



Engineering and
Physical Sciences
Research Council

Quick Reference

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

Access to High Performance Computing

Call type: Invitation for proposals

Closing date: 4 September 2020 for full proposals

Funding Available: Through this call you can apply for computational time on EPSRC's High Performance Computing (HPC) services. Please find the an indicative amount of resource available from each service listed in Appendix 1.

How to apply: A two-stage application process will be used. Stage 1: applicants must submit a Technical Assessment to the service they are requesting access to, along with a short project description. Stage 2: applicants must then submit all relevant documentation via the embedded form on the EPSRC Call page.

Assessment Process: Applications to this call are not subject to postal peer review. The proposals will be reviewed and prioritised directly by a Resource Allocation Panel run by either a Tier-2 service or EPSRC in the case of ARCHER2.

Key Dates:

Activity	Date
Technical Assessment Deadline	7 August 2020 (4pm)
Closing date for applications	4 September 2020 (4pm)
HPC Triaging Committee: Pre-panel Meeting	Approx 21 September 2020
Panel meetings	Week of 2 November 2020
HPC Triaging Committee: Post-panel Meeting	Approx 11 November 2020
Expected project start dates	From 18 November 2020

Additional information: Applications to this call can, in general, request ARCHER2 or Tier-2 computing resource for a maximum duration of one year. However, see Appendix 1 for service specific restrictions.

Contacts: A full list of contact details for each Tier-2 service along with the ARCHER2 Helpdesk is available in Appendix 1. For any other queries please contact researchinfrastructure@epsrc.ukri.org.

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Access to High Performance Computing

Call type: Invitation for proposals

Closing date: 4 September 2020 for full proposals

Related themes: Digital economy, Energy, Engineering, Healthcare technologies, ICT, Manufacturing the future, Mathematical sciences, Physical sciences, Quantum technologies, Research infrastructure

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Summary

This call is for researchers to apply for computational resource from EPSRC funded High Performance Computing (HPC) services to support research projects from across EPSRC's remit. It is the successor to the ARCHER RAP and Tier-2 Open access calls which ran prior to 2020. Typically this call runs twice a year.

The services available are ARCHER2, the upcoming Tier-1 national supercomputer accessible to EPSRC research communities, and most of EPSRC's Tier-2 HPC services: Isambard, NI-HPC, JADE, Cirrus, NICE, CSD3 and HPC Midlands +.

EPSRC's final Tier-2 service, the Materials Modelling Hub, is not accessible through this call but can be accessed through EPSRC's Materials Chemistry Consortium (MCC) and UK Car-Parrinello Consortium (UKCP).

The ARCHER2 service provides the capability for researchers to run simulations and calculations which require large numbers of processing cores working in a highly parallelised fashion. The Tier-2 services form a bridge in compute capacity from the Tier-3 local university supercomputers to the Tier-1 ARCHER2 service, as well as providing a highly diverse range of compute architectures which are of limited availability elsewhere in the UK. The Tier-2 layer has been refreshed in 2020, increasing its capacity and further diversifying its hardware offering.

Detailed information on each of these services, their capabilities, service specific restrictions/requirements on proposals and indicative amounts of resource available can be found in Appendix 1. **Please note that some Tier-2 services only accept applications from specific research areas.**

Applications to this call will not be subject to postal peer review. The proposals and the accompanying technical assessments will be examined by EPSRC's HPC Triaging Committee which will move proposals between ARCHER2 and the Tier-2 services to ensure they are considered at the service most technically suitable to the proposed work. Each service (or EPSRC in the case of ARCHER2) will then host a resource allocation panel which will review and prioritise the proposals for the service. Following the panels, the HPC Triaging Committee may move proposals which were fundable but for which there was insufficient resource on a given service to other appropriate services if there is additional capacity available.

Background

Researchers throughout engineering and the physical sciences need access to a variety of computational capabilities in order to conduct their work efficiently and effectively.

EPSRC funded HPC services provide access to a range of specialised capabilities which cannot be provided at the local university level.

Other routes to accessing HPC

In addition to this call, there are a variety of other specialised routes through which researchers can access EPSRC HPC services. EPSRC recommend applicants familiarise themselves with these routes to ensure they apply to the most

appropriate one for their project. If you have any questions on the below you can direct them to researchinfrastructure@epsrc.ukri.org.

ARCHER2

- **Grants** - researchers can request computational time to support their work as part of their grant application to UKRI-EP SRC.
- **High End Computing (HEC) Consortia** - if a researcher's work is within remit of one of the HEC Consortia, formed around research communities with substantial and continuous computational needs, then they can apply for ARCHER2 time by joining the relevant consortium.

<https://epsrc.ukri.org/research/facilities/hpc/access/highendcomputingconsortia/>

- **Pioneer Projects** – researchers can apply for large amounts of ARCHER2 compute for ambitious, computationally intensive simulations and calculations in support of an individual project through EPSRC's ARCHER2 Pioneer Projects call. This is the successor scheme to the ARCHER Leadership Calls.
- **Pump-priming** – researchers can request a small amount of resource awarded through a light-touch process in order to try, test and scale their code on ARCHER2. This is the successor scheme to ARCHER instant access.

<https://www.archer2.ac.uk/support-access/access.html>
<http://www.archer.ac.uk/access/instant-access/>

- **Driving test** - a small allocation for new ARCHER2 users to get them started using the Tier-1 service.

Additional information on these access routes is under development and will be available on the EPRC website in due course.

Tier-2

- **Grants** – following a prior discussion with EPSRC, researchers can request computational time on Cirrus and CSD3 to support their work as part of their full grant applications.
- **Pump-priming** – researchers can request a small amount of resource awarded through a light-touch process in order to try, test and scale their code on the following systems:
 - CSD3
<http://www.csd3.cam.ac.uk/> or email resources@csd3.cam.ac.uk
 - Cirrus
<http://www.cirrus.ac.uk/access/instant.html>
 - JADE
<https://www.jade.ac.uk/access/>

Additional information on these access routes can be found on the service websites. EPSRC is developing our approaches for access to Tier-2 along with the

services and will provide further details on the website/updated call documents in due course.

Details of the Access to HPC call

It is recognised that the above routes may not be appropriate for a number of projects in need of computational support. EPSRC's Access to HPC call is there to provide an open and flexible route to computational support for projects in EPSRC remit. EPSRC's objectives for these calls are to:

- Supply computational time to underpin high quality research within EPSRC's remit.
- Provide an open route to computational capacity for all EPSRC researchers, particularly those with limited access through other routes.
- To support and enable short-term projects, including but not limited to:
 - Computational projects which may not warrant a full grant application.
 - Computational projects linking consecutive grant applications or aiding the preparation of a full grant or fellowship application.
 - Extended feasibility/proof of concept studies (at a larger scale than is possible in pump priming projects as described above).
 - Collaborations with industrial and international partners.
- Encourage and facilitate high-risk/high-reward research.
- Increase the development of computational science skills, for example through providing computational time for PIs to use jointly with their students.

The individual computational projects funded through this call will be required to:

- Conduct high-quality research of which the majority is within EPSRC remit.
- Make efficient use of the computational resource by ensuring the codes are run on technically suitable system(s) and that they scale appropriately.
- Use the entirety of their allocation within a year of the project start date, unless an extension is awarded by EPSRC.

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

Funding available

Types and amounts of resource available

The resource available through this call is computational time from EPSRC funded HPC services. These are ARCHER2, the upcoming Tier-1 national supercomputer accessible to engineering and physical sciences researchers, and most of the

EPSRC funded Tier-2 HPC services: Isambard, Kelvin-2, JADE, Cirrus, NICE, CSD3 and HPC Midlands +.

EPSRC's final Tier-2 service, the Materials Modelling Hub, is not accessible through this call but can be accessed through EPSRC's Materials Chemistry Consortium (MCC) and UK Carr-Parrinello Consortium (UKCP). Further details on this can be found in Appendix 1.

Indicative levels of computational resource available at each available service, as well as **service specific restrictions on projects**, can be found in Appendix 1. Precise levels are subject to variations in the current usage of the services. EPSRC encourages applicants to contact the service they are applying to early, to discuss whether the level of resource they are requesting is realistic and reasonable, and to refine this whilst completing their technical assessments. EPSRC reserves the right to adjust the overall level of computational resource available and delay the start dates of projects where circumstances require.

Only ARCHER2 or Tier-2 computing resource is available through this call. There is no financial resource funding available.

Please also note that services will expect users to either use existing software on the system or to build their own software, but will provide support where possible.

Exclusions

See below for details on **circumstances where Access to HPC computational resources are not available:**

1. **Projects in HEC consortia remit requiring ARCHER2:**

Projects in the remit of the consortia cannot apply for ARCHER2 time through this call (see background section for information on the consortia). Applicants who wish to use ARCHER2 for work in the remit of a consortium should apply through the relevant consortium.

2. **Projects in the remit of UKCP or MCC requiring Tier-2:**

Projects requiring Tier-2 and in the remit of either the UK Carr-Parrinello Consortium (UKCP) or the Materials Chemistry Consortium (MCC) are expected to be accommodated through their allocations on the MMM Hub unless the service is not technically appropriate for the work. The applicants should contact the consortium directly and apply for access to the MMM Hub. See <http://www.ukcp.ac.uk/> and/or <https://www.ucl.ac.uk/klmc/mcc/>.

Where the MMM Hub services is not technically appropriate for the proposed work the applicant may apply for access to a suitable Tier-2 service through this call. To do so they should ask the relevant consortia to confirm that this is the case directly and in writing with EPSRC.

3. **Projects in the remit of HEC BioSim requiring JADE:**

Projects in the remit of HEC BioSim requiring JADE are expected to apply to through HEC BioSim's calls for access to JADE and thus are not eligible

for access to JADE through this call. See <http://www.hecbiosim.ac.uk/jade>.

4. **Applicants with institutional access to a Tier-2 service:**

Where a potential applicant is based at an institution which is a partner in or has access to a Tier-2 service they must first discuss accessing resources those by contacting the service directly. If the potential applicant needs to access a different Tier-2 service for a distinct capability, then they are eligible to apply for a suitable computational resource through this call.

5. **Technical suitability to Tiers 1 & 2:**

Projects which could be conducted on Tier-3 (local university HPC) are not funded through this call and instead applicants should access their local HPC service.

6. **Service specific exclusions and requirements:**

Each service may have additional requirements on projects and details of these can be found in [Appendix 1](#). Applicants should check these requirements before preparing their application.

To assist with the implementation of these policies **all applicants will be required to inform EPSRC in their application if they are a member of a HEC Consortium**, and the chair of said consortium will be informed of details of their application if it is successful. Additionally, if an application is judged by EPSRC staff to potentially be within the remit of a HEC Consortium then the application may be shared with the chair of the said consortium to ensure the exclusions are adhered to.

EPSRC retains the right to remove allocations (on any EPSRC funded service) from successful applicants if it is established that these exclusions are being breached post award.

Extensions

Please note extensions are not generally available for projects funded through this call. Any compute units which have not been used by the end of the project (or each quarter for Tier-2) will be lost.

Exceptions to this policy include where an individual progressing the project needs to take parental or sick leave and this significantly impacts their ability to use their allocation; such circumstances should be reported to the Tier-2 or ARCHER2 service being used, as soon as is feasible.

Please do not hesitate to contact the service at an early stage if any computational issues occur.

Project start dates

The start date of each funded project must be within two months from the notification of outcome. However, given the refresh of EPSRC's Tier-1 and Tier-2 services in 2020 and the impacts of the COVID-19 pandemic it is possible that

some services may be delayed. Hence, if the relevant service is not operational at the time of notification, then applicants are expected to start their project within two months of the start of service as determined by EPSRC.

Equality, Diversity and Inclusion

The long-term strength of the UK research base depends on harnessing all the available talent. EPSRC expects that equality and diversity is embedded at all levels and in all aspects of research practice and funding policy. We are committed to supporting the research community, offering a range of flexible options which allow applicants to design a package that fits their research goals, career and personal circumstances. This includes career breaks, support for people with caring responsibilities, flexible working and alternative working patterns. With this in mind, we welcome applications from academics who job share, have a part-time contract, or need flexible working arrangements.

Peer review is central to EPSRC funding decisions, we require expert advice and robust decision-making processes for all EPSRC funding initiatives. We are committed to ensuring that fairness is fully reflected in all our funding processes by advancing policy which supports equality, diversity and inclusion. Please see our Equality and Diversity webpages

<https://epsrc.ukri.org/funding/equalitydiversity/> for further information.

Responsible Innovation

EPSRC is fully committed to develop and promote responsible innovation. Research has the ability to not only produce understanding, knowledge and value, but also unintended consequences, questions, ethical dilemmas and, at times, unexpected social transformations. We recognise that we have a duty of care to promote approaches to responsible innovation that will initiate ongoing reflection about the potential ethical and societal implications of the research that we sponsor and to encourage our research community to do likewise.

Responsible innovation creates spaces and processes to explore innovation and its consequences in an open, inclusive and timely way, going beyond consideration of ethics, public engagement, risk and regulation. Innovation is a collective responsibility, where funders, researchers, interested and affected parties, including the public, all have an important role to play. Applicants are expected to work within the EPSRC Framework for Responsible Innovation given on the EPSRC website (<https://epsrc.ukri.org/research/framework/>).

Guidance on Journal-based metrics

As part of our commitment to support the recommendations and principles set out by the San Francisco Declaration on Research Assessment (DORA; <https://sfdora.org/read/>), UKRI reviewers and panel members are advised not to use journal-based metrics, such as journal impact factors, as a surrogate measure of the quality of individual research articles, to assess an investigator's contributions, or to make funding decisions.

The content of a paper is more important than publication metrics, or the identity of the journal, in which it was published, especially for early-stage researchers. Reviewers and panel members are encouraged to consider the value and impact

of all research outputs (including datasets, software, inventions, patents, preprints, other commercial activities, etc.) in addition to research publications. We advise our peer reviewers and panel members to consider a broad range of impact measures including qualitative indicators of research impact, such as influence on policy and practice.

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 this call. Please note the following specific cases:

- Research technical professionals, including research software engineers, are considered as academic employees and thus they are eligible to be a principle or co-investigator under the same terms as traditional researchers:
<https://epsrc.ukri.org/funding/applicationprocess/fundingguide/eligibility/investigators/>
- Students wishing to access the HPC resources available through this call must seek an eligible PI to apply on their behalf, who will oversee the preparation of the proposal and who will be responsible for how any time awarded is used.

Each applicant is limited to be an investigator (PI or Co-I) on at most one proposal to Tier-1 and at most one proposal to Tier-2. The HPC Triaging Committee will examine each proposal and decide whether it has been submitted to the most appropriate service. If not, the proposal in question will be moved to the most appropriate service. Should this result in an applicant having two proposals being considered for time at a single service, the applicant will be required to withdraw one of their proposals.

For a project to be eligible the proposed use of the computational resource must clearly be distinct from all the applicant's other ongoing projects on EPSRC funded HPC services.

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

<https://epsrc.ukri.org/funding/applicationprocess/fundingguide/>

A list of eligible organisations is provided at: <https://www.ukri.org/funding/how-to-apply/eligibility/>

How to apply

A two-stage application process will be used.

Stage 1- Applicants must submit a Technical Assessment form to the service they are applying to access, along with a short project description. This form will be assessed by the service and returned to the applicant. The contact details applicants must use for each service can be found in [Appendix 1](#).

Stage 2- Applicants must then submit their application via the embedded form on the EPSRC Call page, where they:

- Must submit the following as separate pdf documents:
 - Document 1: A completed Application Form
 - Document 2: A one-page diagrammatic workplan
 - Document 3: A completed and approved Technical Assessment
- Optional: Applicants may separately submit a cover letter which will be seen only by EPSRC and not sent to peer review.

Stage 1: Obtain a Technical Assessment

All full proposals **must be accompanied by a technical assessment** completed by both the applicant(s) and service they wish to access. This step is to ensure that the resource request is appropriate and so that all technical requirements have been considered prior to submission.

The services will examine and comment on the Technical Assessment form, and applicants will have the opportunity to amend the technical aspects based on these comments before the service decides whether to give its approval.

In order to obtain a completed technical assessment, applicants should:

1. Complete Section 1 of the technical assessment form (available for download from the EPSRC call page where you accessed this document, note there are different forms for ARCHER2 and Tier-2).
2. Submit the Technical Assessment form (with Section 1 completed) to service they are applying to by **4 September 2020 at 16:00**, using the details listed in [Appendix 1](#). **Please make sure the subject header of your submission email states that this is an "Access to HPC submission"**.

The service will normally return the technical assessment (either approved or with requests for amendments) to the applicant promptly, but this is dependent upon the service and the level of demand at the time of submission.

EPSRC and the services 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.

Stage 2: Application form and Workplan

Applicants should download the application form from the EPSRC call page, where they accessed this document.

When completing your application form you should take into account the [assessment criteria](#) given below and keep in mind that proposals will be assessed

by a generalist panel drawn from research areas across EPSRC's remit with computational expertise.

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

To submit their application to EPSRC the applicant must create 3 separated pdf files containing:

- Document 1 : A completed application form
- Document 2 : A one-page diagrammatic workplan
- Document 3 : A technical assessment approved by the service

and submit it via the SmartSurvey which can be found on the EPSRC call page or at <https://www.smartsurvey.co.uk/s/DU5WMR/> before the call deadline. A checklist of the required information can be found in [Appendix 2](#), and further details are given in the 'Guidance on writing an application' section below.

Guidance on writing an application

When drafting the sections below, **the applicant(s) should keep in mind:**

- **The assessment criterion:** the criterion with which the panels will score the proposals can be found in the assessment criteria section below.
- **The panel expertise:** the panel run by each service will draw upon a broad cross-section of HPC users from disciplines within engineering and the physical sciences. Each service aims to engage panel members who cover the expertise of the research areas of the submitted applications.

However, it is not guaranteed that there will be an expert for every application area. Therefore **it is important that the case for support can be understood by a general scientific audience** with significant computational expertise.

Objectives (max ½ page): Briefly list the main objectives of the proposed research. Explain how access to your chosen service will help you to meet these objectives.

Description of the proposed research and its context (max 2½ pages): Describe your proposed computational research project: detail the scientific and wider context, explain what you are aiming to achieve with the computational resource and how the project will advance the current context, highlight the novelty and timeliness of the work. Explain how the project will deliver or enable high-quality scientific research.

Identify any potential applications of the proposed work. Include how it would contribute to computational science, for example through generating new code, development of existing code, increased computational efficiency, opening up HPC for new scientific areas and industrial sectors.

Please explain why the service applied for is the most appropriate resource for this work.

Importance (max 1 page): Explain why this proposal warrants support in terms of the importance to the UK. This could include (but is not limited to) economic or industrial impacts, advancing world leading research activities and identifying how the proposed research contributes to national and EPSRC priority areas (<https://epsrc.ukri.org/research/ourportfolio/>).

Expertise and track record of the team (max 1 pages): Provide details of the applicant(s) track record in computational science and engineering, porting, developing and using codes and on the use of relevant HPC facilities. Highlight any previous publications or other scientific outputs arising from HPC work related to this application. If you are new to HPC, explain how you plan to involve partners and use service support to ensure there is sufficient computational expertise to achieve the stated objectives. Include any other information you think is relevant to demonstrate applicant(s) suitability to undertake this work.

Other associated resources (max ½ page): State details of any additional financial and/or technical support for this or related 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.

Resource Management (max 1½ pages): Please state the requested number of compute units needed throughout the project; as approved by the technical assessment.

Explain how you plan to use and manage the allocated computational resources. It is imperative that applicants only request an allocation they can realistically use in the allocation period. This should take into account queuing times, potential issues with newly ported codes, scheduled maintenance periods and the time needed to interpret intermediate results. Any compute units which have not been used by the end of the period will be lost.

Please remember that the total number of compute units allocated through this process is limited. 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. (Please note, the panels can recommend a reduction in units or time awarded if the original request is not fully justified).

Describe the staff resources available and how they will be used to complete the project. Keep in mind that it is important that you start the project promptly (see funding requirements in the funding available section), use the resource efficiently and finish within the allocation period.

If the work has particularly novel elements that could be considered high-risk/high-reward please indicate how the risks will be managed.

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

Cover Letter (no page limit, optional): Applicants can use the Proposal Cover Letter to express any other information they feel is relevant to their application.

This letter will only be seen by EPSRC and will not be sent to Peer Review, in particular the letter will not be shared with the service unless this is specifically requested by the applicant. If the letter contains sensitive information, then the applicant should state clearly whether the information is confidential. The Proposal Cover Letter should also be used to highlight anything that has been discussed and agreed with EPSRC staff beforehand. For example:

- Applicant is on maternity leave until a certain date;
- Declaration of Interest;
- Additional information about eligibility to apply that would not be appropriately shared in the track record;
- Conflict of Interest for EPSRC to consider in reviewer or panel participant selection
- The application is an invited resubmission.

Other guidance

EPSRC will not fund a project if it believes that there are ethical concerns that have been overlooked or not appropriately accounted for. If the research will involve human participation or the use of animals covered by the Animals (Scientific Procedures) Act 1986 it is recommended that applicants pay particular attention to the guidance highlighted below. EPSRC reserves the right to reject applications prior to peer review if the Ethical Information sections are not completed correctly.

Other relevant guidance includes: EPSRC's policy on animal use in research (<https://www.epsrc.ukri.org/about/standards/animalresearchpolicy/>) and the Responsible Innovation Framework (<https://epsrc.ukri.org/research/framework/>).

For advice on writing proposals see:

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

Assessment

Assessment process

Stage 1 – Technical Assessment

Technical Assessment forms will be reviewed by technical reviewers at the service you have submit your form to.

The Technical Assessment stage is carried out to ensure that the level of resources requested have been appropriately scoped and that all technical requirements have been considered prior to submission of an application to EPSRC. Applicants can find the criteria the services will use to assess their technical submission in Section 2 of the Technical Assessment form. Applicants will receive comments made by technical reviewers on the Technical Assessment

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form and should respond to these by amending the technical aspects of their forms. The technical reviewer may recommend applying to a more appropriate service at this stage. Once the technical reviewer at the service is satisfied that their comments have been addressed, they will approve the Technical Assessment, and the form will be returned by email with sections 1 and 2 completed as required for the full proposal stage.

It is recommended that applicants encrypt the email request for a Technical Assessment when it is sent to the appropriate service.

At the end of this stage applicants will submit their full proposal to EPSRC as per the Submitting An Application section.

Stage 2 – HPC Triaging Committee: Pre-panel meeting

Following the proposal submission deadline, the HPC Triaging Committee (hosted by EPSRC) will consider whether proposals should be moved between services prior to the panel. The aim of this step is to coordinate resource allocation across HPC centres in the UK and allow the transfer of applications which are more appropriate to another system. Therefore, proposals which a service deems more suited to a different HPC machine may be awarded HPC time on another machine.

The HPC Triaging Committee includes representatives from each Tier-2 service (the Director and panel coordinators), the ARCHER2 Service Provider (from the CSE team) and EPSRC. All proposals will be shared with the committee.

The factors the HPC Triaging Committee will use to determine whether a proposal is moved at this stage are:

- The overall demand on each service from the applicants.
- The available capacity from the service over the allocation period.
- Which service is most technically suitable for the proposed work.

Should the HPC Triaging Committee decide to move your proposal to a panel at a different service you will be notified at this stage.

Stage 3 – Resource Allocation Panel

Applications to this call are not subject to postal peer review and will be reviewed and prioritised directly by a Resource Allocation Panel hosted by the relevant HPC service.

Once applications have been received by EPSRC they will be shared with the panel members.

There will be one panel meeting at each service. At the panel meeting, the panel will rank the submitted proposals in priority order for allocation. The panel can recommend a resubmission of a proposal if appropriate. All proposals will be considered equally against the assessment criterion including those which originally submitted to a different service. Each service will then decide on the total number of compute units and time awarded, and identify any proposals they believe are fundable but for which there are not sufficient resources.

The Resource Allocation Panels can recommend a reduction in units or time awarded if the original request is not fully justified.

Stage 4 – HPC Triaging Committee: Post-panel meeting

Following the panels at each service there will be a second HPC Triaging Committee where each service will inform EPSRC of the decisions of their panel. The committee will also consider the proposals which were considered fundable at each service, but for which there was not sufficient computational resource, and will move the proposals to another service capable of hosting the work if there is additional capacity.

The services aim to notify applicants of their outcomes within 10 working days of the HPC Triaging Committee post-panel meeting. **Successful applicants should then email the service contact detailed in [Appendix 1](#) to confirm the start date of their project.**

In the event of this call being substantially oversubscribed as to be unmanageable, EPSRC reserve the right to modify the assessment process.

Assessment criteria

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

- **Quality (Primary)**

The degree to which research excellence is achieved within the proposal itself or enabled through the proposed computational work. In particular:

- The novelty, relationship to the context, timeliness and relevance to identified stakeholders;
- The ambition, adventure, transformative aspects or potential outcomes;
- The suitability of the proposed methodology and the appropriateness of the approach to achieving impact.

- **Resource appropriateness and management (Secondary):**

The appropriateness of the computational resource requested for the proposed work and the plans for its utilisation, including whether:

- The computational work could not be better conducted on another available service, such as local university resources.
- The requested computational resources have been fully justified with evidence that the resources will be used efficiently;
- The workplan is appropriate and achievable, demonstrating that there is sufficient staff time dedicated to the project;
- All the potential risks have been considered and are appropriately mitigated;

- **Importance (Secondary):**

The degree to which the research or research enabled through the proposal:

- Contributes to or helps maintain: the health of other disciplines, to addressing key UK societal challenges and/or to future UK economic success, and development of emerging industry(s);
- Complements other UK research funded in the area, including any relationship to the EPSRC portfolio.

- **Applicant and Partnerships (Secondary):**

The applicant's ability to deliver the proposed project, with a focus on the computational elements of the work. In particular:

- Appropriateness of the track record of the applicant(s);
- Balance of skills of the project team, including collaborators.

Feedback

Feedback will not be provided except on the specific request from the panel. In that case, the panel will indicate the points they wish to highlight to the applicant and these will be communicated by either EPSRC (for ARCHER2) or the relevant Tier-2 service.

Grant additional conditions (GACs)

Grants will be subject to the standard UK Research and Innovation grant conditions however the following additional grant conditions will be added to this call:

GAC 1: Publicity and Branding

In addition to RGC 12.4 Publication and Acknowledgement of Support, the Grant Holder must make reference to ARCHER2 (using the service reference specified in [Appendix 1](#)) or the Tier-2 centre accommodating the project (including its grant reference, see [Appendix 1](#)) and UKRI funding and include the UKRI logo and relevant branding on all online or printed materials (including press releases, posters, exhibition materials and other publications) related to activities funded by this grant.

GAC 2: Extensions

Notwithstanding RGC 6.1, computational allocations awarded through the Access to HPC call will not be extended and any compute units which have not been used by the end of the project will be lost. Exceptions to this are considered to fall under RGC 8.3 and RGC 8.4. Exceptions should be reported to the relevant service as soon as is feasible.

GAC 3: Terms and exclusions

The computational allocations awarded through the Access to HPC call must be used in accordance with the terms and exclusions of the Access to HPC call

document published with the call. EPSRC retains the right to remove allocations on any EPSRC funded service from successful applicants if it is established that these terms are being breached post award.

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://www.epsrc.ac.uk/funding/howtoapply/basics/resubpol/rua/>

Key dates

Activity	Date*
Technical Assessment Deadline	7 August 2020 (4pm)
Closing date for applications	4 September 2020 (4pm)
HPC Triaging Committee: Pre-panel Meeting	Approx 21 September 2020
Panel meetings	Week of 2 November 2020
HPC Triaging Committee: Post-panel Meeting	Approx 11 November 2020
Expected project start dates	From 18 November 2020

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

Contacts

For technical queries, a full list of contact details for each Tier-2 service along with the ARCHER2 Helpdesk is available in [Appendix 1](#).

For any other queries please contact researchinfrastructure@epsrc.ukri.org.

Change log

Name	Date	Version	Change
Kieran Jarrett	25/07/20	1.0	N/A

Appendix 1 : Service specific information

ARCHER2

Service details

Service Contact Details	support@archer2.ac.uk
Service Webpage	https://www.archer2.ac.uk/
Service Reference	ARCHER2 PR17125

Hardware and Technical specifications

System name	ARCHER2
Compute nodes & Processors	5,848 compute nodes, each with dual AMD Rome 64 core CPUs at 2.2GHz, for 748,544 cores in total and 1.57 PBytes of total system memory
Interconnect	Cray Slingshot
Storage	14.5 PBytes of Lustre work storage in 4 file systems
Software available	https://www.archer2.ac.uk/about/hardware.html
Additional information on the hardware available	https://www.archer2.ac.uk/about/hardware.html

Resources available through this call

Unit of Allocation	ARCHER2 allocates its compute resource in ARCHER2 Compute Units (CU). Please note: <ul style="list-style-type: none">• 1 node hour on ARCHER2 costs 1 CU, unless jobs are submitted in low priority queues where a discount applies.• 1 CU on ARCHER2 should (at a minimum) provide at least as much scientific throughput as 1.5156 kAU on ARCHER for most codes. This is based on conservative estimates of the performance of ARCHER2 relative to ARCHER, and thus is subject to variability based on the code used.
Indicative level of computational resource available through this call	~840000 CU, up to ~2.5% of EPSRC's ARCHER2 compute.

(subject to fluctuations in overall demand)

% compute allocated to EPSRC mechanisms ~77-83%, this is the total % of ARCHER2 EPSRC can utilise each year i.e. EPSRC's ARCHER2 compute.

(including but not limit to this call)

Storage available N/A

Requirements on applications for the service

Eligible EPSRC research areas All

Project length restrictions over and above those in the call 1 year

Maximum and Minimum requests Users must request more than 4000 CU and less than the call budget, users who want less can use the Pump-priming access route to ARCHER2 from the start of the service, or the instant access route to ARCHER beforehand
<http://www.archer.ac.uk/access/instant-access/>.

Cirrus

Service details

Service Contact Details	support@cirrus.ac.uk
Service Webpage	http://www.cirrus.ac.uk/
Service Grant Reference	EP/P020267/1 (Phase I) EP/T02206X/1 (Phase II)

Hardware and Technical specifications

System name Cirrus HPE/SGI ICE XA Cluster

Compute nodes:

280 dual CPU compute nodes and 2 quad GPU nodes (Phase I)
144 NVIDIA V100 GPUs and an accompanying fast storage layer (Phase II)

Processor:

Cirrus standard compute nodes each contain two 2.1 GHz, 18-core Intel Xeon E5-2695 (Broadwell) series processors. Each of the cores in these processors support 2 hardware threads (Hyperthreads), which are enabled by default. The standard compute nodes on Cirrus have 256 GB of memory shared between the two processors. The Cirrus GPU compute nodes each contain two 2.4 GHz, 20-core Intel Xeon Gold 6148 (Skylake) series processors. Each of the cores in these processors support 2 hardware threads (Hyperthreads), which are enabled by default. The nodes also each contain four NVIDIA Tesla V100-PCIe-16GB (Volta) GPU accelerators connected to the host processors and each other via PCIe.

Cirrus Phase II adds a GPU node upgrade with a further 36 'Plainfield' blades (single GPU node with two Intel processors and four GPU's) into the empty 4th rack of the system along with the necessary power supplies, EDR IB switches and cables. These blades are similar to the two in the existing system, except that they will have Intel 'CascadeLake' processors (6248), 2933 MHz memory and will use EDR IB mezzanine cards and EDR IB switches. Each GPU node will have four NVIDIA V100's (16GB) for a total of 144 GPU's.

Storage:

A single filesystem Lustre file system has a total of 406 TiB available. Cirrus Phase II will include fast storage to the new GPU nodes using HPE XFS/RPOOL with NVMe devices.

Interconnect FDR Infiniband Hypercube

Software available See Service Catalogue:
http://www.cirrus.ac.uk/about/Cirrus_Service_Component_Catalogue.pdf

Additional information on hardware See:
<http://www.cirrus.ac.uk/about/hardware.html>

Resources available through this call

Indicative sizes of previously successful applications

Projects awarded for autumn 2019 RAP ranged from 1,000,000 CPUhs to 4,000,000CPUhs

(not a restriction)

Indicative level of computational resource available through this call

Approximately 70,000,000 CPUhs available per year for Cirrus Phase I.

Will have Cirrus Phase II resource available.

(subject to fluctuations in overall demand)

% compute allocated to EPSRC mechanisms

Cirrus Phase I 70%
Cirrus Phase II 70%

(including but not limit to this call)

Storage available

Default 250GiB per project, can allocate more space if justified

Requirements on applications for the service

Eligible EPSRC research areas

All

Project length restrictions over and above those in the call

1 year

Maximum and Minimum requests

Flexible with justification

CSD3

Service details

Service Contact Details	resources@hpc.cam.ac.uk
Service Webpage	www.hpc.cam.ac.uk
Service Grant Reference	EP/P020259/1

Hardware and Technical specifications

System name	peta4-skylake
Total compute nodes	1152x Dell PowerEdge C6420
EPSRC funded nodes	427 nodes: 65% via RAP, 15% Cambridge EPSRC users internal call, 20% industrial usage
Processor	Intel Xeon Gold 6142 CPU @ 2.60GHz (2 sockets, 32 cores)
Memory	192GB and 384GB
Interconnect	Intel Omni-Path

System name	peta4-cascadelake
Total compute nodes	672 x Dell PowerEdge C6420
EPSRC funded nodes	276 nodes: 65% via RAP, 15% Cambridge EPSRC users internal call, 20% industrial usage
Processor	Intel Xeon Platinum 8276 @2.2GHz (2 sockets, 56 cores)
Memory	192GB and 384GB
Interconnect	Mellanox HDR Infiniband

System name	peta4-knl
Total compute nodes	342x Dell PowerEdge C6320p
EPSRC funded nodes	190 nodes: 65% via RAP, 15% Cambridge EPSRC users internal call, 20% industrial usage
Processor	Intel Xeon Phi CPU 7210 @ 1.30GHz (single socket, 64 cores)
Memory	96GB
Interconnect	Intel Omni-Path

System name	wilkes2-gpu
Total compute nodes	90x Dell PowerEdge C4130
EPSRC funded nodes	200 GPUs: 65% via RAP, 15% Cambridge EPSRC users internal call, 20% industrial usage
Processor	Intel Xeon CPU E5-2650 v4 @ 2.20GHz (single socket, 12 cores)
GPUs	4x NVIDIA Tesla P100-PCIE-16GB per node
Memory	96GB
Interconnect	Mellanox EDR Infiniband

Storage	3120 TB lustre storage available to Tier2 Dell ME4 Series
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Software available A large range of software packages are preinstalled. Licenced packages (e.g. VASP) are available - please contact support@hpc.cam.ac.uk to determine access.

Additional information on the hardware available <https://www.hpc.cam.ac.uk/>

Resources available through this call

Please note that allocations on CSD3 must start from February 2021

Indicative sizes of previously successful applications (not a restriction) 1M-10M Skylake CPU core hours
50,000-200,000 KNL node hours
50,000-200,000 GPU hours

Indicative level of computational resource available through this call (subject to fluctuations in overall demand) 33M cpu hours on Skylake
38M cpu hours on Cascadelake
464K KNL node hours
488K P100 GPU hours

% compute allocated to EPSRC mechanisms (including but not limited to this call) 80% Skylake
80% Cascadelake
80% KNL
80% P100 GPU

Storage available 3120 TB lustre storage (available to all of Tier2)

Requirements on applications for the service

Eligible EPSRC research areas Any

Project length restrictions over and above those in the call 1 year

Maximum and Minimum requests None

HPC Midlands Plus (Athena)

Service details

Service Contact Details	research-computing@lboro.ac.uk
Service Webpage	http://www.hpc-midlands-plus.ac.uk/
Service Grant Reference	EP/P020232/1

Hardware and Technical specifications

System name	Athena
Compute nodes	28 core, 128 GB RAM
Processor	Intel Xeon E5-2980v4
Interconnect	EDR infiniband (100 Gb/s)
Storage	1PB GPFS
Software available	Please see http://www.hpc-midlands-plus.ac.uk/
Additional information on the hardware available	

Resources available through this call

Indicative sizes of previously successful applications (not a restriction)	Typically 200,000 to 2,000,000 core hours
Indicative level of computational resource available through this call (subject to fluctuations in overall demand)	6 million core hours in July to December 2020. 4 million core hours in January to April 2021.
% compute allocated to EPSRC mechanisms (including but not limit to this call)	15
Storage available	5 TB per project

Requirements on applications for the service

Eligible EPSRC research areas	All
Project length restrictions over and above those in the call	Service ends on 30 th April 2021, so all proposals must finish by this date.
Maximum and Minimum requests	n/a

Isambard GW4 Tier-2

Service details

Service Contact Details	Prof Simon McIntosh-Smith S.McIntosh-Smith@bristol.ac.uk +44 117 3315324
Service Webpage	https://gw4.ac.uk/isambard/
Service Grant Reference	EP/T022078/1

Hardware and Technical specifications

System name	Isambard 2 phase 1, a Cray XC50 Arm-based system
Compute nodes	332, each dual socket, 21,248 cores in total
Processor	Arm-based Marvell ThunderX2 32 core 2.1 GHz (2.5GHz turbo)
Interconnect	Cray Aries (same as ARCHER)
Storage	1 PByte
Software available	Full Cray software stack (Cray compiler, MPI, debugger, profiler, performance tools, math library) Full GNU software stack (compilers et at). Full Arm software stack (Clang/LLVM based compiler, math library, Allinea tools etc). Many widely used applications pre-installed on the system ready to use.
Additional information on the hardware available	Most codes should just compile and run on the Arm-based system just like they do on any other supercomputer. Most users won't even be able to tell they are on an Arm system.

Resources available through this call

Indicative sizes of previously successful applications	1-5M core hours over 6 months.
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(not a restriction)

Indicative level of computational resource available through this call

(subject to fluctuations in overall demand)

~516,000 node hours, 33M core hours. Projects requesting anywhere up to but not exceeding 10M core hours across the 6 month RAP period could therefore be considered (projects in the 1-10M range are most likely to succeed).

% compute allocated to EPSRC mechanisms

(including but not limit to this call)

A total of 40% of the system is available to RAP during the 6 month period.

Storage available

Up to tens of TeraBytes per RAP project.

Requirements on applications for the service

Eligible EPSRC research areas

All areas.

Project length restrictions over and above those in the call

6 months typically for Tier-2 RAP on Isambard. Maximum 1 year by exception.

Maximum and Minimum requests

Minimum - 0.5M core hours.

Maximum – 10M core hours.

JADE

Service details

Service Contact Details wes.armour@oerc.ox.ac.uk

dai.jenkins@it.ox.ac.uk

Service Webpage <https://www.jade.ac.uk/>

Service Grant Reference EP/P020275/1

Hardware and Technical specifications

System name JADE

Compute nodes 22x NVIDIA DGX-1V

Processor Per node:
8x V100 16GB
2x 20 core Xeon E5-2698

Interconnect InfiniBand ERD to filestore (so not really designed for heavy node-to-node communication).

Ideal problems are those that fit within a node (so across 8x GPUs), codes that use NVLink (nccl) will also benefit.

Storage 512 GB DDR4 per node, 4x 2TB SSD (RAID0) per node. 1TB spinning disk filestore.

Software available Anything in Nvidia NGC:
<https://ngc.nvidia.com/catalog/all?orderBy=modifiedDESC&pageNumber=1&query=&quickFilter=&filters=>

Additional information on the hardware available Designed for AI/Machine Learning.
We also support some Molecular Dynamics (MD) work and have the standard set of MD codes available.

Resources available through this call

Indicative sizes of previously successful applications Varies significantly, we consider any application.

(not a restriction)

Indicative level of computational resource available through this call

(subject to fluctuations in overall demand)

Due to JADE's model of open access for AI/Machine Learning research, applicants who wish to conduct AI/Machine Learning projects on JADE should contact the service directly (at the above addresses) to discuss suitable levels of resource. Applicants in other research areas should refer to the eligibility section below.

% compute allocated to EPSRC mechanisms

(including but not limit to this call)

80% of JADE's total capacity, split between AI and Molecular Dynamics research.

Storage available

Without asking users to remove data we have around ~200TB free at the moment.

Requirements on applications for the service

Eligible EPSRC research areas

AI & Machine Learning projects can get access through this call. Projects in the area of Molecular Dynamics should apply through HEC BioSim at <http://www.hecbiosim.ac.uk/jade/application-form>. Projects in other research areas are not eligible for access to JADE.

Project length restrictions over and above those in the call

6 months with the possibility of renewing for up to another 6 months

Maximum and Minimum requests

N/A

MMM Hub

Service details

Service Contact Details	rc-support@ucl.ac.uk
Service Webpage	https://mmmhub.ac.uk
Service Grant Reference	EP/T022213/1

Hardware and Technical specifications

System name	Thomas 2 (provisionally)
Compute nodes	576 HPE 40 core compute nodes with 192 GB of RAM, 3 with 3TB of RAM and 3 with 6TB of RAM
Processor	2x 20 core Intel Xeon Cascade Lake
Interconnect	Omnipath in 36 node 1:1 blocks
Storage	1PB Lustre
Software available	Standard UCL application stack: 700+ software modules supporting development tools (compilers from Intel, Python etc) and user applications (e.g. VASP, GROMACS, CP2K...)

Resources available

The MMM Hub operates a different allocation mechanism to the other Tier 2 Centres. Access is only available via membership of two HEC consortia and not via this call. For more information see: <https://mmmhub.ac.uk/thomas>

% compute allocated to EPSRC mechanisms 30% of the Thomas 2 facility

(including but not limit to this call)

Requirements on applications for the service

Eligible EPSRC research areas As noted above, research within the broad area of materials and molecular modelling.

NI-HPC (Kelvin-2)

Service details

Service Contact Details v.purnell@qub.ac.uk

Service Webpage www.ni-hpc.ac.uk

Service Grant Reference EP/T022175

Hardware and Technical specifications

System name	Kelvin-2
Compute nodes	Standard: 60x Dell PowerEdge R6525 with 768GB RAM Hi-memory: 4x Dell PowerEdge R6525 with 2TB RAM GPU: 8 x Dell DSS8440 (each with 2x Intel Xeon Platinum 8168 24 Core CPU). Provides 32x NVIDIA Tesla v100 32GB
Processor	AMD Rome 2x64core 7702
Interconnect	Mellanox EDR infiniband
Storage	2PB usable lustre for scratch storage Metadata Servers: Dell R640 Metadata Targets: Dell Powervault ME2024 with 1TB SSD Object Storage servers: Dell Powervault ME4084
Software available	Centos 7.7 Lustre file system Alces flight cluster manager Applications – see attachment.

Resources available through this call

Indicative sizes of previously successful applications n/a

(not a restriction)

Indicative level of computational resource available through this call	2688 standard compute cores 2 hi-memory compute nodes 12 GPUs
(subject to fluctuations in overall demand)	
% compute allocated to EPSRC mechanisms	35
(including but not limit to this call)	
Storage available	2PB shared scratch (no project quota planned in 2020-21)

Requirements on applications for the service

Eligible EPSRC research areas	Priority areas: computational neuroscience, advanced chemistry, innovative drug delivery, precision medicine, food fingerprinting and hydrogen deflagration Then: any EPSRC related area
Project length restrictions over and above those in the call	1 year
Maximum and Minimum requests	Max number of cores per job: 1344 Min number of cores per job: 600 GPUs per job max: 4 GPUs per job min: 1

Northern Intensive Computing Environment (NICE)

Service details

Service Contact Details rebecca.appleby@durham.ac.uk

+44 (0) 191 33 42520

Service Webpage <https://n8cir.org.uk/supporting-research/facilities/nice>

Service Grant Reference EP/T022167/1

Hardware and Technical specifications

System name bede.dur.ac.uk

Compute nodes 32x IBM AC922 with 0.5TB and 4x32GB V100 GPU,
4x IBM IC922 with 256GB and 4xT4 GPU,
2x IBM IC922 with 256GB memory and FPGA

Processor AC922: 2x16core 2.7Ghz Power 9.
IC922: 2x20core 2.9Ghz Power 9.

Interconnect Mellanox EDR

Storage 2Pb, 10GB/s Lustre filesystem for running jobs.

Software available <https://n8cir.org.uk/supporting-research/facilities/nice/software>

Additional information on the hardware available <https://n8cir.org.uk/supporting-research/facilities/nice/hardware>

Resources available through this call

Indicative sizes of previously successful applications N/A – but say 5000 node hours over 12 months for guidance

(not a restriction)

Indicative level of computational resource available through this call 85000 node hours over 12 months/42,500 node hours per 6-month call.

(subject to fluctuations in overall demand)

% compute allocated to EPSRC mechanisms 38%

(including but not limit to this call)

Storage available N/A

Requirements on applications for the service

Eligible EPSRC research areas All

Project length restrictions over and above those in the call 1 year

Maximum and Minimum requests Requirement for requests to utilise unique features of Power 9 architecture, such as GPU/CPU memory coherence and/or multi-GPU. Whole nodes will be allocated to individual jobs.

Appendix 2 : Full Application Checklist

When submitting your application via the smart survey (see 'Submitting an Application') at <https://www.smartsurvey.co.uk/s/DU5WMR/>. Please ensure the following are attached in the specified sections of the survey.

Text/Document	Maximum Page length
Document 1 - Completed Application Form including:	
Objectives	½
Description of the proposed research and its context	2 ½
Importance	1
Expertise and track record of the team	1
Other associated resources	½
Resource Management	1 ½
Document 2: Diagrammatic Work Plan	1
Document 3: Completed Technical Assessment	N/A

Details on the expected content for each of these sections can be found in the 'Guidance on 'Writing an Application'' section.

In addition to the above, applicants also have the opportunity to add an optional cover letter as a separate attachment to the smart survey. This will only be seen by EPSRC. See 'Guidance on 'Writing an Application'' for details.