

Summary of Successful Applications By State  
Special Research Initiatives: E-Research to Commence in 2005

<b>New South Wales</b>	<b>5</b>
<b>Victoria</b>	<b>11</b>
<b>Queensland</b>	<b>10</b>
<b>South Australia</b>	<b>1</b>
<b>Western Australia</b>	<b>2</b>
<b>Tasmania</b>	<b>2</b>
<b>Australian Capital Territory</b>	<b>6</b>
<b>TOTAL NUMBER OF GRANTS</b>	<b>37</b>

# Summary of Successful Applications By State

## Special Research Initiatives: E-Research to Commence in 2005

### New South Wales

#### Macquarie University

**SR0567319** Dr S Cassidy; Dr R Goecke; Dr PA Watters; Dr M Buchhorn; A/Prof DM Powers; Prof M Wagner; Dr LM Barwick; Prof R Dale; Dr JH Simpson

**Title:** **DADA-HCS: Distributed Access and Data Annotation for the Human Communication Sciences**

**2005 :** \$72,500

**2006 :** \$72,500

**Category:** 2801 - INFORMATION SYSTEMS

**Administering Institution:** Macquarie University

#### Summary:

This project aims to build a National storage network for human communication sciences data which will enable subscribers to publish their own data and make use of data provided by other subscribers or third party suppliers. The network will provide infrastructure for rights management of data, in particular making sure that any original conditions on the collection and publication of data are respected. The project will support collaborative annotation of data stored in the network so its use can be maximised across disciplines.

#### The University of Newcastle

**SR0566756** Dr FA Henskens; Mr PJ Johnston; Mr P Rasser; A/Prof PB Ward; A/Prof U Schall; Prof PT Michie; Prof V Carr; Dr PM Thompson

**Title:** **Application for funding to develop a software grid for data-sharing associated with the NISAD/LONI Virtual Brain Bank.**

**2005 :** \$47,627

**2006 :** \$47,627

**Category:** 3207 - NEUROSCIENCES

**Administering Institution:** The University of Newcastle

#### Summary:

This project will produce tools to enhance collaboration between researchers at physically disparate locations. It builds on emerging Grid computer network technology to create virtual research communities that permit secure sharing of geographically disjoint resources such as data collections, computer software and computer processing power. The project's test case will create a community of researchers into brain disease (e.g. schizophrenia) who are located in three Australian and one USA site and who will share their patient data, analysis tools and special-purpose computer equipment. The developed tools will allow relatively simple and rapid deployment of similar research grids suitable for a wide range of collaborative projects.

#### The University of Sydney

**SR0567533** A/Prof CJ Kepert; Prof DA Abramson; Dr K Chiu; Dr N Hauser; Prof MB Hursthouse; Dr DF McMullen; Prof BA Pailthorpe; Dr P Turner; Prof AY Zomaya

**Title:** **Scientific Instruments as ICT Components in Building a GrEMLIN for e-Research**

**2005 :** \$60,000

**2006 :** \$60,000

**Category:** 2803 - COMPUTER SOFTWARE

**Administering Institution:** The University of Sydney

#### Summary:

The proposal seeks to initiate the development of a GrEMLIN, a Grid Enabled Multi-Level Instrument Network, for e-Research. Scientific instruments, whether at conventional laboratories or at major facilities, may be regarded as specialised ICT components in a network providing remote access to such instrumentation. Collaborative remote access and data analysis brings efficiency and effectiveness dividends, that can be enhanced through the harnessing of Grid technologies. The collaborative project will leverage middleware, Web Services and e-Science software developments in the US and UK, to provide Grid enabled remote instrument access and data analysis as a powerful e-Research tool.

**SR0566892** A/Prof RD Muller; Prof PA Cawood; A/Prof LN Moresi; Prof HB Muhlhaus; Prof AY Zomaya; Dr MF Coffin; Dr SJ Cox; A/Prof GL Clarke; Dr K Gohl; Dr M Gurnis; Dr WR Roest; Prof TH Torsvik; Prof P Wessel; Dr R Woodcock; Dr A Woolf; Dr C Cervato; Prof Dr X Xie; Dr PF Rey

**Title:** **The EarthByte software and database system**

**2005 :** \$110,000

**2006 :** \$110,000

**Category:** 2802 - ARTIFICIAL INTELLIGENCE AND SIGNAL AND IMAGE PROCESSING

**Administering Institution:** The University of Sydney

#### Summary:

Earth processes over geological timescales cannot be understood outside of a plate tectonic context. However, no standard tool exists to explore the causes and effects of lithosphere-mantle interaction in accordance with past plate configurations. Our aim is to develop a Palaeo-Geographic Information System called EarthByte that will connect the open source and architecture-independent GPlates and GMT software, and implement XML-based service interfaces and databases. EarthByte will create the foundation for an e-geoscience framework for grid-based data access and Earth process modelling by linking geological and geophysical observations to palaeogeographic models for constraining mantle convection and lithospheric deformation.

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**University of Technology, Sydney**

**SR0567443** Prof AS Mowbray; Prof GW Greenleaf

**Title:** Improving a global research network of free access providers of legal information: Synchronisation, stability, redundancy, load balancing and shared metadata

**2005 :** \$50,000

**2006 :** \$50,000

**Category:** 2801 - INFORMATION SYSTEMS

**Administering Institution:** University of Technology, Sydney

**Summary:**

High quality legal research must increasingly be global and comparative. Australian researchers have led development of an international consortium of University-based free-access providers of legal information that rival commercial sources, and run one of the hubs of its network (WorldLII). This project will develop a set of tools which can be deployed by all Legal Information Institutes (LIIs) in or joining the network to provide synchronisation, stability, redundancy and load balancing for each LII, improving network reliability and speed. Provisions for shared metadata will facilitate the development of high quality research tools which will benefit all areas of law.

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### Victoria

#### Monash University

**SR0566602** Dr A Buckle; Dr SP Bottomley; Prof GI Webb; Dr KF Fulton; Prof KW Plaxco

**Title:** Development of a collaborative online environment and workbench for the investigation of protein folding.

**2005 :** \$43,967

**2006 :** \$43,967

**Category:** 2499 - OTHER PHYSICAL SCIENCES

**Administering Institution:** Monash University

**Summary:**

The investigation of protein folding – one the most important unsolved biological problems, is generating large amounts of complex data. This proposal aims to develop a highly collaborative content management system and interactive data mining tools that will allow the open exchange and analysis of protein folding data. A chief goal of this proposal is, by creating a rich informatics environment, to foster the exchange of ideas and rapid dissemination of new data across the international array of groups working in parallel on various aspects of the folding problem.

**SR0566976** Prof AH Lynch; Prof DA Abramson; Prof IH Simmonds; Prof Dr K Dethloff; Prof L Mysak; Dr RM Wardle

**Title:** eScience and Climate: Using Grid technology to build capacity in studies of Australian climate variability.

**2005 :** \$25,000

**2006 :** \$25,000

**Category:** 2803 - COMPUTER SOFTWARE

**Administering Institution:** Monash University

**Summary:**

Australia possesses capability in the area of palaeoclimate modelling, but efforts to understand our past natural climate variations are hampered by the computational profligacy of such models. Further, Australia does not possess a capability in intermediate complexity models which would allow experiments that take account of tectonic time scales. This initiative aims to develop a framework to allow the integration of climate system models with grid computing approaches (such as Nimrod/G) and test this framework on a pilot study of the Australian palaeomonsoon system. In addition, we will use this initiative to develop international linkages to enhance our ability to address problems of importance to Australian natural climate variability.

**SR0567460** Dr JC Whisstock; Dr A Buckle; Prof GI Webb; Prof DA Abramson; Dr SP Bottomley; Prof B Adler; Prof DG Green; Dr J Rossjohn; Prof IA Smith; Dr MJ Garcia de la Banda; Prof RL Coppel

**Title:** Development of a collaborative environment for high throughput biology discovery pipelines.

**2005 :** \$42,500

**2006 :** \$42,500

**Category:** 2799 - OTHER BIOLOGICAL SCIENCES

**Administering Institution:** Monash University

**Summary:**

Modern biological science involves the parallel high-throughput investigation of many hundreds of different experimental targets. Traditional approaches for recording, analysing, mining and cross comparing experimental data are inadequate for conducting high throughput experiments. This proposal aims to develop new algorithms in the high throughput arena that will revolutionize biological discovery.

#### RMIT University

**SR0563610** A/Prof JY Tu; A/Prof GJ Dusting; Prof DC Reutens; Dr FC Thien; Dr CG Li; Prof WF Appelbe; Prof AJ Maeder; Dr R Markus; Prof A Subic; Prof X Yu; Dr Q Deng; Dr JZ Huang; Dr P Schwarz; Dr GH Yeoh; Prof C Liu; Prof LC Wrobel

**Title:** Developing an E-Platform for Application of Clinical Management in the Human Respiratory and Vascular System

**2005 :** \$55,558

**2006 :** \$55,558

**Category:** 2802 - ARTIFICIAL INTELLIGENCE AND SIGNAL AND IMAGE PROCESSING

**Administering Institution:** RMIT University

**Summary:**

This project aims to develop an E-PLATFORM that will provide a simulation-based virtual reality environment for clinical management and therapy treatment in the human respiratory and vascular system. One significant feature of the expected outcomes is the ability for surgeon or physician to adequately plan their treatment or operation decision-making of respiratory or vascular disease, in particular, from the point of view of flow analysis using state-of-the-art computational fluid dynamics techniques. This research proposal aims to facilitate new medical research and development for treatment of respiratory and/or vascular diseases, which can have a great socioeconomic benefit to the Australian community.

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## **The University of Melbourne**

**SR0567353** Dr TJ Baldwin; A/Prof S Bird; Mr BM Hughes

**Title:** **An Intelligent Search Infrastructure for Language Resources on the Web**

**2005 :** \$49,018

**2006 :** \$49,018

**Category:** 2801 - INFORMATION SYSTEMS

**Administering Institution:** The University of Melbourne

### **Summary:**

Language occupies a central role on the web: most content is expressed in language, and most access takes place via natural language search. Today, investigation of human language depends on access to this vast store of language data. This project will develop new infrastructure for accessing language resources, namely a language-aware search engine. Language technologies will be employed to classify web content, and a special search keyword 'lang:' will constrain search results to be in the specified language. The system will be integrated with major language archives in Australia and overseas, and deployed on the high performance computing infrastructure at Melbourne University's Advanced Research Computing Centre.

**SR0567350** Prof DJ Clarke; Dr S Barnes; Prof F Leung; A/Prof F Sahlström

**Title:** **VisualGrid: Grid-enabled International Collaborative Entry, Retrieval and Analysis of Video Data in Education and the Social Sciences**

**2005 :** \$37,500

**2006 :** \$37,500

**Category:** 3301 - EDUCATION STUDIES

**Administering Institution:** The University of Melbourne

### **Summary:**

This e-Research project utilises grid-enabled technology to share and extend existing practices in video analysis on an international scale. Grid-enabled collaborative analysis offers definite advantages in comparison with web-mediated streamed data sharing and analysis using non-grid approaches. A grid-enabled facility to which data can be incrementally added and iteratively coded and analysed in a synchronous or asynchronous fashion on an international scale will transform the nature of international collaborative activity in the social sciences, where the complex data (text, graphic, audio or video) have challenged international research teams seeking to establish highly interactive collaborative partnerships.

**SR0564829** A/Prof GF Egan; Dr R Buyya; Prof IM Mareels; Prof R Kotagiri; Prof AW Toga

**Title:** **Development of e-Research Tools for an MRI Grid Computing Facility**

**2005 :** \$40,000

**2006 :** \$40,000

**Category:** 2801 - INFORMATION SYSTEMS

**Administering Institution:** The University of Melbourne

### **Summary:**

The proposed middleware tools will provide a resource management system for the national MRI grid computing facility. The main functions of the middleware tools are resource discovery and allocation, job scheduling and monitoring, workflow management and data management. The middleware tools will allow system developers and maintainers to simplify and optimize the development and deployment of MRI grid applications. The complete system incorporating the middleware tools will provide a set of web and application-based user interfaces that allow secure, seamless and uniform access to resources in a heterogeneous grid environment.

**SR0567373** A/Prof SK Halgamuge; A/Prof PA Mendis; Dr A Ooi; Mr MR Edwards; Dr MH Premaratne; Dr D Alahakoon; Dr UR Abeyratne; Dr AD Jayalath; Dr S Tang; Prof R Kruse; Prof M Glesner; Dr PD Gamage; Dr AC Ratnaweera

**Title:** **Collection, Sharing, Visualisation and Analysis of locally gathered information from geographically remote areas vulnerable to tidal waves**

**2005 :** \$49,848

**2006 :** \$49,848

**Category:** 2899 - OTHER INFORMATION, COMPUTING AND COMMUNICATION SCIENCES

**Administering Institution:** The University of Melbourne

### **Summary:**

This project will set up a virtual organization for tsunami related data analysis using grid technology. Due to geologically remote areas/countries involved the sharing of seismic, tidal and other locally gathered tsunami related information is critical to issuing a warning. In collaboration with Australian and International partners, this project will explore: new avenues of tsunami-related data collection, which are currently not available; new data fusion methods; data sharing strategies; visualisation and analysis methods; and develop sensing methods to gather data on animal behaviours often reported as a possible way of identifying similar disasters.

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## Special Research Initiatives: E-Research to Commence in 2005

**SR0567417** Prof PJ Harris; Dr A Lonie; Dr R Buyya; Dr S Thomas; Prof PJ Hunter; Prof WF Appelbe

**Title:** eResearch Grid Environment for Integration of Distributed Kidney Models and Resources

**2005 :** \$62,221

**2006 :** \$62,221

**Category:** 2803 - COMPUTER SOFTWARE

**Administering Institution:** The University of Melbourne

**Summary:**

We aim to produce a collaborative computing based approach to integrating and representing distributed renal models and resources that will enable researchers to gain access to and interact with the models and databases irrespective of format or location, permitting quantitative online exploration of new hypotheses within a variety of simulations. We will develop a portal providing an interactive 3D visualisation of the kidney as a user interface to a collection of distributed published models and extracted resources at all levels of renal physiology. The models will be hosted in France, New Zealand, Australia and the USA and be made available internationally to client users using Grid-based distributed computing systems.

**SR0566965** Dr NA Thieberger; Dr JH Simpson; Dr LM Barwick; A/Prof G Wigglesworth; Dr A Rumsey; Dr FJ Bowden; Dr M Buchhorn; Mr SC Hungerford; Prof WA Foley; Prof AJ Marett; Dr AD Corn; Dr R Nordlinger; A/Prof ND Evans; Dr JT Hajek; A/Prof TA Johnston; Dr A Schembri; Dr S Pfeiffer; Dr JL Hunter; Dr P McConvell; Mr JN Gumbula; Prof PK Austin; Dr G Holton; Dr H Johnson

**Title:** Sharing access and analytical tools for ethnographic digital media using high speed networks

**2005 :** \$50,000

**2006 :** \$50,000

**Category:** 3802 - LINGUISTICS

**Administering Institution:** The University of Melbourne

**Summary:**

We will develop a collaborative distributed research environment for humanities research based on ethnographic audiovisual media by bringing together cutting-edge researchers to provide practical solutions to impediments to progress in both ICT and humanities areas. Testbed data will be large audiovisual corpora collected by Australian-based e-humanities research projects. We will adapt and implement web tools for collaborative access to these corpora, building on software developed by CSIRO's Annodex, DSTC's Vannota and the ANU Internet Futures project, and taking advantage of Australia's world-class storage and networking capacity. Interactive use of data is essential for advancing humanities research.

### Victoria University of Technology

**SR0567506** Prof Y Zhang; Dr H Shi; Ms E Beal

**Title:** Peer-to-Peer collaborative research network for sharing and managing digital legal information

**2005 :** \$35,000

**2006 :** \$35,000

**Category:** 3902 - PROFESSIONAL DEVELOPMENT OF LAW PRACTITIONERS

**Administering Institution:** Victoria University of Technology

**Summary:**

The aim of this project is to develop a collaborative research network using P2P technology to allow research across multiple disciplines for an open exchange of information. Current P2P technology only supports general information sharing. This research will investigate how to use P2P technology to incorporate digital rights management and network authentication, and to facilitate existing open access initiatives, traditional scholarly publishing models and emerging research practices. The collaborations between IT and legal industry will be established and expanded significantly in the scope of e-research for sharing legal resources. A P2P prototype will be developed to facilitate legal users and applications.

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## Special Research Initiatives: E-Research to Commence in 2005

### Queensland

#### Queensland University of Technology

**SR0567386** Prof PR Croll; Prof VL Narasimhan; Prof WJ Caelli; A/Prof J Soar

**Title:** **Mechanisms for Ultra-secure Access to Large Repositories of Sensitive Data over the Grid**

**2005 :** \$49,000

**2006 :** \$49,000

**Category:** 2801 - INFORMATION SYSTEMS

**Administering Institution:** Queensland University of Technology

**Summary:**

Large repositories of data that are typically geographically distributed and are subject to varying degrees of legal and ethical constraints are not available for open scientific research due to the sensitive and private nature of the information they contain, e.g. personal health records offer significant value for medical research, but are not readily available due to privacy legislation and the requirement to maintain end-user's trust in healthcare information system. This project will build a demonstrator, based upon advanced cryptographic and information research and technologies to provide ultra-secure and sanitized access to this data via a data network grid.

**SR0567493** Dr JM Hogan; A/Prof P Roe; Prof P Timms; Prof JA Clements; Prof B Pham; Prof AJ Maeder

**Title:** **E-Services for Comparative Studies in Molecular Biology**

**2005 :** \$49,573

**2006 :** \$49,573

**Category:** 2803 - COMPUTER SOFTWARE

**Administering Institution:** Queensland University of Technology

**Summary:**

The central challenge of post-genomic biology is to exploit the range of sequence and microarray data to yield greater understanding of biological processes. Large comparative studies are hamstrung by the inaccessibility of specialist comparative tools and the problem of managing large-scale disparate data. This project will provide portal and web services facilities to remove these obstacles, relying on robust and scalable business technologies to be made freely available. Our work will be driven by specific applications in bacterial genomics and cancer research, and will support research into prostate cancer and the pathogens Chlamydia and Bacillus anthracis.

#### The University of Queensland

**SR0567201** Dr NS Bordes; Dr SG Ulm; Mr SC Hungerford; Dr P Hiscock; A/Prof J Hall; Prof BA Pailthorpe

**Title:** **e-Archaeology: Towards an Australian Archaeological Data Grid.**

**2005 :** \$38,714

**2006 :** \$38,714

**Category:** 4302 - ARCHAEOLOGY AND PREHISTORY

**Administering Institution:** The University of Queensland

**Summary:**

The central goal of this pilot project is the development and implementation of an Australian archaeological digital collection platform based on existing High Performance Computing techniques and infrastructure. This collection will facilitate the dissemination and interchange of archaeological data across disciplines and institutions and across the public and private sectors; enhance archaeological research; and contribute to discourses about Australian cultural heritage and identity. Our case study will be the Mill Point Archaeological Project in southeast Queensland. This initiative will build on existing developments made overseas and through strategic collaborations between UQ, ANU and the San Diego Supercomputer Center at UCSD.

**SR0567196** Prof S Crozier; Dr AJ Mehnert; Dr SJ Wilson; Dr AP Bradley; Prof E Bengtsson; A/Prof I Nyström; Dr KE McMahon

**Title:** **Improved early detection of breast cancer enabled by grid-computing and advanced modelling and visualisation of MR images**

**2005 :** \$27,500

**2006 :** \$27,500

**Category:** 2802 - ARTIFICIAL INTELLIGENCE AND SIGNAL AND IMAGE PROCESSING

**Administering Institution:** The University of Queensland

**Summary:**

This project will investigate the utility of grid computing in the detection of breast cancer from magnetic resonance (MR) images. The large quantity of data acquired using MR imaging is difficult for clinicians to review and the cost of missed or incorrect detection is high. To provide rapid visualisation and assessment of the acquired data, grid computing will be used in conjunction with interactive visualisation with haptic feedback. Grid computing experience and haptic device expertise will be achieved via Swedish collaborators. The successful outcome of this project will be software for the production of 3D colour-coded breast images in which suspicious regions are highlighted and can be physically interrogated using the haptic device.

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## Special Research Initiatives: E-Research to Commence in 2005

**SR0567334** Prof J Drennan; Dr JL Hunter; A/Prof SP Ringer; Prof PR Munroe; A/Prof BJ Griffin; Prof S Praver

**Title:** **A Grid-Enabled National Archive of Nanostructural Imagery (GRANI)**

**2005 :** \$62,874

**2006 :** \$62,874

**Category:** 2803 - COMPUTER SOFTWARE

**Administering Institution:** The University of Queensland

**Summary:**

The Nanostructural Analysis Network Organization (NANO) is an Australian Major National Research Facility that provides access to a grid of advanced microscopic instruments for the nanostructural analysis of both physical materials and biological systems. The aim of this initiative is to provide the NANO community with a set of common, interoperable tools and services to enable more efficient, cost-effective storage, management, analysis and sharing of generated microscopic images, video and analytical data. The significance of the proposed middleware is that it will improve collaboration and reduce duplication across many disciplines, through a shareable, distributed national scientific image/video database.

**SR0567109** Dr MJ Drinkwater; Prof EM Sadler; Dr MR Gallagher; Dr PJ Francis; Prof BA Pailthorpe

**Title:** **Smart astronomy: using computational science to understand distant radio galaxies**

**2005 :** \$34,719

**2006 :** \$34,719

**Category:** 2401 - ASTRONOMICAL SCIENCES

**Administering Institution:** The University of Queensland

**Summary:**

Radio galaxies are among the largest galaxies in the universe with their copious radio emission powered by massive black holes. Australian radio telescopes are very effective at tracing these massive galaxies back in time so we can measure how black holes formed and developed. These measurements depend on reliable identification of the radio sources with our optical telescopes to make vital measurements of their distances. Until now this identification process has been straightforward, but the next generation of studies will look so far back in time that the identification will become ambiguous. Our project will develop a software tool that applies techniques from computational science to overcome the ambiguity in this matching problem.

**SR0567393** Prof ME Orlowska; Prof X Zhou; Dr DV Pullar; Prof FK Dehne; Dr JL Hunter; Prof HW Schmidt

**Title:** **Infrastructure for large-scale data resource sharing between research institutions – an environmental case study**

**2005 :** \$50,000

**2006 :** \$50,000

**Category:** 2803 - COMPUTER SOFTWARE

**Administering Institution:** The University of Queensland

**Summary:**

The project creates a federated distributed data infrastructure for research, that encourages data creators to make their data available to other scientists, and encourages users to make use of data available from many sources. The vision is to establish an ICT infrastructure to facilitate a whole-of-environment approach to environmental research. The outcome is a proof-of-concept application based upon a case study of Queensland Environmental Protection Agency's databases, to gain an in-depth understanding of the complexity, scope and key technological barriers for establishing an ICT infrastructure, to identify where the latest technologies can be used and where the gaps are for these technologies to be used in environmental sciences.

**SR0567199** Prof BA Pailthorpe; A/Prof IM Atkinson; Mr CK Willing; Dr NS Bordes

**Title:** **Collaborative Working using Shared Applications in the Access Grid**

**2005 :** \$37,117

**2006 :** \$37,117

**Category:** 2801 - INFORMATION SYSTEMS

**Administering Institution:** The University of Queensland

**Summary:**

This project aims to further develop an amplified collaboration environment, based on the Access Grid (AG), that will support shared software applications between geographically distributed research groups. This enhanced AG will provide a platform for collaborative and network-based, shared scientific visualisation tools. The project will build upon our all-linux AG, the emerging suite of tools for tiled displays and our strategic collaborations with JCU, Leeds (UK), ANL (USA) and NCHC (Taiwan). Case studies will be on ecological and geosciences data, relevant to agriculture and coastal studies, marine sciences and coral reefs

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**SR0567263** Dr AE Smith; Mr BM Hughes; Dr D Rooney; Prof PW Graham; Dr DA Mitchell; Prof MS Humphreys; Prof C Gallois; A/Prof HJ Chenery

**Title:** **Development of Tool Interfaces and Data Standards for Enabling Remote Secondary Analysis of Qualitative Data**

**2005 :** \$41,416  
**2006 :** \$41,416

**Category:** 2805 - DATA FORMAT

**Administering Institution:** The University of Queensland

**Summary:**

This proposal will promote sharing and rapid secondary analysis of natural language and other qualitative data by providing interface standards between qualitative analysis systems, and will enhance the integration of analytic methods through improved archiving. This will be achieved by the construction and dissemination of open standards for the efficient, flexible transport and storage of annotation metadata, along with demonstrated implementations of these standards in qualitative tools. At the current stage of development of e-Social Science, the provision of middleware for collaborative work is more important than large-scale computational capability. The initiative will leverage existing ARC investment in qualitative data archiving.

**SR0566924** A/Prof C Turner; Prof S Stewart; Dr CJ Bain; Prof AJ Dobson; Mr R McFarlane

**Title:** **Develop and pilot an e-cohort research technique for longitudinal studies using multiple international cohorts**

**2005 :** \$26,413  
**2006 :** \$26,413

**Category:** 3212 - PUBLIC HEALTH AND HEALTH SERVICES

**Administering Institution:** The University of Queensland

**Summary:**

The aim of this project is to develop and pilot an e-cohort research methodology suitable for longitudinal studies with multiple international cohorts. Historically, studies of this nature are expensive as they are conducted in traditional paper-based mode and the studies are therefore confined to one country. Population-based epidemiological studies of this type have led to major scientific advances in global health for the last sixty years. Developing and employing e-research techniques in longitudinal studies will significantly reduce the costs of this important research and enable multi-national cohorts of participants that will result in high quality research.

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**South Australia**

**The University of Adelaide**

**SR0567450** Dr PD Coddington; Dr AL Wendelborn; A/Prof AR Gerson; Dr GU von Oertzen; Prof NS McIntyre; Dr GE Ice

**Title:** Real-time control and data analysis of remote synchrotron microprobe experiments

**2005 :** \$54,782

**2006 :** \$54,782

**Category:** 2801 - INFORMATION SYSTEMS

**Administering Institution:** The University of Adelaide

**Summary:**

A Canadian-Australian collaboration to design and construct sister synchrotron microdiffraction fluorescence probes (mDFP) commenced in 2004. The Canadian mDFP will be available in the first half of 2006, at least two years prior to the sister facility at the Australian Synchrotron. The proposed project will extend this collaboration to develop a system for remote control of mDFP experiments, incorporating real-time data analysis and 3D visualization. This system will enable Australian scientists to use the Canadian mDFP, and subsequently the Australian Synchrotron mDFP, from their home institutions. The resulting flexibility of scheduling and alleviation of downtime for travel will be particularly beneficial for industry users.

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### **Western Australia**

#### **Curtin University of Technology**

**SR0567388** Prof AD Lloyd

**Title:** **Grid-enabled fusion of global data and local knowledge – applying the INWA Grid to eResearch links with China**

**2005 :** \$25,000

**2006 :** \$25,000

**Category:** 2801 - INFORMATION SYSTEMS

**Administering Institution:** Curtin University of Technology

#### **Summary:**

This project extends a model of eResearch that has been demonstrated between the UK and Australia in a collaboration between the UK National eScience Centre and Curtin University that modelled consumer behaviour in telecommunications and financial services markets using Grid technologies. The INWA (Innovation Node – Western Australia) Grid was extended to the Chinese Academy of Sciences in January 2005 and now offers the potential for applying these techniques to emerging markets within China. Modelling and understanding these dynamics within the most rapidly developing economy in the world provides a number of valuable outputs but will also allow a Grid support for collaborative eResearch across three continents to be tested and developed.

#### **The University of Western Australia**

**SR0564565** Dr SM Broomhall; Dr BC Stocks; Dr R Pennell; Mr C Wood

**Title:** **A Web-Based Humanities Image Database and Descriptive Catalogue for Academic, Industry and Community Application**

**2005 :** \$50,000

**2006 :** \$50,000

**Category:** 2801 - INFORMATION SYSTEMS

**Administering Institution:** The University of Western Australia

#### **Summary:**

This research develops a web-based visual database and catalogue with associated, annotatable explanatory text files, that is suitable for input and access by academics, industry and the general community. The catalogue's information input and search mechanisms will respond to the needs of relevant Humanities disciplines for which image collection and analysis is a critical research tool. Its design aims to encourage user communities to contribute images and text efficiently, effectively and confidently, and guarantees the security of their images through application of a tag system. The collaboratively authored image catalogue would facilitate national and international research projects using visual resources.

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## Tasmania

### University of Tasmania

**SR0567321** Dr SP Ellingsen; Dr A Tzioumis; Dr SJ Tingay; Prof JM Dickey

**Title:** Real-time Very Long Baseline Interferometry

**2005 :** \$92,391

**2006 :** \$92,391

**Category:** 2401 - ASTRONOMICAL SCIENCES

**Administering Institution:** University of Tasmania

**Summary:**

We will develop a range of software products that are required to implement real-time very long baseline interferometry with the Australia long baseline array. These developments build upon substantial recent infrastructure investments and will place Australia at the forefront of this field. They will enhance our capacity to participate in international collaborations in a range of sciences including astrophysics, spacecraft tracking and geodetic monitoring.

**SR0567397** Dr JL Roberts; Dr A Woolf; A/Prof NL Bindoff; Dr GB Hyland

**Title:** Earth Systems Science OPeNDAP compute server framework

**2005 :** \$40,950

**2006 :** \$40,950

**Category:** 2801 - INFORMATION SYSTEMS

**Administering Institution:** University of Tasmania

**Summary:**

This E-Research initiative will produce a compute sever to exploit data locality for access to Digital Libraries. This will allow geographically disbursed researches in all disciplines related to climate change, variability and the associated impacts, to readily analyse existing data repositories, and generate derived data products of interest, without generating a prohibitive amount of network traffic. This will facilitate collaborative efforts and data sharing between Australians and international research teams.

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## Australian Capital Territory

### CSIRO - Mathematical & Information Sciences

**SR0567658** A/Prof CM O'Keefe; Dr CW Kelman; Dr E Banks

**Title:** **A cross-disciplinary collaboration to develop a national system for real-time detection of Adverse Drug Reactions using linked Australian health data**

**2005 :** \$50,000

**2006 :** \$50,000

**Category:** 2801 - INFORMATION SYSTEMS

**Administering Institution:** CSIRO - Mathematical & Information Sciences

#### **Summary:**

Our aim is to use existing administrative health data in the evidence-based, cost-effective and privacy-respecting discovery of Adverse Drug Reactions. This research is of vital importance, since adverse reactions to medicines currently represent one of the leading causes of hospitalisation and death in Australia. In a groundbreaking collaboration, we have successfully shown that large linked, administrative data sets are sufficiently rich to enable discovery of adverse drug reactions, but our analytic tools are at an early developmental stage. The outcome of this project would be innovative, effective and sustainable analytic tools for the discovery of unexpected associations between drugs and medical events.

## The Australian National University

**SR0567298** Dr RJ Ackland; Dr RK Gibson; Dr M Buchhorn; Dr M O'Neil; Dr B Bimber; Dr SJ Ward

**Title:** **Virtual Observatory for the Study of Online Networks (VOSON)**

**2005 :** \$49,293

**2006 :** \$49,293

**Category:** 2801 - INFORMATION SYSTEMS

**Administering Institution:** The Australian National University

#### **Summary:**

This project is the first stage in establishing the Virtual Observatory for the Study of Online Networks (VOSON) - a Grid-enabled research environment facilitating innovative and collaborative research into the impact of social and political networks on the Internet. In addition to the development of prototype Grid-enabled software that will 'power' VOSON, we will establish international linkages with leading researchers in the UK and the US who will contribute to software testing and development via a collaborative demonstrator research project. By establishing VOSON 'nodes' at key international research institutions, Australia will take a leading international role in a major e-Social Science research endeavour.

**SR0567379** Dr SG Haberle; Prof G Hope; Dr M Buchhorn

**Title:** **The Australasian Pollen and Spore Atlas**

**2005 :** \$55,000

**2006 :** \$55,000

**Category:** 2801 - INFORMATION SYSTEMS

**Administering Institution:** The Australian National University

#### **Summary:**

This proposal will enable online accessibility to the largest collection of pollen and spores information in the Australasian region that is currently located at the Australian National University. This will be a searchable database that is accessible over the web and suitable for professional as well as the technical novice involved in pollen and spore identification. Novel approaches to the federation of other smaller existing pollen and spores databases will result in The Australasian Pollen and Spores Atlas. The Atlas will be a flexible and powerful knowledge management tool applicable to research development by a wide range of users including those within the archaeology, biology, geology, and airborne allergy specialists.

**SR0567355** Mr KI McKenzie; Dr P Raftos; Mr PM Cooke

**Title:** **Bidwern: Managing multi-formatted digital data across disciplines on the western Arnhem Land Plateau**

**2005 :** \$48,543

**2006 :** \$48,543

**Category:** 2801 - INFORMATION SYSTEMS

**Administering Institution:** The Australian National University

#### **Summary:**

This project will develop processes and tools to manage digital data associated with multidisciplinary projects. A pilot project will use a selection of visual and audio data being collected by social and physical scientists working with Indigenous communities on a major land management project across the western Arnhem Land Plateau. Tools will be developed and methods formulated for preparing the data for uploading to suitable repositories, for capturing the metadata relating to each file, and for enabling the data to be retrieved for subsequent analysis and dissemination purposes. The tools will be used by a wide range of stakeholders, including researchers, the general public and remote communities.

## Summary of Successful Applications By State Special Research Initiatives: E-Research to Commence in 2005

**SR0566962** Prof H Morphy; Miss C Bridgewater; Ms L Allen; Dr JE Stanton

**Title:** **Developing a prototype multi-institutional search engine for Australian Indigenous collections.**

**2005 :** \$40,553

**2006 :** \$40,553

**Category:** 2801 - INFORMATION SYSTEMS

**Administering Institution:** The Australian National University

**Summary:**

We will investigate technical and cultural issues, and identify an optimal model for developing a multi-institutional search engine for Australian Indigenous collections. This will be achieved through the development of a prototype search engine linking two Australian museum collections. Current digital models for managing and accessing materials in multiple formats (audio, film, photographic and print materials) will be investigated, and a set of cultural protocols developed for a subset of materials from one geographical area. Such an online research tool has the potential to facilitate research across disciplines, encourage collaborations between cultural institutions, and re-connect Indigenous communities with collections.

**SR0567380** Dr SM Scott; Dr AC Searle; Prof DE McClelland; Dr A Melatos; Prof BC Barish

**Title:** **International data exchange for global gravitational wave astronomy**

**2005 :** \$55,690

**2006 :** \$55,690

**Category:** 2401 - ASTRONOMICAL SCIENCES

**Administering Institution:** The Australian National University

**Summary:**

The aim is to develop software tools to efficiently combine and share large gravitational wave datasets from around the world, leveraging existing data grid and replication technologies (Globus and LDR). This will greatly improve the access of Australian scientists to gravitational wave data, thereby facilitating gravitational wave science in this country.