheduling and supply control systems for large scale irrigation networks**

**2009 :** \$ 145,000

**2010 :** \$ 145,000

**2011 :** \$ 90,000

**2012 :** \$ 220,000

**Primary RFCD** 2301 MATHEMATICS

**APA(l) Award(s):** 2

**Collaborating/Partner Organisation(s)**

Rubicon Systems Australia Pty. Ltd.

## **Project Summary**

Irrigation water delivery losses in Australia are equal in volume to the total non-agricultural water consumption nationwide. In a drought-prone country where water is such a scarce resource, precise water management is critical. Through the intelligent development and application of technology to the supply and management of water flows in irrigation networks, this project will deliver increased flexibility and security in water delivery to farmers, and substantial water savings overall. These benefits will lead directly to increased productivity and growth in the rural sector and wider economy, whilst providing improved environmental and catchment flows of benefit to all Australians.

## **LINKAGE INTERNATIONAL Funding to commence 2009**

**LX0989942** Dr LA Connal; Dr CJ Hawker; A/Prof GG Qiao

**Approved Project Title** **Advanced nanoparticle stabilisation and functionalisation: small particles with huge potential**

**2009 :** \$ 86,000

**Primary RFCD** 2918 INTERDISCIPLINARY ENGINEERING

**Collaborating Countries**

USA

## **Project Summary**

Australia is strongly investing in nanotechnology and through the governments priority goals 'Frontier Technologies for Building and Transforming Australian Industries' it has been recognised as an important area for investment. This proposal will help develop an internationally recognised nano-industry. It is envisaged that the particles made during this work will have direct implications for the public - creating a new class of medical diagnostic particles with better resolution and specificity. These particles have the potential to diagnose patients more precisely and at an earlier stage than is currently available. Additionally, these particles could be designed to load drugs and hence could be used to treat diseases such as cancer.