

## Quick Reference

**Please note that you must read the full Call document for guidance before submitting your proposal**

### **Resource Allocation Panel (RAP): Access to ARCHER**

**Call type: Invitation for proposals**

**Closing date for applications to EPSRC: 9 October 2018 at 16:00**

**Closing date for the ARCHER technical assessment that needs to be attached to your application: 25 September 2018 at 16:00**

**Funding Available:** A total of 300,000 kAUs of ARCHER resource is available through this call.

**How to apply:** Single stage submission: an application form and an approved Technical Assessment should be submitted to EPSRC.

**Assessment Process:** Applications to this call are not subject to postal peer review and will be reviewed and prioritised directly by a Resource Allocation Panel (RAP). Any application deemed to be more appropriate for a Tier 2 facility prior to the RAP assessment will be referred to the relevant Tier 2 facility and assessed accordingly.

#### **Key Dates:**

<b>Activity</b>	<b>Date</b>
Technical Assessment Deadline	25 September 2018
Closing date for application submissions	9 October 2018
Panel Meetings	November 2018
Project Start Date	November/December 2018

**Additional information:** Applications to this call can request ARCHER computing resource for a maximum duration of one year only.

**Contacts:** Bill McAlister email: [ARCHERRAP@epsrc.ac.uk](mailto:ARCHERRAP@epsrc.ac.uk)

## **Resource Allocation Panel (RAP): Access to ARCHER**

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**Related themes:** Research infrastructure

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### **Summary**

This is a call for applications to access ARCHER through the Resource Allocation Panel. Please note that this is a call for projects outside of the remit of the High End Computing Consortia. The total amount of resource for this call is limited to ~ 300,000 kAU (20,000,000 core-hours), subject to the quality of the proposals.

We would encourage applicants to show relevant scaling data for their codes in order to assure the panel that the allocated resource is used efficiently. If no scaling data is available on the system, we would encourage researchers to obtain this information through a preliminary instant access to ARCHER:

<http://www.archer.ac.uk/access/instant-access/>

Resource Allocation Panel calls for ARCHER resources are published approximately every four months.

## Background

EPSRC offers access to ARCHER through calls for proposals to the Resource Allocation Panel (RAP). Users can request significant amounts (>1,000 kAUs) of computing resource over a maximum one-year period. The aim of this call is to provide:

**Access to our national state-of-the-art high performance computing facility for proposals of high scientific quality within the EPSRC remit that would benefit from ARCHER.**

A non-exclusive list of eligible projects includes:

- Short computational projects that do not warrant a full grant application
- UK led collaborative projects with international and/or industry partners
- Joint applications from students (as Co-Is) with proven HPC experience (e.g. a successfully completed instant access project) and their PIs
- Projects that link consecutive standard grant applications or that aid the preparation of a grant or fellowship application
- Extended feasibility studies and trialling application developments at scale (for a short pump priming allocation of maximal six months, please contact the ARCHER service for “instant access”).

Applications to the Resource Allocation Panel should lie within the remit of EPSRC although proposals in multidisciplinary areas will be considered. Please note that **EPSRC reserves the right to reject proposals which lie outside the remit of EPSRC**. If you are unsure about eligibility, please contact us before preparing your application.

For more information about EPSRC’s portfolio and strategies, see our website: <https://epsrc.ukri.org/research/ourportfolio/>

## Technical Details for ARCHER

**System:** Cray XC30

**Interconnect:** Cray Aries (Dragonfly topology)

**XC30 Cabinets :** 26

**Compute Nodes:** 4920

**Processor:** Intel XEON E5-2697v2, 12-core 2.7GHz IvyBridge

Each compute node has two 12-core Intel Ivy Bridge series processors giving a total of 118,080 processing cores.

Standard compute nodes have 64 GB of memory shared between the two processors. There is a subset of large memory nodes (376 nodes) having 128 GB of memory shared between the two processors.

Computing resources on ARCHER are awarded in kilo-Allocation Units (kAUs) with one kAU representing a measure of relative performance of ARCHER based on a

range of benchmarks compared to previous national services. On ARCHER, one core hour equates to 0.015 kAU. To calculate the number of kAUs you need, please refer to the ARCHER kAU calculator: <http://www.archer.ac.uk/access/au-calculator/>.

Further technical information on ARCHER is available on the ARCHER website: <http://www.archer.ac.uk/about-archer/>

For more information about EPSRC's portfolio and strategies, see our website: <https://epsrc.ukri.org/research/ourportfolio/>

## Funding available

Applications to this call can request ARCHER computing resource only for a maximum duration of one year. Although there is no limit to the number of Allocation Units (kAUs) which can be applied for, **there is a limit to the total amount of kAUs available** against this call. EPSRC aims to allocate around 300,000 kAUs (20,000,000 core-hours) at every Resource Allocation Panel depending on the available resource on the machine. Applicants with large resource requirements are encouraged to get in touch with the named EPSRC contact before submission.

Since this type of computer access is not intended to replace full peer reviewed standard grant access, full economic costs for projects cannot be requested; only ARCHER computing resource is available through this mechanism. Any resource allocated is for immediate use and the **start date of the proposal must be within one month of the panel date** (see Call Schedule).

Please note that we do not generally grant extensions of a RAP project and any kAUs which have not been used by the end of the project will be lost. It is therefore imperative that applicants are well prepared and only request an allocation they can realistically use in the allocated period. This should take into account queuing times, potential issues with newly ported codes, scheduled maintenance periods (<http://www.archer.ac.uk/status/maintenance/>) and the time to respond to intermediate results. **Please do not hesitate to contact the helpdesk at an early stage if any computational issues occur.** Exciting high-risk/high-reward research is strongly encouraged, but careful consideration is needed to ensure that the requested allocation is appropriate and can realistically be used within the project duration.

Please note that we would not allocate resource through the RAP where one of the High End Computing consortia (HEC consortia) would allocate projects of this type. As a result, you must justify in the technical assessment document why the resource cannot be allocated by one of these consortia. If your application falls within the remit of a consortium, please contact the respective consortium directly:

- Materials Chemistry Consortium (<http://www.ucl.ac.uk/klmc/mcc/>)
- UK Turbulence Consortium (<https://www.ukturbulence.co.uk/>)
- Biomolecular Simulation Consortium (<http://www.hecbiosim.ac.uk/>)
- Plasma Physics Consortium (<http://www.ccpp.ac.uk/hec/index.html>)

- Mesoscale Engineering Consortium (<http://www.ukcomes.org/>)
- UK Car-Parrinello Consortium (<http://www.ukcp.ac.uk/>)
- UK Turbulent Reacting Flows Consortium (<http://www.ukctrf.com/>)
- UK Atomic, Molecular and Optical Physics R-Matrix Consortium

Please consider carefully if ARCHER is the appropriate resource for your proposal. If your project would be better placed at a Tier-2 or Tier-3 resource, please contact the respective Tier-2 centre or local University directly. Any application deemed to be more appropriate for a Tier 2 facility following the RAP assessment will be referred to a clearing panel for Tier 2 facilities and assessed accordingly.

## **Equality, Diversity and Inclusion**

The long term strength of the UK research base depends on harnessing all the available talent and the Research Councils have together developed the ambitious UKRI Equality, Diversity and Inclusion Action Plan (<https://www.ukri.org/about-us/policies-and-standards/equality-diversity-and-inclusion/>).

In line with the UKRI Diversity Principles, EPSRC expects that equality and diversity is embedded at all levels and in all aspects of research practice. We are committed to supporting the research community in the diverse ways a research career can be built with our investments. This includes career breaks, support for people with caring responsibilities, flexible working and alternative working patterns. With this in mind, we welcomes applications from academics who job share, have a part-time contract, need flexible working arrangements or those currently committed to other longer, large existing grants. Please see our Equality and Diversity webpages at <https://epsrc.ukri.org/funding/equalitydiversity/> for further information.

## **Equipment**

Equipment is not available through this call.

For more information on equipment funding, please see: <https://epsrc.ukri.org/research/facilities/equipment/>

## **Eligibility**

Only individuals eligible to hold a full EPSRC grant can apply to the Resource Allocation Panel. This specifically implies that students wishing to access ARCHER through this route must obtain commitment for support by an eligible PI.

For information on the eligibility of organisations and individuals to receive EPSRC funding, see the EPSRC Funding Guide: <https://epsrc.ukri.org/funding/howtoapply/fundingguide/>

As this call is a targeted funding opportunity provided by EPSRC, higher education institutions, and some research council institutes and independent research organisations are eligible to apply. A list of eligible organisations to apply to EPSRC is provided at: <http://www.rcuk.ac.uk/funding/eligibilityforrcs/>

Resubmissions to the RAP from previously successful applicants who applied to the last call are not encouraged. Also, **researchers may not submit more than two consecutive proposals to the RAP (as PI or Co-I).**

***Only one application per PI or Co-I is permitted for this call in each round.***

For information on the eligibility of organisations and individuals to receive EPSRC funding, see the EPSRC Funding Guide:

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A list of eligible organisations to apply to EPSRC is provided at:

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## **How to apply**

Applicants must provide the following three documents:

- 1) Technical Assessment
- 2) Application Form
- 3) A one-page diagrammatic workplan

### **1. ARCHER technical assessment**

Applicants must submit a completed technical assessment from the ARCHER service provider together with their application in order for it to be considered by the panel. This additional step is important to ensure that the level of resources requested has been appropriately scoped and that all technical requirements have been considered prior to submission. It is recommended that applicants encrypt the email request for a Technical Assessment when it is sent to the ARCHER helpdesk. Applicants will receive comments made by technical reviewers on the Technical Assessment form and can respond to these by amending the technical aspects of their forms before the Technical Assessment is approved.

In order to obtain a technical assessment, applicants should submit a short project description together with an ARCHER technical assessment form

<http://www.archer.ac.uk/access/ta/> to the ARCHER service

([support@archer.ac.uk](mailto:support@archer.ac.uk)) prior to **25 September 2018 at 16:00**

**Please make sure the subject header of your submission email states that this is an "ARCHER RAP submission".**

The completed technical assessment will normally be returned to the applicant promptly, although if the reviewer has concerns about the project, it may take extra time for these to be addressed. **EPSRC and the service provider cannot be held responsible for applications that miss the final deadline if the applicant has not met the deadline specified above for submission of the technical assessment.**

### **2. Application form and workplan**

Applicants should download the application form from the ARCHER website:

<http://www.archer.ac.uk/access/rap/autumn2018/ApplicationFormRAPAutumn2018.docx>

When completing your proposal you should take into account the assessment criteria given below (see Assessment Criteria) and consider the broad expertise of the panel (see Assessment Process). **Applications submitted on an incorrect form will not be considered. Unless explicitly stated otherwise, only information contained in the application form and the technical assessment, as well as a separate diagrammatic workplan will be considered by the panel.** No additional letters of support are allowed.

## Submitting an application

Provided the technical assessment endorses the proposal, **applications should be submitted together with the completed technical assessment** via the link here: <https://epsrc.ukri.org/funding/calls/archerrapautumn2018/> before the call deadline. Please submit all documents as a single pdf file.

## Guidance on writing an application

**Track Record (max one page):** Provide details of the applicant(s) track record in computational science and engineering, porting, developing and using codes, on HPC facilities such as ARCHER. Highlight any previous publications or other scientific outputs arising from HPC work relevant to this application. If you are new to HPC, how do you plan to involve partners / CSE support from the ARCHER Service to ensure the necessary computing expertise is guaranteed? Please include any other information you think is relevant to demonstrate applicant(s) suitability to undertake this work.

If your project involves collaboration with an international or industrial partner please include any information you feel is relevant regarding their expertise and your collaboration with them.

**Additional Support (max ½ page):** State details of any additional financial and/or technical support for this or other research projects relevant to this application. As this proposal is for computing resources only, applicants should give details of how any other necessary resources for the project (e.g. staff time) will be made available.

**Objectives (max ½ page):** Briefly list the main objectives of the proposed research, written for a generalist scientific audience. Explain how ARCHER will help you to meet these objectives.

**National Importance (max ½ page):** Please justify why this proposal warrants support in terms of the importance to the UK and explain how the proposed research relates to and contributes to EPSRC priority areas (<http://epsrc.ukri.org/research/ourportfolio/>)

Please also state which research area(s) this proposal relates to:

<http://epsrc.ukri.org/research/ourportfolio/researchareas/>

**Case for support (max two pages):** Describe your proposed research explaining clearly the novelty and timeliness of the work. Explain how it will deliver a high quality scientific output, or lead to results that will ultimately enable high quality scientific research. If the work has particularly novel elements that could be considered high risk - high reward please indicate how the risks will be managed.

Please explain why ARCHER is the most appropriate resource for this work, rather than other national, regional or local (university) resources. If your proposal is within the remit of one of the EPSRC HEC consortia (see links above), please explain why the consortium could not provide access to you in this case. We encourage you to attach a letter from the consortium to strengthen your case.

**Pathway to Impact (max ½ page):** Please identify any potential applications of the proposed work which are not already covered in the case for support section, especially focussing on economic and societal impacts of your project. How might this work impact the national / international high performance computing landscape (for example generating new code, development of existing code, increased computational efficiency, opening up HPC for new scientific areas and industrial sectors). Will any specific training opportunities arise from this project? Would access to ARCHER impact new or existing industry-partnerships? Explain how you will ensure that impacts are achieved.

Further general guidance on impact can be found here:

<https://www.ukri.org/innovation/excellence-with-impact/pathways-to-impact/>

**Resources Management (max one page):** Please state the requested number of kAUs, memory, storage and notional costs; as approved by the technical assessment. Please state how much storage space on the Research Data Facility (RDF) you require. It is important that you ensure a timely start and finish of the project as well as efficient use of the granted kAU allocation over the requested time period. No extensions will be granted and any AUs which have not been used by the end of the period will be lost.

Explain how you plan to use and manage the allocated resources. Please remember that the total number of AUs allocated through this process is limited. If you are applying for a comparatively large number of kAUs, you need to demonstrate that your code(s) can make optimal use of this resource – e.g. by providing detailed, relevant, benchmarking and scaling data. It is important that you ensure a timely start and finish of the project as well as efficient use of the granted kAU allocation over the requested time period. (Please note, the Resource Allocation Panel can recommend a reduction in kAUs or time awarded if the original request is not fully justified).

**List of High Performance Computing related publications (max one page):** Please provide a list of your scientific output in terms of publications in the area of High Performance Computing over the last 2 years. Please state the name and type of machine used for the work (Tier-3 = local clusters; Tier-2 = regional machine; Tier-1 = national machines; e.g. ARCHER; Tier-0: large international supercomputers, e.g. through PRACE or INCITE).

**Work plan (max one page):** Please attach a diagrammatic work plan for the proposed project to justify the requested amount of time and kAUs.

For advice on writing proposals see:

<https://epsrc.ukri.org/funding/howtoapply/preparing/>



## Assessment

### Assessment process

Applications to this call are not subject to postal peer review and will be reviewed and prioritised directly by the Resource Allocation Panel (RAP). The panel will review proposals prior to this meeting and request clarification or further information from the applicants on certain assessment criteria where appropriate. This request will be provided to the applicants by EPSRC and applicants will be given one week to provide their response. It is recommended that the applicants encrypt this response.

The RAP is selected to comprise a broad cross section of HPC users from disciplines within engineering and the physical sciences. EPSRC aims to engage panel members who cover the expertise of the research areas of the submitted applications. However, EPSRC cannot guarantee an expert for every exact application area. Therefore it is important that the case for support can be understood by a general, scientifically and computationally literate audience.

At the panel meeting, the RAP will rank the submitted proposals in priority order for allocation. EPSRC will then decide on the total number of kAUs and time awarded.

Applicants will be notified of the outcome of the panel within one week of the meeting. Any application deemed to be more appropriate for a Tier 2 facility prior to the RAP assessment will be referred to the relevant panel for Tier 2 facilities and assessed accordingly. **Successful applicants should then contact [support@archer.ac.uk](mailto:support@archer.ac.uk) to confirm the start date of their project.**

### Assessment criteria

The assessment criteria used by the panel to rank proposals are:

- **Scientific quality (Primary):**
  - Sufficient evidence of the quality, importance, novelty and timeliness of the proposal in terms of the scientific research proposed.
  - The proposal will deliver a high quality scientific output, or lead to results that will ultimately enable high quality scientific research.
  - The proposed work will explore novel and new ideas that may have a high risk, high reward element.
- **Appropriateness and Technical suitability (Secondary Major):**
  - The technical suitability of the proposed work for the ARCHER facility is clearly explained.
  - The rationale for why ARCHER is the best or only UK system on which this research can be conducted and why this work could not be performed on other computing facilities at local Universities or regional centres is clear.

- **Applicant(s) (Secondary):**

- The team identified within this proposal are appropriate to undertake the research proposed.
- The applicant(s)' track record in computational science and engineering, porting, developing and using codes, on HPC facilities such as ARCHER is sufficient.
- The applicant(s)' have a strong track record of publishing in this area.
- Appropriate support mechanisms are in place to guarantee efficient use of the allocated resource.

- **Impact (Secondary):**

- Awareness of the potential broader societal and economic impacts of the proposed work with regard to the application domain and/or the HPC landscape including potential further applications are demonstrated.
- Sufficient training or career development opportunities are provided by this project.
- The potential for future industrial partnerships is clearly described.
- A clear pathway is shown for how the described impacts will be achieved.

- **Resources and Management (Secondary):**

- The level of requested resource (no of kAUs) is justified and appropriate.
- A clear work plan that justifies the requested allocation is evident.
- Sufficient staff time has been allocated to complete the proposed work.
- A clear plan for managing this allocation over the duration of the project is articulated.
- Risks to the project have been identified and there are suitable risk management strategies in place as well as mitigations for dealing with any issues that arise.

## **Feedback**

As the proposals will not be postal peer-reviewed, brief feedback will be given to each applicant after the Resource Allocation Panel. In addition, the applicants will be given an opportunity to provide clarification to the panel on certain queries that the panel may have in advance of the meeting. The panel will review proposals prior to the meeting and request clarification or further information from the applicants on certain assessment criteria where appropriate. This

request will be distributed to the applicants by EPSRC and applicants will be given one week to provide their response.

## Moving forward

Submissions to this call will **not** count towards the Repeatedly Unsuccessful Applicants Policy. Further information about the policy can be found at: <https://epsrc.ukri.org/funding/howtoapply/basics/resubpol/rua/>

Applicants will be notified of the outcome of the panel within one week of the meeting.

## Key dates

Activity	Date*
Technical Assessment deadline	25 September 2018
Closing date for application submissions	9 October 2018
Panel meeting	November 2018
Project start date	November/ December 2018

\*EPSRC aims to adhere to the key dates as published, however there may be exceptions where the sift, prioritisation or interview meeting may have to change due to panel member availability.

Submissions must be accompanied by a completed technical assessment.

## Contacts

Please contact Bill McAlister with any queries at: [ARCHERRAP@epsrc.ac.uk](mailto:ARCHERRAP@epsrc.ac.uk)

## Change log

Name	Date	Version	Change
Bill McAlister	23/07/2018	1	N/A

## Attachments Check List

Attachment Type	Maximum Page length	Mandatory /Optional	Extra Guidance
ARCHER Technical assessment	No page limits	M	Approved by ARCHER Helpdesk

<p>Application form (top-up)</p>	<p>1 page each for track record, resource management, HPC publications and work plan.</p> <p>½ page each for additional support, objectives, national importance and pathways to impact.</p> <p>2 pages for the case for support.</p>	<p>M</p>	<p>Containing track record, additional support, objectives, national importance, case for support, pathways to impact, resource management, list of HPC publications and a work plan.</p>
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