



Professor John O'Callaghan  
Executive Director  
The Australian Partnership for Advanced Computing (APAC)  
CSIT Building (108), North Road  
The Australian National University  
CANBERRA ACT 0200

Dear Professor John O'Callaghan

I am writing to you to formally advise that the Department is commissioning a review of APAC as part of the Government's normal evaluation process to satisfy accountability requirements, evaluate APAC's achievements to date against agreed milestones, and to inform future government investments in advanced computing, data management, grid infrastructure and services.

I wish to state clearly at the outset that the Government acknowledges the considerable progress made by APAC and its partner consortia and I am sure this will be confirmed by the Review Panel. Nevertheless, the Government's investment in APAC is considerable and there is a need to assess APAC's future directions in the light of both domestic and international trends in the provision of advanced computing, data management, grid infrastructure and services. There is also a need to assess the anticipated demand for these services as a consequence of planned additional investment in research infrastructure under the National Collaborative Research Infrastructure Strategy (NCRIS).

The Review Panel is to be chaired by Professor Lance Twomey, the former Vice-Chancellor of Curtin University. The remaining members of the Panel include:

- Dr George Collins, Chief of Research, ANSTO;
- Professor Ah Chung Tsoi, Head, Monash University e-Research Centre;
- Professor Chris Barter, former Head, Computer Science, University of Adelaide;
- Professor Michael Levine, Scientific Director, Pittsburgh Supercomputing Centre, Pittsburgh, USA;
- Dr Daniel Reed, Vice-Chancellor of Information Technology Services, the University of North Carolina at Chapel Hill, USA.

To assist the Review Panel in its deliberations, and on behalf of the Chair who is currently overseas, I am inviting APAC and its partners to provide their views to the Panel by 15 August 2006. This will assist the Panel in its initial work and subsequent follow-up consultations/ discussions/ meetings. Your views may take the form of a submission responding to the Terms of Reference of the APAC Review (see Attachment) or a paper addressing issues which you would wish to draw to the Panel's attention. It would be particularly helpful to receive views on the anticipated growth in demand for services by the research community.

The Panel will also take account of the views of the wider research community, including those communities formulating proposals for funding under the nine NCRIS capabilities for which investment plans are currently being developed.

I expect that the Australian and US members of the Panel will convene in Canberra, possibly in the second week in September and this will provide an opportunity for APAC and its partners to present their views to the Panel in person. The Panel has been asked to provide an interim report to DEST in late September 2006, and its final report by the end of October 2006. The Department will then refer it to the NCRIS Committee to inform its consideration of an appropriate level of investment of NCRIS funding in advanced computing, data management, grid infrastructure and services before it makes a recommendation to the Minister.

Should you have any queries, please contact Peter Nicholson by email [peter.nicholson@dest.gov.au](mailto:peter.nicholson@dest.gov.au) , or by phone (02)6229-4165; or Thien Tran by [thien.tran@dest.gov.au](mailto:thien.tran@dest.gov.au) , or (02)6229-4026.

Please send your submission to either the above email address, or by post to:

Mr Peter Nicholson  
Director, Education Innovation and Technology Unit  
Innovation and Research Systems Group, Location 530  
Australian Government Department of Education, Science and Training  
GPO Box 9888, Canberra City ACT 2601

I have also written to each of the APAC partners seeking their input along the line of this letter.

Yours sincerely

Evan Arthur  
July 2006

CC: Dr John Zillman, Chair, APAC Board



**TERMS OF REFERENCE FOR THE  
REVIEW OF THE AUSTRALIAN PARTNERSHIP FOR ADVANCED COMPUTING (APAC)**

The Review is to be conducted as part of the Australian Government Department of Education, Science and Training (DEST)'s normal evaluation process to satisfy accountability requirements, inform the future directions of the Australian Partnership for Advanced Computing (APAC) and to assist in determining the nature and extent of future government investments in advanced computing, data management and grid infrastructure and services.

**OBJECTIVE**

1. The aim of this Review is to obtain an independent assessment of:
  - the performance of APAC against its key objectives (see Attachment);
  - APAC's contribution to Australia's research and innovation and its impact in terms of research, expertise and industry;
  - APAC's third-stage plan in advanced computing, data management and grid infrastructure, to inform consideration by the National Collaborative Research Infrastructure Strategy (NCRIS) Committee in determining Australia's systemic infrastructure needs;
  - Australia's overall future capabilities for systemic infrastructure, skills and services required:
    - to respond to emerging global research challenges and opportunities;
    - to address Australia's research needs identified through the NCRIS Committee and e-Research Coordinating Committee processes;
  - strategic options for Australia to respond to these needs through investments in systemic infrastructure, skills and services;
  - the extent to which APAC is able to contribute to meeting these needs building on its achievements in advanced computing and grid infrastructure.

**PROPOSED METHODOLOGY AND TIMING**

It is proposed that the Review will be conducted by a team led by an Australian assisted by several Australian and overseas experts.

The Review Team leader and Secretariat are expected to discuss with team members and develop a work program including timeline. A draft report must be delivered to DEST by 27 September 2006; and a final report by 23 October 2006.

It is envisaged that the Australian members may meet from time to time and make site visits if required for consultations with identified major stakeholders and focus groups including APAC partners, NCRIS facilitators, users (universities, research organisations, including prospective users/ researchers not associated with APAC or NCRIS as yet) of advanced computing, data management and grid infrastructure and services. The overseas members would analyse and comment on the views expressed through the above-mentioned consultative process and contribute to writing of the APAC Review Report. They may also contribute short papers on the future of advanced computing, data management and grid infrastructure and services from an international perspective, including its role in supporting e-Research. The overseas members will also travel to and may stay for a week in Australia for formal consultation sessions, and site visits if necessary, probably in early September 2006.

## ATTACHMENT - APAC'S PERFORMANCE INDICATORS FOR 2004-2006

Key Objectives	Key Performance Indicators	Outcomes
Develop a national strategy for advanced computing and grid infrastructure to support eResearch in Australia.	<ul style="list-style-type: none"> <li>• A national advanced computing and grid strategy to support eResearch is in place and maintained.</li> <li>• Demonstrated progress towards the implementation of the strategy.</li> </ul>	A long-term commitment to strengthening the Australian advanced computing and grid infrastructure for eResearch in line with international trends.
Strengthen the APAC partnership to provide national cooperation on Australia's advanced computing and grid infrastructure.	<ul style="list-style-type: none"> <li>• Membership and participation in APAC categorised by degree of involvement and contribution of organisations.</li> <li>• Funding received from other Federal Government programs.</li> <li>• Amount and kind of funding received from non-Federal Government sources.</li> </ul>	APAC leading the development and use of an Australia-wide advanced computing and grid infrastructure for eResearch supported by Federal and State Governments, research institutions and other organisations.
Improve the peak computing capabilities of the APAC National Facility to serve the demands of Australian researchers.	<p>Achievements</p> <ul style="list-style-type: none"> <li>• Key research achievements obtained by users of the National Facility.</li> <li>• Significant developments in computational tools and techniques on the APAC and partner facilities.</li> </ul> <p>Capability</p> <ul style="list-style-type: none"> <li>• Capability of the National Facility relative to countries of similar size and development such as Canada, Sweden and Korea.</li> <li>• Capability of the National Facility relative to the needs of the Australian research community as indicated by extent and type of demand.</li> </ul> <p>Accessibility</p> <ul style="list-style-type: none"> <li>• Extent of use of the National Facility indicated by the number of States represented by users, projects, users and resource allocations.</li> <li>• Availability and performance of the National Facility indicated by the available system units, used system units, efficiency of operation and extent of parallel computation on the National Facility.</li> </ul> <p>Customer Service</p> <ul style="list-style-type: none"> <li>• Summary of surveys of users of the National Facility showing their level of satisfaction.</li> <li>• Number of users participating in training courses on the use of the National Facility.</li> </ul>	<p>Significant research achievements by users of the APAC National Facility.</p> <p>Australian advanced computing capabilities commensurate with comparable countries.</p> <p>Australia as a leader in the development and use of advanced computing services for eResearch.</p> <p>Demands of major Australian researchers for advanced computing services satisfied by the APAC National Facility.</p>

<p>Develop the APAC Grid to provide Australian researchers with seamless access to resources in the National Facility and with advanced services for eResearch.</p>	<p>Achievements</p> <ul style="list-style-type: none"> <li>• Major achievements in the development and use of the APAC Grid.</li> </ul> <p>Participation</p> <ul style="list-style-type: none"> <li>• Extent of support for national and international research collaboration.</li> <li>• Participation and contribution of organisations in the Grid Program.</li> </ul> <p>Capability</p> <ul style="list-style-type: none"> <li>• Extent and scope of resources and systems integrated into the Grid.</li> <li>• Kinds and capability of services delivered by the Grid.</li> </ul> <p>Customer Service</p> <ul style="list-style-type: none"> <li>• Summary of surveys of users of the Grid showing their level of satisfaction.</li> <li>• Number of users participating in training courses on the use of the Grid.</li> </ul>	<p>Significant research achievements by users of the APAC Grid.</p> <p>Australian grid capabilities commensurate with comparable countries.</p> <p>Australia as a leader in the development and use of grid services for eResearch.</p> <p>Demands of major Australian researchers for grid services satisfied by the APAC Grid.</p> <p>Increased national and international collaboration by Australian research groups.</p>
<p>Develop and deliver education, outreach and training services for users of advanced computing and grid infrastructure.</p>	<ul style="list-style-type: none"> <li>• Major achievements in the development of educational courses, modules and on-line materials.</li> <li>• Number and scope of educational courses or modules developed.</li> <li>• Number and scope of on-line materials developed.</li> <li>• Participation and contribution of organisations in the EOT Program.</li> <li>• Major achievements in the industrial uptake of advanced computing.</li> <li>• Number and types of outreach activities conducted.</li> <li>• Extent and nature of working linkages between industry and research organisations.</li> </ul>	<p>Increased skills of users of advanced computing and grid infrastructure.</p> <p>Increased education, training and on-line materials in computational science and engineering.</p> <p>Increased uptake of advanced computing and grid services in Australian industry.</p>

## **BACKGROUND - THE AUSTRALIAN PARTNERSHIP FOR ADVANCED COMPUTING (APAC)**

The Australia Government has made substantial strategic investment commitments through the *Systemic Infrastructure Initiatives* (SII) and the *Backing Australia's Ability – Building Our Future through Science and Innovation* to support collaboration within the Australian research community and between it and the global research community, providing a solid e-Research infrastructure to enable them to reach out to each other anytime and anywhere, to position Australia at the leading edge of global, network-enabled collaboration.

To date the Government's focus on e-Research infrastructure has comprised:

- a robust communications network (the *Australian Research and Education Network* AREN including dual 10 gigabit per second (Gbps) fibre trans-Pacific network connections to the US. Operating at multiple gigabit speeds (a gigabit is a billion bits per second), the network will link all universities, including most regional campuses and research bodies, to the rest of Australia and the world beyond) - over \$83 million invested in AREN to date;
- distributed high performance computing (the *Australian Partnership for Advanced Computing* (APAC));
- accessible digital repositories (research databases, online libraries etc), an agenda being run by the *Australian Research Information Infrastructure Committee* ARIIC, appointed by the Minister;
- accessible research facilities and large instruments (telescopes etc); and
- agreed standards and specifications to maximise interoperability between networks, computer platforms and applications including middleware (the software glue to assure accessibility etc).

### ***The Australian Partnership for Advanced Computing (APAC)***

APAC was established in 2000 with the Australian Government funding of \$19.5 million over 2000-2003. A further \$29 million over 2004-06 has been provided to strengthen the national advanced computing capabilities and to develop the national advanced computing and grid infrastructure to serve the Australian research community.

APAC is a national partnership involving 8 organisations, one in each state as well as the Australian National University (ANU) and the Commonwealth Scientific and Industrial Research Organisation (CSIRO). The State-based Partners involve joint ventures that include universities, State Government agencies, Government research organisations and TAFE institutes. Overall the Partnership includes 29 universities nationwide.

The 8 APAC Partners are playing a vital role in developing Australia's capability in advanced computing, information and grid infrastructure. They are providing operational advanced computing services to users and are involved in research, development, education, training and outreach activities.

The following organisations are the APAC partners:

- Australian Centre for Advanced Computing and Communications (ac3): [www.ac3.com.au](http://www.ac3.com.au)
- Commonwealth Scientific and Industrial Research Organisation (CSIRO): [www.hpsc.csiro.au](http://www.hpsc.csiro.au)
- The Hub of Advanced Computing in Western Australia (iVEC): [www.ivec.org](http://www.ivec.org)
- Queensland Parallel Supercomputing Foundation (QPSF): [www.qpsf.edu.au](http://www.qpsf.edu.au)
- South Australian Partnership for Advanced Computing (SAPAC): [www.sapac.edu.au](http://www.sapac.edu.au)
- The Australian National University (ANU): [www.anusf.anu.edu.au](http://www.anusf.anu.edu.au)
- Tasmanian Partnership for Advanced Computing (TPAC): [www.antcrc.utas.edu.au/tpac](http://www.antcrc.utas.edu.au/tpac)
- Victorian Partnership for Advanced Computing (VPAC): [www.vpac.org](http://www.vpac.org)

For further details, see <http://www.apac.edu.au/>

## **BACKGROUND - THE NATIONAL COLLABORATIVE RESEARCH INFRASTRUCTURE STRATEGY (NCRIS) COMMITTEE**

The National Collaborative Research Infrastructure Strategy (NCRIS) is a major initiative under the Government's Backing Australia's Ability - Building our Future through Science and Innovation. It aims to bring greater strategic direction and coordination to national research infrastructure investments. \$542 million is available through to 2010/11 to provide researchers with access to major research facilities and the supporting infrastructure and networks necessary to undertake world-class research. See further details at

[http://www.dest.gov.au/sectors/research\\_sector/policies\\_issues\\_reviews/key\\_issues/ncris/ncris\\_background.htm](http://www.dest.gov.au/sectors/research_sector/policies_issues_reviews/key_issues/ncris/ncris_background.htm)

On 13 April 2006, the Minister for Education, Science and Training, The Hon Julie Bishop approved the NCRIS Investment Framework. The Investment Framework describes:

- how NCRIS will use facilitators to develop investment plans in consultation with the research community;
- how interested parties can participate in the development of investment plans;
- the role of the NCRIS Committee in ensuring the quality of investment plans;
- the role of the Minister in providing final approval of funding for Investment Plans; and
- administrative arrangements for implementing investment plans.

The NCRIS Investment Framework is available at <http://www.dest.gov.au/NR/rdonlyres/1D31522C-4ACC-4008-BA59-686B90142C0A/10176/NCRISInvestmentFrameworkapprovedbyMinisterBishopAp.pdf>