Australasian Leadership Computing Grants
Information for Applicants 2020

24 February 2020	EOI call open
3 March 2020	Online information session
6 March 2020	EOI deadline (5pm AEDT)
12 March 2020	EOIs shortlisted
13 March 2020	Shortlisted EOIs invited to submit a full application
1 April 2020	Full application deadline (5pm AEDT)
8 April 2020	Allocation Committee meeting
9 April 2020	Allocations announced

Contents

Background

- NCI's new petaflop-scale HPC system, *Gadi*, replaced *Raijin* in January 2020.
- The ALCG Initial Call for Applications is intended to identify meritorious research projects with demonstrated ability to use HPC systems effectively at scale, and to provide these projects with larger allocations for extreme scale computational science.
- ALCG allocations in the initial call will be 30-50 MSU per project, valid for Q2-Q4 2020.
- The Expression of Interest process in this initial call has been fast-tracked to enable access to Gadi as soon as possible in 2020 Q2. The ALCG scheme will be refined based on experiences in this initial call. Further ALCG calls will be announced later in 2020.
- The Expression of Interest phase of this call is open to all prospective applicants. EOIs are expected to demonstrate HPC competence, experience at an Australian or international HPC facility, and a high degree of application scalability.
- The Allocation Committee will invite successful EOIs to submit a full ALCG application.

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24 February 2020	Call for Expressions of Interest
6 March 2020	Expressions of Interest deadline (5pm AEDT)
12 March 2020	EOI shortlisting
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HPC Facilities

NCI is Australia's national research computing service. Home to Gadi, the nation's most highly integrated and highest performance supercomputer, NCI provides innovative, world-class HPC and HPD services to Australian researchers.

NCI operates as a formal collaboration between:
- The Australian National University – ANU
- The Commonwealth Scientific and Industrial Research Organisation – the national research agency – CSIRO
- The Australian Bureau of Meteorology – the national meteorological agency – BoM
- Geoscience Australia – the national geosciences agency – GA

Since 2007, NCI's collaboration has expanded to include a further 22 Australian universities. NCI's infrastructure was established through Australian Government funding under the National Collaborative Research Infrastructure Strategy (NCRIS).

ALCG allocations for 2020 will be on NCI's new petaflop-scale supercomputer – Gadi. Gadi is named after the words "to search for" in the language of the Ngunnawal people – the Traditional Owners of the Canberra region.

This new system comprises approximately 3000 Intel Xeon Cascade Lake compute nodes, with 24 x 2 cores/node, configured with 192 GB RAM per node. Gadi also provides 50 Cascade Lake nodes with 1.5TB of memory, utilising Intel Optane DC Persistent memory, and 640 NVIDIA V100 GPUs in 160 nodes. Gadi's data interconnect is the latest generation Mellanox HDR InfiniBand, capable of data transfers at 200 Gb/sec.

NCI also offers persistent data storage in excess of 50 petabytes. Data holdings include significant national and international data collections. NCI also operates a compute cloud for ancillary computing and data services.

ALCG allocations in this initial Call for Applications will be 30-50 MSU per project, for 2020 Q2-Q4. Successful applicants will be required to set up new, dedicated projects for this work.

Application Procedure

Applying for an ALCG allocation is a two-stage process.

1. Expression of Interest (*deadline 5pm AEDT 6 Mar 2020*)

   NCI invites eligible applicants to submit an Expression of Interest through the NCI user registration system https://my.nci.org.au.

   Expressions of Interest are shortlisted by the Allocation Committee.

   Successful EOIs are invited to submit a full application.

2. Full Application (*deadline 5pm AEDT 1 Apr 2020*)

   The applicant (Lead CI) provides additional track record information in the NCI registration system, and submits an 8-page written application (PDF document) to help@nci.org.au

Note that a Full Application will be accepted only for EOIs which have been favourably assessed and shortlisted by the Allocation Committee.

Unsuccessful EOIs will be notified of this outcome as soon as possible following assessment.

Stage 1 – Expression of Interest

Expressions of Interest to the ALCG scheme are submitted as NEW project proposals in the NCI online registration system: https://my.nci.org.au (hereafter referred to as "MyNCI"). An Expression of Interest must be submitted by the Lead CI of the proposed project.

To submit an ALCG Expression of Interest:

1. Login to MyNCI and update your contact details.

2. Update your career profile in MyNCI. All applicants must provide an ORCID ID and use the ORCID functionality for publications in the MyNCI system.

3. Select "Propose a Project" on your MyNCI home page.

4. Enter a Title for your proposed ALCG project.

5. Use the proposal text-entry box to enter an executive summary for your ALCG EOI. Note that the full EOI is provided at a later point in this form (See step 11).

6. Enter relevant FOR (Field of Research) and SEO (Socio-Economic Objective) codes for your EOI proposal.

7. Select "Australasian Leadership Computing Grants" as the allocation scheme.

8. Select Gadi as the computational resource for your proposal.

9. Set the compute resource request for your proposal. Applicants can request quarterly allocations in the range 10-20 Million Service Units (MSU) per quarter.

10. Add new team members to your research team, if needed.

    It is important to **add additional Chief Investigators at this stage of the proposal process** so that their research track records are included for assessment of the EOI.

    Note that a Lead CI can invite additional Researchers (technical or management staff or students) to a successful project after it is set up on Gadi.

11. Enter your Expression of Interest following the instructions provided on the form page.

12. Acknowledge the NCI terms and conditions of use.

13. Final review and submission.

    All submissions are final.

Track Record

The Lead CI (applicant) is expected to provide evidence of current peer-reviewed funding in support of their research, and a link to their Google Scholar profile. A list of publications is **not required** for an EOI.

Please note that the research track records of Chief Investigators (CIs) on your project will also be considered by the Allocation Committee. CIs can update their profiles independently of the Lead CI's Expression of Interest; however, profile updates must be completed before an Expression of Interest is assessed by the Committee.

It is the responsibility of the Lead CI to ensure that all CIs on a project update their MyNCI profiles before scheduled assessment dates – 12 March 2020 for the EOI phase of the call, and 1 April for the invited full application phase of the call.

Expression of Interest - Proposal

The proposal body is the most important component of the EOI. It should contain two sections:

1. Technical Record:
    a) details of the code(s) to be used,
    b) an execution and workflow plan, and
    c) evidence of rigorous application performance benchmarking.

2. Project Description:
    a) a brief description of the project,
    b) justification of the significance, originality and innovative nature of the project,
    c) an explanation of demonstrable contributions to economy, society, environment and culture beyond the contribution to academic research

The recommended length for the EOI proposal body is two (2) A4 pages with single-spaced type, or roughly 1000 words. The MyNCI system does not enforce word limits on the proposal text-entry dialogue so all applicants are advised to prepare the proposal in advance using a word processing application and check the length of their proposal body before completion of the MyNCI proposal form.

EOI Formatting Guidelines

- Adhere strictly to the two-page limit (approximately 1000 words) for the EOI body.
- An EOI must contain the sections described above: (a) technical record, and (b) project description.
- Include information which is pertinent to the project.

Assessment

- Expressions of Interest will be assessed by the Allocation Committee.
- Shortlisted EOIs will be invited to complete a full application, as outlined below.

Unsuccessful EOIs will be notified of the EOI outcome via rejection of the EOI proposal in the MyNCI system, which will send an email notification to the applicant (Lead CI).

Stage 2 – Full Application

Successful EOI applicants will be invited to submit a detailed application containing more extensive information on the track records of Chief Investigators, technical aspects of the proposed workflow, scientific foundations of the work, and a plan for data visualization and dissemination of outcomes.

The full application comprises two components:

1. MyNCI: Track records of the Lead CI and other Chief Investigators as saved in the MyNCI system should be up to date.

2. PDF document: A standalone PDF document containing:

    a) Detailed technical overview

    b) Complete project description

    c) Data visualization and outcome dissemination plan

The secretariat will merge track record information from the MyNCI system with PDF application forms to present complete proposals for Committee review at the time of assessment.

Researcher Track Records

The applicant (Lead CI) should ask all Chief Investigators on the proposal to update their track record information in MyNCI.

For the ALCG applications, each CI should provide:

1. A link to their Google Scholar profile and their ORCID ID

2. Evidence of peer-reviewed funding for the research project

3. Evidence that the approach is world-leading, such as publications in high-impact journals.

    A list of key publications can be included at this stage

Full Application

The PDF application document should contain the following sections:

1. Cover sheet (1 page)
    a) Title and MyNCI project reference from the successful EOI
    b) Name and contact information for the Lead Chief Investigator
2. Technical Record (2 pages)
    a) Evidence of capability and readiness to use extreme scale computational resources
        i. including details of the code to be used
    b) Detailed workflow and execution plans
        i. including evidence of readiness to commence use of resources at scale immediately,
    c) Evidence of rigorous application performance benchmarking.
3. Project Description (3-4 pages)
    a) An executive summary of the project
    b) Justification of the significance, originality and innovative nature of the project
    c) Demonstrable contributions to economy, society, environment and culture beyond the contribution to academic research
4. Visualisation/Dissemination Plan (1 page)
    a) A plan to communicate the impact and outcomes of the research, including how data visualisation may be incorporated, to demonstrate the importance of HPC to Australian research.

Application documents should be submitted by email (attachment) to help@nci.org.au. Include the text "ALCG2020" and the surname of the Lead CI in the subject line of the email.

Application Formatting Guidelines

- Document format must be PDF.
    o The PDF file name must include, at a minimum, the Lead CI's surname and MyNCI project reference (e.g. *ALCG2020-mysurname-12345.pdf*).
- Black type, which can include occasional coloured type for highlighting or emphasis.
- Single column on A4 paper with at least 0.5 cm margins.
- Use a highly legible font type.
    o Recommended fonts are Arial, Helvetica, Palatino and Times New Roman
    o Recommended font size is 12 point.
    o Variants such as mathematical typesetting languages may also be used.
- Adhere strictly to the **eight (8) page limit** for the application document.
- Include information which is pertinent to the project.
- Up to three (3) figures may be included.
- **Do not** provide a list of references in the application document.
    o Use your MyNCI profile to provide publications. Use of ORCID is strongly encouraged.
    o MyNCI track record information will be merged with your PDF application document for assessment.

Getting Help

Read all supporting documentation if you have questions. Contact help@nci.org.au if you require assistance with your application.

Information session

NCI User Support will run one online information briefing on Tuesday 3 March at 12pm AEDT. To register see details at https://anu.zoom.us/meeting/register/uZEtf-2oqz8iUx1KL_PR18sR2gsTI6lAqQ.

Acknowledging NCI

A condition of accepting an ALCG allocation is that the Project must acknowledge the NCI resources that they have used in all publications and presentations of the associated work. The following is a standard acknowledgement template:

This work was supported by the Australasian Leadership Computing Grants scheme, with computational resources provided by NCI Australia, an NCRIS enabled capability supported by the Australian Government.

The Lead CI also must agree to providing input to assist NCI Australia in communicating (e.g. via research highlights, case studies, articles, interviews, etc.) the importance of HPC to Australian research.

Eligibility Criteria

Applicants are expected to have demonstrated experience using HPC at an Australian or international facility and a record of research outputs in one or more areas of computational science.

In accordance with guidelines for access to Commonwealth-funded research infrastructure and relevant Australian Government legislation, Chief Investigators (CI) and Lead Chief Investigators (Lead CI) of projects must hold at least a 0.2 FTE research position at an Australian higher- education institution, research institute or publicly-funded research agency, and be based in Australia. If an applicant (Lead CI) holds a fixed duration contract for at least 0.2 FTE for the calendar year 2020, they are eligible to apply.

Lead Chief Investigators and Chief Investigators on an application must provide evidence of independent research funding, for example, grants from the ARC or NHMRC. Any grants referenced by a Lead CI or CI must name that applicant as a primary recipient. Applications citing grants on which the applicants are not primary (named) grant recipients will be disqualified for non-compliance.

A person holding a Postdoctoral appointment or undertaking a higher degree by research is not eligible to be a Lead Chief Investigator on an ALCG EOI or application.

An individual may be named as a Chief Investigator or Lead Chief investigator on only one ALCG EOI or application.

An ALCG application must demonstrate scalability on one or more HPC systems, at an Australian or international HPC facility. Proposals based on serial, single-cpu workflows will be rejected.

Assessment Criteria and Scoring

Applications will be scored on the following criteria.

Project

- Quality and innovation
- Significance of the research
- Originality and innovative nature of the computational methods and workflows
- Advancement of knowledge through the goals of the proposed research
- Potential for the research to contribute to <u>Australian Science and Research Priorities</u>

Investigators

- Research record and performance relative to opportunity (publications, research funding, recognition and esteem metrics)

Feasibility

- Adequacy of the time commitment of investigators to undertake the research and utilise the resources successfully
- Capacity to realise the goals of the project within the resources requested
- Appropriate track record demonstrating a capacity to use high-performance computing systems effectively at scale.
- Suitability of the system to support the research, and an appropriate and efficient use of the system

Benefit and impact

- Ability of the project to generate impactful outcomes and produce innovative economic, environmental and social benefits to Australia and the international community.

Application, Assessment and Allocation Process

The Call for Applications allocation process comprises the following stages:

	Process	Responsible Party
1	Call for EOI announced	Secretariat
2	EOIs accepted	
3	Administrative assessment: eligibility and compliance	
4	EOI assessment	Committee and NCI
5	Invitation to successful EOIs to submit full applications	Secretariat
	Notification of unsuccessful EOIs	
6	Merit assessment of full applications	Committee
7	Allocation Committee meeting	Committee Supported by Secretariat and NCI Technical staff
8	Notification of outcomes	Secretariat

The Secretariat will review all applications for compliance as soon as possible following the EOI and full application deadlines. Potential cases of non-compliance will be referred to the Committee Chair for a final decision. The Secretariat will notify the Lead CI of an EOI or full application confirmed as non-compliant within seven (7) days of the submission deadline.

NCI will assess each application for suitability/fit for its HPC systems in the technical assessment. NCI may contact an applicant for further information as part of the technical assessment. Technical assessments are provided as advice to the Allocation Committee, and do not constitute a full assessment of a proposal. The Committee may also recommend that an applicant consult NCI for further technical advice during merit assessment or after an allocation is awarded.

Assessment and Allocation Protocol

Assessment of proposals will be based on a combination of technical and scientific merit (see the section above on selection criteria) based on material provided in the proposal. All applicants are expected to provide a detailed justification of the resources requested and are expected to demonstrate the capacity to use the requested HPC resources effectively. The Committee reserves the right to allocate all or part of the resources available, and all or part of any specific request.

Assessment and allocation decisions are made by the Allocation Committee only. NCI provides advice or supporting information to the Allocation Committee but are not otherwise involved in determining allocations.

Minimum and Maximum Computing Request and Allocation

Facility-System	Minimum Allocation (KSU/annum)	Maximum Allocation (KSU/ annum)
NCI-Gadi	30,000	50,000

Appeal Process

All decisions of the ALCG Allocation Committee are final. Appeals will be considered only against administrative or procedural issues and not against decisions of the Committee or against assessor ratings and comments.