

AUSTRALIAN E-RESEARCH INFRASTRUCTURE COUNCIL (AeRIC)

AeRIC MEETING – 31 AUGUST 2007

AGENDA ITEM 5: NATIONAL e-RESEARCH ARCHITECTURE TASKFORCE (NeAT)

Purpose

To:

1. update AeRIC on progress in implementing NeAT; and
2. seek AeRIC's agreement to the proposed membership of NeAT.

Issues

The comments provided by AeRIC members regarding the development of an 'architectural blueprint' were addressed in an updated draft NeAT Operational Framework (Attachment A). To ensure NeAT remains relevant, a provision has also been added that requires annual reviews of NeAT.

This draft has also been circulated to the potential members of NeAT (Attachment B).

A meeting of the potential members has also been arranged for 29 August 2007. The key purpose of the meeting is to discuss with potential members of NeAT their views on the Operational Framework, as well as explore with them their attitudes to how NeAT should operate. Given the limited resources that will be available, it is essential that NeAT operate in a robust but collegiate fashion. Attitudes to this will be explicitly explored at the meeting, as well as other expected behaviours.

A verbal update on this meeting will be provided by the Executive Director.

A list proposing the final membership of NeAT will be distributed at the August meeting.

Following agreement to membership, DEST will quickly move to organise the inaugural meeting of NeAT. It is expected that this will be a face-to-face meeting, most likely held in Melbourne in mid- to late September.

Action

That AeRIC agree to the proposed membership of NeAT.

AeRIC Secretariat

August 2007

OPERATIONAL FRAMEWORK

**NATIONAL E-RESEARCH ARCHITECTURE TASKFORCE
(NeAT)**

SCOPE

While NeAT should more generally provide guidance on the evolution of the national e-Research infrastructure, its specific mission is to identify and scope activities that broaden the appeal of e-Research infrastructure and services so that a wider base of Australian researchers become e-Researchers.

The expectation is that this will depend on the identification and development of tools and services which have wide value to the research community and that such development should be undertaken in concert with interests and expertise similarly engaged, where ever it exists.

For a more detailed statement regarding the purpose of NeAT, please see the attached extract from the PfC plan.

ROLE

NeAT will:

- develop an architectural blueprint of e-Research tools and services to guide decision making;
- provide a mechanism to undertake a technical examination of future generations of tools and services needed by the Interoperation and Collaboration Infrastructure and the Australian National Data Service communities;
- make recommendations on priority projects to be funded;
- oversee the development and implementation of e-Research tools to embed them in research communities; and
- provide advice to the Australian e-Research Infrastructure Council (AeRIC) on issues associated with the development and use of e-Research tools in Australia.

Activities

In order to effectively fulfil its role, NeAT will:

- engage with the broader e-Research community;
- work closely with the governing bodies of the Interoperation and Collaboration Infrastructure and of the Australian National Data Service;
- take note of developments in the Computational Tools and Techniques component of the National Computational Infrastructure;
- ensure it has access to a thorough understanding of the e-Research landscape, including;
 - the current generation of e-Research tools,
 - research being undertaken to develop e-Research tools,
 - trends in e-Research,
 - researchers' priority for the development of particular tools, particularly researchers in each of the funded NCRIS capabilities,

- using its understanding of the e-Research landscape, identify and prioritise activities that will provide the next generation of e-Research tools, and make project and funding recommendations to AeRIC, for implementation within ICI and ANDS;
- work collaboratively with the relevant research community to successfully conduct projects to bring e-Research tools into 'production' through the governing bodies of the Interoperation and Collaboration Infrastructure and of the Australian National Data Service;
- in all of its activities, seek to broaden and strengthen expertise and skills relevant to e-Research; and
- through its Chair and AeRIC representative, maintain a strong relationship with AeRIC.

Two key factors that NeAT will need to take into account are:

1. the change in emphasis and skills necessary to take the outcomes of research into e-Research tools and turn those tools into 'production' level tools which are embedded in research communities; and
2. the development of global standards and other international developments and their importance to Australian researchers in the relevant discipline, including how to 'adopt, adapt and influence' global standards, components and middleware to create tools and services that meet identified discipline needs.

It is expected that projects approved for funding on the basis of NeAT recommendations will have the following characteristics:

1. a focus on embedding a tool or service within a research community;
2. timeframes for projects should be short (1-2 years), reflecting NeAT's focus on getting tools into 'production';
3. an appropriate level of coinvestment; and
4. projects would include activities to encourage uptake by researchers, including awareness raising and skills development.

MODE OF OPERATION

Membership of NeAT

Membership of NeAT will be determined by DEST and AeRIC.

Chair

NeAT will be chaired by the Executive Director of AeRIC, or another person chosen by DEST and AeRIC.

Other Members

The membership of NeAT will be decided on the basis of the skills and knowledge of the members, as well as their ability to take the whole-of-sector view necessary for NeAT to successfully undertake its activities.

Given the nature of NeAT's tasks and their timeframes, and the flexible approach to participation in meetings that is outlined below, there is a strong expectation that all NeAT members will be strongly involved in NeAT activities.

Alternates

As membership of NeAT is based on skills and knowledge, members will not be able to send alternates if they are unable to participate in a NeAT meeting.

If they are unable to attend a meeting, NeAT members will be able to provide comment through the Chair of NeAT.

Remuneration

NeAT positions are honorary positions and no remuneration or sitting fees will be paid.

Travel Expenses

NeAT meetings will use access grid/videoconference/teleconference technologies as much as possible to reduce the travel burden and costs on members. The two expected face-to-face meetings of NeAT will also be scheduled, to the extent possible, to complement e-Research events that members are likely to be attending.

DEST will consider reimbursing travel expenses on a case-by-case basis.

Conflicts of Interest

As its decisions and recommendations will affect funding decisions, NeAT will adopt a Conflict of Interest policy consistent with that of the NCRIS Committee and AeRIC.

Conduct of Meetings

Regularity of Meetings

It is expected that NeAT will meet on an 'as-needs' basis. It is likely that meetings would be infrequent but intensive.

Quorum

No quorum will be set for NeAT meetings.

Manner of decisions

NeAT shall seek to reach decisions on a consensus basis.

Records of Meetings

The NeAT secretariat will keep appropriate records of decisions and resolutions made by NeAT.

ICI and ANDS Representation

The Directors of ICI and ANDS will also attend NeAT meetings given the close working relationship needed between these bodies.

Annual Review of NeAT

AeRIC will review the membership and mode of operation of NeAT 12 months after its first meeting and every 12 months thereafter.

National e-Research Architecture Taskforce (NeAT)(extract from PfC Investment Plan)

NeAT will bring together user, platform and discipline groups to work towards the vision:

Users are able to work together with familiar tools despite accessing multiple and remote compute, data, analysis, sensor or instrument resources.

This emergent behaviour is most likely to arise through several 'discipline, problem or task oriented' grids, and the development of common services that can support their simultaneous operation and inter-operation.

This is an ambitious goal if translated across all possible research interests and research disciplines, so that this investment will focus primarily on NCRIS priorities.

However, the underlying motivation is that improved e-Research adoption depends on higher levels of content, application and system inter-operability and the provision of common tools and services that add value to research communities. Without tools and content inter-operability, researchers can only create bespoke components and isolated data sets that require costly case-by-case integration at a later date.

Because of the limited funding, the following priority will apply, as the first is required to extend existing grid infrastructure and the last depends on further development of the NCRIS capability investments:

- First to harden the definition, specification and implementation of the core middleware services required for data and compute system inter-operation
- Second to develop collaboration services that will support the broad e-Researcher community and then harden these for

deployment within ICI to provide an initial set of basic collaboration tools

- Third to work with ANDS to identify, implement and harden middleware and tools relevant to data curation and management for new e-Researchers
- Fourth to work with NCRIS capability and other discipline communities to identify the core middleware services they require, develop operational forms of these services and move them into the national grid.

Platforms for Collaboration proposes to fully fund the operational activities within the ICI and ANDS components. Organisations in which many of those services will be located have agreed to contribute additional effort to the developmental, expertise enhancement and user support activities proposed under NeAT.

The rationale for this approach is that e-Research requirements are dominated by the evolving international discipline developments in middleware and tools, and only those involved in such activities can offer advice on the directions likely to arise.

A gap exists and will continue to exist, where service providers are focussed around system and middleware, inherently seeking generic services, and researchers are focussed into specific solutions and specific tools by international developments.

The goal of NeAT is to close that gap by bringing together service providers, researchers in infrastructure services, and researchers in application spaces to guide the continuous evolution and development of the operational cyber-infrastructure.

The rationale from regional service providers and research groups, is that separate piecemeal approaches to every NCRIS capability (as an

example) is most likely to alienate everybody involved and harm their own goals.

Hence, while the regional service providers are funded to undertake such work and middleware oriented research groups are enhanced by engagement with applications, NCRIS can achieve significant overall benefits by developing a national orientation that engages these groups in coordinated (and preferably concerted) activities.

The particular importance to NCRIS is that the process is structured to identify, trial and test the middleware and user tools that can be adopted as part of the developing national cyber-infrastructure. The intention will be to migrate such tools into operational services.

Three kinds of activities are contemplated:

- Projects that 'adopt, adapt and influence' selected middleware components into demonstrable user and discipline focussed tools and services
- Investments in nationally significant expertise that adds value to infrastructure development and aligns with strategic needs identified by NRIC
- Resources for service providers to sustain additional tools and services as they are deployed into the operational infrastructure.

The funding in these will vary over time, as will the relative emphasis between general user tools and more generic discipline services. Resource allocation will be based on the opportunities that are most likely to create new services or to enhance existing services within the operational infrastructure.

Trial Services

This is the primary means by which new tools and services will be identified, trialled and developed for deployment as an operational service.

Because of the steep learning curves in middleware, the number of technologies that need to be integrated to develop a service, and the need to develop understanding between communities, projects are expected to be generally of two years duration.

Projects will only be considered in response to the infrastructure development timeline published by NeAT.

Projects that deploy resources within PfC components which do not require additional funding can be approved by the relevant component director on the recommendation of NeAT.

Projects which commit further funds, will need endorsement by NeAT for approval by NRIC.

Expertise development

Activities in this category will build nationally recognised centres of support for key technologies identified by NeAT.

Such expertise will be expected to assist the adoption, adaption and influence of global standards, components and middleware to create discipline oriented formats, tools and services. The activities will be expected to participate with global peers in developing standards, components and middleware where appropriate.

Some of these centres are likely to be associated with the organisations involved in other parts of the investment plan; however, some may be associated with e-Research 'user' communities. Proposals for expertise support will be approved by NRIC.

Tools environment

As new infrastructure components and particularly as an increasing variety of user tools are made operational, funding for additional

expertise and operational cost needs to shift to the operators of the infrastructure.

Recommendations in this category will be negotiated with relevant services providers and would result in a change to the budget in that component to support the newly developed services.

Budget

The budget of NeAT activities is \$10M from NCRIS combined with up to twice that in participant resources.

The expectation on leverage is justified from the full funding of operating costs of core services by NCRIS and for the fact that participants in NeAT activities will be self selecting by virtue of their existing activity and interest levels in those activities.

As an indicator of the challenge facing the NeAT process, the following immediate opportunities for NeAT have been identified during the facilitation process:

- Expertise build up to support campus network harmonisation with AREN
- Development of AAP integrated collaboration tools
- Trial deployment of the iRODs successor to SRB
- Hardening and extension of data transfer services
- Hardening and extension of job submission fabric
- Installation and operation of a re-configurable high capacity research network
- Development and hardening of a simple meta-data capture tool
- Development of initial forms of ANDS technical services
- Transfer into operational mode of ARCHER tools
- Development of initial workflow services
- Establishment of a national Nimrod service

- Development of reference architectures for research data management solutions
- Development of national reference models for intellectual property (IP) management in research data
- Development of national reference models on roles and rights for the AAF
- Any of the AREN developments contemplated but not funded by PfC
- The integration of AAF protocols into any number of applications

While this appears initially as a daunting list, the developments are not on-going, and not limited to Australia (ie some of these are global issues) and they also have some temporal relationship to the overall development of the e-Research infrastructure.

The maximisation of non-NCRIS funding in these activities is vital if flexibility and a satisfactory overall rate of progress is to be achieved.