

eResearch Australasia 2008

**eResearch Forum
Tuesday 30 September 2008
3.00 pm – 5.00 pm**

The Australian eResearch Infrastructure Council (AeRIC) welcomes you to the eResearch Forum at the eResearch Australasia 2008 Conference.

The aim of the eResearch Forum is to seek feedback from the conference delegates on progress of the implementation of the Government's eResearch initiatives coordinated by AeRIC through the National Collaborative Research Infrastructure Strategy (NCRIS) Platforms for Collaboration (PfC) capability and to identify areas for further development of eResearch capabilities to address researchers' needs.

All conference delegates are invited to attend.

BACKGROUND

eResearch

Much of the research carried out around the globe is now conducted with the assistance of advanced information and communications technology (ICT) tools and services. Researchers can now reach out to each other from opposite ends of the country, even the globe, sharing data, ideas and instruments or equipment. Entirely new fields of research are emerging as researchers can now collect, move and manipulate large amounts of data, enabling new and much more complex problems to be addressed. The technologies themselves create new avenues through which research can be achieved, so that research is routinely undertaken that would not be feasible using any other means.

These new and collaborative approaches to research within disciplines and across disciplines, supported by ICT, constitute eResearch. eResearch provides an effective way of enabling institutions and researchers to work together, using shared infrastructure and resources to tackle complex problems.

Investments in Platforms for Collaboration

Through the Department of Innovation, Industry, Science and Research (DIISR), the Australian Government is investing \$82 million in the NCRIS Platforms for Collaboration (PfC) capability¹, to build and support eResearch. This investment supports technological platforms that enhance researchers' ability to generate, collect, share, analyse, store and retrieve information, allowing them to access knowledge, data and information and work together seamlessly from desk to desk between organisations.

Such seamless access enables researchers to carry out their research more creatively, efficiently and collaboratively across long distances, regardless of location and time, and disseminate their research outcomes with greater effect.

The Australian eResearch Infrastructure Council

The Australian eResearch Infrastructure Council (AeRIC) is the governance and coordination body within the PfC capability. The Council is responsible for ensuring that world-class infrastructure, services and expertise are identified, developed and delivered nationwide in ways that sustain the strategic motivation and promotion of eResearch.

AeRIC is chaired by Professor Tom Cochrane from the Queensland University of Technology. Dr Rhys Francis is the Executive Director of the Council.

The Council considers developments within the PfC Components outlined below and advises DIISR on progress and issues across NCRIS eResearch investments.

¹ The Platforms for Collaboration capability builds on the achievements of the Australian Government's Systemic Infrastructure Initiative and the Final Report of the e-Research Coordinating Committee, accepted by the Australian Government in April 2007.

Platforms for Collaboration Components

Interoperation and Collaboration Infrastructure (ICI)/ Australian Research Collaboration Service (ARCS)

Overview

The Interoperation and Collaboration Infrastructure (ICI) component is providing grid enabled technologies and infrastructure to enable seamless access to research facilities and services. The ICI is being implemented through a joint-venture consisting of service providers across Australia known as the Australian Research Collaboration Service (ARCS). The members of ARCS receive funding via a \$20.5 million agreement between DIISR and the lead agent for the Collaboration – the Victorian Partnership for Advanced Computing (VPAC).

The current members of ARCS include the following service providers:

- ac3 - Australian Centre for Advanced Computing and Communications*
 - ANU - Australian National University
 - CSIRO - Commonwealth Scientific and Industrial Research Organisation
 - iVEC - 'The hub of advanced computing in Western Australia'
 - eRSA (formerly SAPAC) - eResearch South Australia
 - TPAC - Tasmanian Partnership for Advanced Computing
 - VPAC - Victorian Partnership for Advanced Computing
 - QCIF - Queensland Cyber Infrastructure Foundation
- *Note: The newly formed INTERSECT will soon join ARCS as the NSW provider*

Professor Anthony Williams was appointed as the ARCS Executive Director in December 2007.

Activities

Following an initial year of establishment and transitioning activity, ARCS is becoming more focused on a closer engagement with research communities. Following DIISR's acceptance of the ARCS' first Annual Business Plan in May 2008, the current focus for ARCS is on engaging with affiliates more explicitly and working in a coordinated manner with other service providers. In this activity, ARCS is seeking a closer engagement with the Council of Australian University Directors of Information Technology (CAUDIT).

The types of services now on offer through ARCS include:

- Video and web collaboration tools
- Data storage and collaboration, replication, and transfer services (the "ARCS Data Fabric")
- Remote and grid computing
- Training, workshops and helpdesk services

ARCS is also likely to provide authorisation development services to assist eResearch service providers and research communities, with a view to enabling these communities to meet their authorisation requirements in collaboration with the Australian Access Federation (see page 4).

Australian National Data Service (ANDS)

Overview

The Australian National Data Service (ANDS) component of the PfC capability will ensure researchers are able to identify, locate, access and analyse any available research data. In particular, ANDS will provide a systemic approach to research data to transform the disparate collections of research data around Australia into a cohesive corpus of research resources.

A Technical Working Group was established by a broader ANDS reference group in early 2007 and submitted its conceptual design for ANDS in the form of a report, *Towards the Australian Data Commons (TADC)*, in October 2007. This report formed the basis of deliverables required of ANDS and enabled the characteristics of its operation to be well defined and broadly agreed.

ANDS Establishment Project and transition to ANDS

An ANDS Establishment Project, led by Monash University in collaboration with the ANU and CSIRO, helped develop the necessary elements to move to full ANDS implementation.

A Collaboration Agreement has now been signed between the foundation parties, and a funding agreement between DIISR and Monash University was executed on 17 September 2008. The ANDS project will receive funding of \$21 million over the forthcoming three years.

Activities

ANDS has been funded to start the process of helping Australian researchers deal with what TADC described as a "data deluge". The high level vision for ANDS is to start building the Australian Research Data Commons by:

- addressing issues of research data ownership and the roles and responsibilities associated with ownership;
- providing access to research data collected and maintained with public funding; and
- co-ordinating and sharing best practice for the curation of experimental, research and published data.

Four programs of activity will be pursued: Developing Frameworks, Providing Utilities, Seeding the Commons, and Building Capabilities. An Interim Business Plan (IBP) has been drafted which outlines the expected first year outcomes for ANDS as a whole and for each of the four programs. The IBP will form the basis of the first Annual Business Plan upon the commencement of the ANDS Executive Director.

ANDS recognises in the IBP the importance of the contribution, cooperation and cohesion of many higher education and research institutions as well as the major government agencies from which researchers access primary information. ANDS will therefore focus strongly on engagement with the whole sector, sourcing expertise for projects, activities and services from wherever that expertise resides.

National Computational Infrastructure (NCI)

Overview

The National Computational Infrastructure (NCI) project, hosted by the ANU, is being implemented under an agreement for \$26 million between the ANU and DIISR. NCI is expected to deliver an internationally significant high-performance computing (HPC) capability which can be assigned on a merit and priority basis, and build essential expertise in high-performance computing needed to support priority research. It will also provide a national strategy for computation infrastructure.

NCI is governed by ANU on advice from the NCI Steering Committee, chaired by Professor Mark S. Wainwright. The breadth of NCI's engagement is reflected in the Committee, with members from the ANU, CSIRO, Bureau of Meteorology (BoM), Geoscience Australia, and the research and higher education sector.

Professor Brian Yates chairs the NCI Merit Allocation Committee. Professor Lindsay Botten was appointed as the NCI Director in May 2008.

Activities

Following DIISR's acceptance of the NCI's first Annual Business Plan in May 2008, the current focus for NCI is on engaging with stakeholders and providing them with the following services:

- through the National Facility (NF) at ANU, the national peak computing system for capability computing. Joint planning is underway with CSIRO and the Bureau of Meteorology aiming at installing the new peak facility in April 2009, with acceptance testing to occur in July 2009. At the same time, efforts are being made to install an HPC system by early September 2008 at the NF to provide for much needed additional cycles between now and the installation of the next peak system;
- through Specialised Facilities (SF), access to high-end computing resource to complement the National Facility in its support for particular research communities and their applications. Negotiations are underway with universities; major research organisations, including CSIRO, BoM and Geoscience Australia; and providers of specialised computational research services, including the state-based partnerships (the 'PACs') and specialist service providers associated with individual research communities. The purpose is to secure specialised facilities that these organisations are willing to share; and

- through the Computational Tools and Techniques (CT & T) program, targeted software development support for particular research communities in order to improve their access to a tailored and high quality computational research environment.

NCI is in discussions with CSIRO, BoM, Geoscience Australia, the Centre for Australian Weather and Climate Research (CAWCR), a number of the research intensive universities and the related University Climate Consortium. The purpose is to secure increased co-investments and partnerships and the uptake and impact of high-end computing.

National eResearch Architecture Taskforce (NeAT)

The National eResearch Architecture Taskforce (NeAT) has been established to provide guidance on the evolution of the national eResearch infrastructure and to identify and scope activities that broaden the appeal of eResearch services. NeAT is responsible for recommending projects for investment from the \$12 million NeAT funding, available within the ANDS and ICI components. The Taskforce is chaired by the Executive Director of AeRIC, Dr Rhys Francis.

The first round of NeAT projects has commenced and is assisting research communities from the humanities through to biodiversity specialists (see below). Expressions of interest for a second round of funding will be sought later this year.

Round 1 NeAT Projects	
Aus-e-Lit	Spatial Information Services Stack (SISS)
Data Integration and Annotation Service in Biodiversity (DIAS-B)	Data in Microscopy Imaging Neutron X-ray (Data-MINX) (in development)
Marine and Climate Data Discovery and Access Project (MACDDAP)	ASSDA Services for e-Social-Sciences (ASeSS) (in development)

Foundation Investments

Australian Access Federation

The Australian Access Federation (AAF) project is an initiative funded by the Government to provide a shared infrastructure for all users working in multiple environments and institutions to have seamless and secured access to resources online. Once established, the AAF will provide a national authentication and authorisation framework for the higher education sector and research community, and will hence play a critical role in ensuring the accessibility of NCRIS infrastructure and research data.

The AAF project team is comprised of University of Queensland, Macquarie University and AusCERT staff. Work is underway on governance, technical and legal issues, and a communications strategy to engage prospective members of the Federation, such as universities, research agencies and service providers. It is expected that implementation will commence in early 2009.

Australian Research and Education Network (AREN)

The Australian Research and Education Network (AREN), funded by the Australian Government to the value of \$88 million from 2003 to 2006 through the Systemic Infrastructure Initiative, is one of the most advanced international optic fibre research and education networks in the world. This builds on the considerable work undertaken by AARNet Pty Ltd over several years. The network connects universities and research institutes in all capital cities and many regional centres, as well as isolated research facilities such as radio telescopes. It also connects the east coast of Australia to multiple points of presence on the west coast of the USA and the west coast of Australia to Singapore, Frankfurt and on to European networks.

The potential exists for the AREN to grow to meet the needs of new NCRIS users of the network. Defining these requirements and setting the standards for optimal access to the network is a priority for Pfc and AREN's operator and manager, AARNet Pty Ltd, into the future.

The future

The Minister released a new Strategic Roadmap for Australian Research Infrastructure on 4 September 2008. The Roadmap identifies research infrastructure needs across the country and contains an increased emphasis on eResearch in recognition of the pervasive and underpinning relevance of ICT to research.

The Roadmap identified the importance of the **continuation of underpinning national eResearch infrastructure** including support for those technologies that assist researchers and institutions to make the transition from research to eResearch. Much of this activity is seamless and focused on assisting researchers in their electronic work and collaborations.

The Roadmap will form an important input to the Government's White Paper response to the Review of the National Innovation System. Subject to the availability of further funding, the implementation of the Roadmap will involve consultation with the research community and other stakeholders to agree the detailed needs for each capability area, including eResearch.

Contacts

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<p>Enquiries in regards to the implementation process for Platforms for Collaboration should be directed to the following leaders for each of the components:</p>		
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For matters related to management of the NCRIS program, please contact the NCRIS Team by email at ncris@innovation.gov.au