**DiRAC Resource Allocation Committee 15th Call
Guidance notes for Applicants**

Contents

1.   Introduction

1.1.   The DiRAC (Distributed Research utilizing Advanced Computing) facility is the STFC national HPC resource for the UK astronomy, cosmology, particle physics and nuclear physics communities. This document explains the process for the allocation of time on the DiRAC HPC services for the 15th Call.
A table to show the availability of resources for RAC 15 is provided at Annex 1.
A summary of the DiRAC-3 hardware is available at Annex 2.
Information on the HPC services that DiRAC offers can be found on the DiRAC website.

1.2.   Please note that there have been some changes to the guidance for RAC15 which are summarized below, but it is essential that applicants read this guidance document in its entirety:

- Applicants are asked to address some specific questions related to Equality, Diversity and Inclusion as part of their Management Plan (Sections 5.2 and 9.3.5).
- Whilst this is not a change for RAC15, we would like to emphasize that STFC welcomes applications from Early Careers Researchers, including Postdocs and PhD students who are eligible to be PI of a DiRAC RAC award (Section 7).
- Whilst this is not a change for RAC15, we would like to remind applicants that it is acceptable to be a Co-Investigator (Co-I) on a RAC proposal and be a PI on a different RAC proposal at the same or another RAC Call (Section 7.4).
- Further clarity regarding the definition of a Thematic Proposal has been included within Sections 8.3, 8.4 and 8.5.
- We would like to request that specific documents are submitted in a specific file type (i.e. Word or pdf) as directed in Sections 3 and 9.3.1.
- Applicants are requested to save their documents with a specific file title format, and the PI's name must be visible on all documents (Section 9.3.2).
- Changes have been made to the page limits for the case for support, based on the size of the requested resources rather than proposal type (Sections 9.3.4 and 9.3.5).
- The case for support page limits are 'up to' the stated page limit, there is no obligation to fill the entire page limit and a shorter case for support is acceptable (Section 9.3.4).
- Changes have been made to the number of External Reviewers, based on the size of the requested resources rather than the proposal type (Section 11.3).
- Applicant's staff time should be clearly documented in the Management Plan as a % FTE across the working week (Section 9.3.5).
- The RAC Additional Scoring Criteria will now comprise 10% of the overall score for the proposal rather than having the potential to deduct 20% from the overall score (Section 10).

1.3.   There have been some changes to the Technical application form. Applicants must fully complete all of the information requested in both the Technical and Scientific application form, but the key changes to the Technical form are summarized below:

- Resources requested should be shown per quarter and per year rather than the total across the duration of the award.

- If applicants would like to have their RAC15 allocation added to an existing RAC project they must make this clear and provide the actual code of the project (dp number).
- Storage requests must be specified per site if more than one service is being requested. Applicants should also specify if they have existing storage from a previous RAC project which should be retained, and if a new storage allocation is being requested this must be clearly shown in the table provided in section 6.3 of the form.

2. DiRAC Resource Allocation Committee

2.1. The DiRAC Resource Allocation Committee (RAC) was established to oversee the time allocation for DiRAC project proposals. The membership of the RAC is available at https://dirac.ac.uk/resource-allocation-committee/. To maximise the quality of the scientific output of DiRAC, the allocation of time will be determined via robust, transparent peer review. The RAC has two sub-panels, one for Particle Physics & Nuclear Theory and one for Astronomy & Cosmology, which will consider the proposals within their respective remits. A meeting of the RAC attended by representatives from both Sub-Panels will determine the overall allocation of DiRAC time across the whole portfolio of proposals.

3. Call Closing Date

3.1. The RAC issues one call per year to apply for time on the DiRAC facility. The deadline for proposal submissions to the 15th Call is **Tuesday 4th October 2022 at 16:00 UK time**. The following documents should be sent direct to STFC (via email: DiRACRAC@stfc.ac.uk) by the deadline. STFC recommends that applicants send their documents via secure / encrypted email.

1. Scientific application form (pdf)
2. Scientific case for support (pdf)
3. Project Management and Data Management Plan (pdf)
4. Relevant publications (annex - pdf)
5. References (annex - pdf)
6. Any letters of verification (pdf - non-mandatory, maximum of 3, if the work proposed is dependent on other scientific results or being part of a large collaboration)
7. Technical application form (Word)
8. RSE application form (Word) – if applicable

3.2. Please note that all applicants must submit a Technical application form otherwise a full proposal submission will not be accepted. The Technical application form does not need to be sent in advance and can be sent direct to STFC along with the full scientific proposal. Please submit the Technical application form as a Word document.

3.3. Successful awards will be scheduled to begin on 1st April 2023.

3.4. Please note that Discretionary and Seedcorn proposals can be submitted at any time and these allocations can start at any time.

4. Enquiries

4.1. All Call application forms and documentation can be found on the DiRAC website. Enquiries should be directed as follows:
- RAC process and remit: STFC Swindon Office DiRACRAC@stfc.ac.uk
- Technical questions: dirac-support@epcc.ed.ac.uk
- Direct allocations or discretionary requests: DiRAC Director, Prof Mark Wilkinson (miw6@leicester.ac.uk)

5. Equality, Diversity and Inclusion

5.1. In line with the UK Research and Innovation Diversity Principles, STFC 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 welcome 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.

5.2. As part of our commitment to Equality, Diversity and Inclusion (EDI), applicants are asked to address some specific questions related to EDI as part of the Management Plan. The page limit has been increased by one page to allow for this information to be included, please see Section 9.3.5 for full details regarding this.

6. Impact of Covid-19 Pandemic

6.1. UKRI recognises that the COVID-19 pandemic has caused major interruptions and disruptions across our communities and are committed to ensuring that individual applicants and their wider team, including partners and networks, are not penalised for any disruption to their career(s) such as breaks and delays, disruptive working patterns and conditions, the loss of on-going work, and role changes that may have been caused by the pandemic.

6.2. Reviewers and Panel Members will be advised to consider the unequal impacts of the impact that COVID-19 related disruption might have had on the track record and career development of those individuals included in the proposal and will be asked to consider the capability of the applicant and their wider team to deliver the research they are proposing. Where disruptions have occurred applicants can highlight this within their application, if they wish, but there is no requirement to detail the specific circumstances that caused the disruption.

6.3. UKRI acknowledges that it is a challenge for applicants to determine the future impacts of COVID-19 while the pandemic continues to evolve. Applications should be based on the information available at the point of submission and, if applicable, the known application specific impacts of COVID-19 should be accounted for. Where known impacts have occurred, these should be highlighted in the application, including the assumptions/information at the point of submission. There is no need to include

contingency plans for the potential impacts of COVID-19.

6.4. Reviewers will receive instructions to assume that changes that arise from the COVID-19 pandemic, post-submission, will be resolved and complications related to COVID-19 should not affect their scores.

6.5. Where an application is successful, any changes in circumstances that affect the proposal will be managed as a post-award issue.

7. Eligibility

7.1. Each proposal must identify a Principal Investigator (PI) who has overall responsibility for the delivery of the proposed research and will act as the point of contact for all STFC, DiRAC and RAC communications.

7.2. In line with STFC's research grant conditions the PI must be either
a) resident in the UK, or
b) be employed by an overseas Research Organisation approved by STFC as eligible to apply for research grant funding.

7.3. The STFC eligibility criteria can be found on the STFC website. Please note that in addition to the eligibility criteria, STFC also welcomes applications from Early Careers Researchers, including Postdocs and PhD students, who are eligible to be PI on a DiRAC RAC award as long as they satisfy the eligibility criteria except for the requirement to be an academic member of staff (lecturer or equivalent), or hold a fellowship.

7.4. It is acceptable to be a Co-Investigator (Co-I) on a RAC proposal and be a PI on a different RAC proposal at the same or another RAC Call.

7.5. We welcome proposals that represent the UK's contribution to an International Research Programme. However, it is expected the proposed research programme will enhance the UK's research outputs. Applicants are invited to submit letters of verification if the work proposed is dependent on other scientific results or being part of a large collaboration. If any projects are heavily led by international collaborators full reasons for this must be provided in the case for support. If applicants are aware of any restrictions on their ability to acknowledge the use of DiRAC resources in their publications, for example because of rules within an international collaboration, they should indicate these in their proposal. (Note that this will not affect the assessment of the proposal but will ensure that appropriate reporting mechanisms can be agreed with the PI if the proposal is successful).

7.6. Please note that if applicants hold an existing STFC Consolidated Grant this does not automatically guarantee that they will be allocated computing time on DiRAC facilities.

8. Proposal Types

8.1. The categories of proposals considered by each RAC Call are:

- Short Projects
- Thematic Projects
- Research Software Engineer Support (for requests of 3 months or more)
- Discretionary and Seedcorn proposals may be submitted at any time.

8.2. **Short Projects**

A Short Project is a self-contained research problem typically lasting 3-6 months, up to a maximum of 12 months. The category will include proposals intended to develop exploratory study by users new to HPC or to DiRAC. No single application may request more than 80% of the RAC available time on any individual machine within a given year (please see Annex 1). Requests above this will not be considered by the RAC.

8.3. **Thematic Projects**

A Thematic Project is a clearly defined research programme of outstanding scientific merit which requires significant HPC resources over a period longer than 12 months and up to 36 months duration. The proposed research should be world-leading, with the expectation of making step changes in knowledge through the use of DiRAC resources. Applicants must demonstrate a track record of the productive use of HPC. Thematic projects must be centred on a singular scientific theme, but can contain a small number of sub-projects and activities as long as they are clearly linked and must be within the same scientific theme, rather than a collection of different projects across multiple scientific themes.

8.4. Thematic projects with significantly disparate scientific themes are advised to submit separate proposals. Applicants should consider the range of material contained within submissions as very large proposals can have a detrimental effect on the peer review system due to lack of detail and insufficient justification of resources, and the need for Reviewer diversity. No single application may request more than 80% of the RAC available time on any individual machine within a given year (please see Annex 1). Requests above this will not be considered by the RAC.

8.5. Thematic proposals can span multiple Research Organisations/Institutes and can consist of a number of Institutions or groups working on a large project /activity.

8.6. **Discretionary / Seedcorn proposals**

These are very small allocations of DiRAC resource (up to 100,000 x86 core hours or 1,000 GPU hours or 1,000 KNL node hours) for projects that fall into the following categories:

- Scientifically outstanding projects where DiRAC resources could enable a breakthrough to be made but where the impact of the research would be lost if the project were submitted according to the scheduled calls for proposals.
- Very small projects where the researcher is not already a member of an existing Short Project or Thematic Project.

Discretionary / Seedcorn applications cannot be used to uplift existing project activities. Proposals may be submitted at any time and should be sent directly to DiRAC: dirac-support@epcc.ed.ac.uk

Information on how to submit a Seedcorn proposal can be found on the DiRAC website.

8.7. **Research Software Engineering (RSE) Support**

Applications can be made for support from the DiRAC Research Software Engineering (RSE) team to help improve and develop software for the DiRAC community. Applicants must complete the RSE request form and should refer to the specific RSE guidance notes, available on the DiRAC website.   Applications for RSE support must be sent to STFC (DiRACRAC@stfc.ac.uk) by **Tuesday 4ᵗʰ October 2022, 16:00 UK time**. Your application will be forwarded to a member of the DiRAC RSE team for technical evaluation. This will then be forwarded to the RAC for their consideration and applicants will be notified of the outcome following the RAC Main Panel meeting.

A RAC award of RSE effort to a DiRAC project will enable the employment of a Research Software Engineer (RSE) to work specifically on the relevant software to enable new features or improve the performance of the code. Examples of this could be:

- Implementation of algorithmic improvements within an existing code in a portable manner
- Improving the scalability of software on higher core counts in a portable manner
- Improving a code to enhance sustainability and maintainability
- Improvements to code that allow new science to be carried out on current and future DiRAC services
- The integration of new algorithms/functionality into a code;
- Porting and optimising a code to run efficiently on current and future DiRAC services
- Code development to take a code from a Tier-2 (Regional) or local university cluster to DiRAC level bringing new communities onto DiRAC

Applicants should note that RSE support is technical in nature and is not research support. In particular, RSE effort is not meant to be a replacement for PDRA/Post-grad student activity. The construction of a piece of scientifically valid code is the project's responsibility and is not the role of RSE support. If the initial review process identifies activities which are deemed to be out of scope, the PI will be contacted to discuss the appropriateness of DiRAC RSE effort for the required work prior to the proposal being considered by the RAC.

We expect applications to be for 3 to 12 months of effort in most cases. If you require shorter amounts of RSE time (e.g. to help profile or port an application), these are available to all funded DiRAC projects; please contact the DiRAC helpdesk: dirac-support@epcc.ed.ac.uk with your request. (Note that RSE time is finite and we cannot guarantee to support every such request).

9.   How to submit a proposal

9.1. **Discretionary / Seedcorn proposals**

Applicants wishing to submit a Discretionary or Seedcorn proposal should follow the

instructions described in section 8.6 above.

9.2. **Research Software Engineer (RSE) proposals**
Applicants wishing to submit proposal for Research Software Engineer (RSE) support should follow the instructions described in section 8.7 above.

9.3. **Short and Thematic Proposals**
Applications for Short and Thematic Projects all require the submission of a Technical Case (technical application form). Proposals will not be considered by the RAC unless the Technical Case has been completed and submitted. Applicants may discuss their request with the DiRAC RSE Team in advance of submitting a technical case by emailing DiRAC support (dirac-support@epcc.ed.ac.uk) and adding the heading 'RAC 15 technical enquiry' into the subject of the email.

9.3.1. Applicants must submit the following documentation via email to STFC (DiRACRAC@stfc.ac.uk) by the closing date of **Tuesday 4ᵗʰ October 2022**, **16:00 UK time**. The Technical application form and RSE application form must be submitted as a Word document. All other documents should be submitted as a pdf. STFC recommends that applicants send their documents via secure / encrypted email as follows:

1. Scientific application form (pdf)
2. Scientific case for support (pdf)
3. Project Management and Data Management Plan (pdf)
4. Relevant publications (annex - pdf)
5. References (annex - pdf)
6. Any letters of verification (pdf - non-mandatory, maximum of 3, if the work proposed is dependent on other scientific results or being part of a large collaboration)
7. Technical application form (Word)
8. RSE application form (Word) – if applicable

9.3.2. Please ensure that the PI's name is visible on all documents and please ensure the file name of each document includes the PI's name and document type, for example 'PI last name_ScientificForm'

9.3.3. One of the following font types must be used:
- Standard Arial 11pt (please note that this is the preferred font for STFC)
- Helvetica Regular 11pt or
- an equivalent regular 11pt Sans Serif universal font e.g. FreeSans

9.3.4. **Scientific case for support – science justification and proposed research**
This should describe the proposed research programme and explain why the applicants wish to use DiRAC. It should address the assessment criteria detailed in section 10 and should include the following information:

- Significance of the proposed research goals with reference to the STFC Science Challenges
- Appropriateness of the proposed methods/codes
- Justification of the requested resources
- Suitability of the investigator(s) for the proposed research

- Justification of any periods of machine use in exclusive mode
- A prioritised list of the projects within the proposal
- Clarification of the absolute minimum time required for the proposed work, including full reasons for needing all of the time requested, why the time requested is essential for the successful completion of the project, and the scientific impact of any cuts.
- The technical case and scientific case should both provide information explaining how intensively the proposed code will be used, and how much of the allocated time will be used by this code. This should be addressed and details provided for all of the major codes that are listed.

The page limit for the Case for Support is dependent on the amount of resources being requested as shown in the table below. Applicants wishing to apply for both CPU and GPU resources should select the page limit relevant to the highest level of resource they are applying for; for example, an applicant wishing to apply for 51M CPUh and 20k GPUh can have a maximum limit of 12 pages. Please note this is the maximum page limit and there is no obligation to fill the entire page limit, a shorter case for support is acceptable.

Page limit for scientific case for support		
Level of resource requested		Maximum page limit for science case
CPUh	GPUh	
<=5M CPUh	<=50k GPUh	4
>5M CPUh but <=15M CPUh	>50k GPUh but <=150k GPUh	6
>15M CPUh but <=50M CPUh	>150k GPUh but <=500k GPUh	9
>50M CPUh	>500k GPUh but <=1.5M GPUh	12
>150M CPUh	>1.5M GPUh	14

9.3.5. **Project Management and Data Management Plan**

The Project Management and Data Management Plan must include the information listed below:

- The project management structure
- Availability of sufficient researcher effort to carry out the proposed research (For Thematic Proposals a table should be included showing the estimated effort, as a percentage FTE, that the PI and each Co-I expect to contribute to the project – this should be a percentage FTE across the overall working week)
- A description of the internal allocation process for the allocation of time to sub-projects (if applicable)
- A work plan, with milestones against which the progress of the project will be measured
- Publication plans
- Project risk and mitigation analysis (include compute/storage usage, staff and technical risks)
- Data Management Plan – please note that completion of a short data management plan is mandatory and will be assessed by the RAC. Applicants are requested to address all points which are found in the STFC Data

Management Plan guidelines. This includes: which communities may have potential interest in the data being produced by their DiRAC project; how and where the data from the project will be stored; how long the data will be stored and what metadata processes will be used. Applicants are encouraged to consult the DMPs of any collaboration they are a part of and to discuss this with their universities data management units.

In addition to the above points, applicants are also asked to address some specific questions related to Equality, Diversity and Inclusion. An additional page has been added to the page limit for this.

1. Please outline your team's approach to equality, diversity and inclusion; what are the key challenges in your area/department and how will you seek to address these?
2. Is there any guidance available on monitoring the equality of opportunity for junior researchers on the team? Please provide details
3. Do the investigators on the team responsible for managing the overall allocation have training on equality and diversity? If yes, is it mandatory? Please provide details
4. Is there any guidance available on procedures to monitor and deal with bullying and harassment within the team? Please provide details

The Panel will not be able to assess or score proposals based on the information provided and the content of answers, but by addressing these questions this should encourage applicants to think more carefully about these issues if they are not already. STFC and the RAC will not be able to take any action or investigate any individuals if there are any unsatisfactory answers, but STFC could go back to the applicant and request further clarification or a strengthened commitment, but proposals will not be penalised as this is not part of the formal assessment criteria.

These questions will be added to the progress/final report templates for next year's project reporting exercise to ask applicants to provide an update on progress, barriers and reflections on the issues since the time of proposal submission so that the Panel can look at how this is progressing.

The total page limit for both the Project Management Plan and Data Management Plan is dependent on the type of proposal as shown in the table below:

Page limit for Project Management and Data Management Plan	
Type of proposal	**Maximum page limit**
Short	2 plus 1 page to address EDI questions
Thematic	3 plus 1 page to address EDI questions

9.3.6. **Relevant publications**
Relevant publications produced via DiRAC resources over the last 3 years (short annex in addition to the maximum page limit)

9.3.7. **References**
Any references should be provided in a short annex in addition to the maximum page limit.

9.4. **General guidance and important points to note:**

9.4.1. No single application may request more than 80% of the available time on any individual machine within a given year (please see Annex 1).

9.4.2. Existing Thematic Projects wishing to apply for more computing time due to additional resources becoming available at DiRAC can submit using the following methods:

- Applications with scientific themes distinct from the existing award can be submitted as a separate proposal.
- Applications building on the same scientific theme as an existing award should apply as a new project, and this new award would then replace any existing compute award. **PIs requesting for a revised or updated thematic project must justify this request fully; the RAC will take into account all currently active projects which are based on a comparable science case.**

9.4.3. Proposals should be focused on scientifically coherent themes and should contain sufficient technical and scientific detail. It should be noted that proposals with greater numbers of themes will generally result in poor coverage and potentially weaker reviews. In these cases it is advised that applicants submit multiple proposals.

9.4.4. Proposals should include adequate detail to justify the requested allocation and should be written in a way that is accessible to the RAC Panel, who may not be an expert in the given field (this especially applies to Thematic proposals).

9.4.5. Please note that the resources requested in the scientific case should match those requested in the technical case.

9.4.6. DiRAC resources are divided into four allocation periods per year, starting 1st April, 1st July, 1st October and 1st January. Successful applicants will be advised of the total amount of resources they have been allocated and the periods within which the allocations must be used. Resources must be used in the allocation period to which they were assigned; they cannot be carried over to the next allocation period. For Thematic awards the first year allocation will be fixed and subsequent years are subject to change. The allocations for each period will be shown in the DiRAC SAFE system. Applicants are required to specify the resource usage profile within the technical application form. Significant deviations from uniform profiles may be requested with adequate justification, but it is not guaranteed that they can be accommodated.

9.4.7. It is possible to request a delay to the start date of a project. This should be specified on the application form (start dates must be on the first day of a month).

10. Assessment Criteria

10.1. Proposals will be assessed according to the following criteria:

a) **Scientific Excellence** (total weighting of 50%)
- Significance of the proposed research goals with reference to the STFC Science Challenges
- Strategic value within the STFC programme
- National and international competitiveness and leadership

- Suitability and national/international standing of the investigator(s) for the proposed research

b) Project Management (weighting 10%) **and Data Management** (weighting 10%)
- Feasibility of project timeline considering the DiRAC resources requested and size of investigator team
- Project risk and mitigation analysis (include compute/storage usage, staff and technical risks)
- Publication plans
- Availability of sufficient staff effort to carry out the proposed research and make full use of the allocation.
- Direct response to the STFC Data Management policy guidelines

c) Technical Assessment by DiRAC RSE Team (total weighting 20%)
- Appropriateness of the proposed architecture/machine selection
- Justification for any Research Software Engineering Support requested
- Efficiency of resource usage and how well code(s) vectorise

d) **RAC Additional Scoring considerations** (total weighting 10%):
- Alignment of the proposal with the call guidelines.
- Full and effective usage of previous DiRAC allocations (not applicable to applicants who have not had a previous DiRAC allocation). Reasons for any under usage of previous DiRAC allocations will be taken into consideration.
- Timely submission of interim and final reports of any previous DiRAC allocation (not applicable to applicants who have not had a previous DiRAC allocation).

Please note that applicants will not be penalised if they cannot meet the criteria in bullet points 2 and 3 due to technical problems, Covid-19 related reasons, or other personal circumstances such as caring responsibilities, illness, bereavement, or periods of special leave for example.

11. Assessment Process

11.1. **Discretionary / Seedcorn Proposals**
Discretionary and Seedcorn proposals can be submitted direct to DiRAC dirac-support@epcc.ed.ac.uk at any time. They will be reviewed by the Chairs of the Sub-Panels and will not be sent out to external Reviewers. Applicants will be notified of the outcome as soon as possible, usually within one week.

11.2. **Research Software Engineer (RSE) Proposals**
The relevant RAC Sub-Panel Chair will assign a RAC Sub-Panel member to act as the Introducer for each RSE proposal received. RSE proposals will not be sent to external Reviewers. The DiRAC RSE Team will carry out a technical assessment of the RSE proposals which will be shared with the applicants for information. The RSE proposals will be discussed at the appropriate Sub-Panel meeting and at the Main Panel meeting where the final outcome of the proposals will be agreed. If the Panel has any questions regarding the RSE proposal, these will be sent to the applicants so the applicants may respond.

11.3. **Short Proposals and Thematic Proposals**
The relevant RAC Sub-Panel Chair will assign a RAC Sub-Panel member to act as the

Introducer for each project proposal received. The Introducers will suggest names for external Reviewers (referees). The number of Reviewers will depend on the amount of resource being requested, as shown in the table below. If applicants are requesting both CPU and GPU resources, the number of Reviewers will be set based on the highest level of resource they are applying for; for example, an applicant wishing to apply for 51M CPUh and 20k GPUh will have their proposal sent to 5 Reviewers. For Thematic Proposals, at least one of the external Reviewers should be a non-UK based Reviewer.

Number of External Reviewers		
Level of resource requested		Number of External Reviewers
CPUh	GPUh	
<=5M CPUh	<=50k GPUh	2
>5M CPUh but <=15M CPUh	>50k GPUh but <=150k GPUh	3
>15M CPUh but <=50M CPUh	>150k GPUh but <=500k GPUh	4
>50M CPUh	>500k GPUh but <=1.5M GPUh	5
>150M CPUh	>1.5M GPUh	5

11.4. For both Short and Thematic Proposals a member of the DiRAC RSE Team will be asked to provide a technical assessment of the proposal (as detailed in Section 10) and provide a score on the technical case. The Technical case is solely completed by the DiRAC RSE Team and will not be shared with the external Reviewers. External Reviewers will only see the scientific proposal form, case for support, data management and project management plans, and letters of verification. These documents will be sent to Reviewers via secure encrypted email and Reviewers will be asked to return their comments to STFC via secure encrypted email.

11.5. Applicants will be given an opportunity to respond in writing to Reviewers' comments. It is strongly recommended that applicants make use of this opportunity. Please note that STFC will send the Reviewers reports to applicants using secure encrypted email.

11.6. If the Panel has any questions regarding the written proposal, these will also be sent to the applicants at the same time as the Reviewer's comments so the applicants may respond.

11.7. Each proposal will be considered at a meeting of the relevant Sub-Panel. At the meeting, the Sub-Panel will provide an assessment of the proposal, taking into consideration the Reviewers reports and the applicant's response to the Reviewers reports. At this meeting an overall ranked list of the proposals will be produced.

11.8. Following the Sub-Panel meetings, a further meeting of the RAC (the Main Panel Meeting) will be convened which will include selected members from each Sub-Panel. At this meeting the resources to be assigned to each proposal will be agreed. Applicants will be notified of the outcome for their proposal and provided with feedback

as soon as possible after the RAC meeting.

12.   Code Efficiency

12.1. The aim of the RAC process is to maximise the output of high quality research by the DiRAC facility. Scientific excellence will be the primary driver for allocation decisions and the RAC will balance 'time to science' against reasonable requirements on the operational efficiency of approved projects and simulation codes. It is recognised that the cutting-edge and novel nature of research across the DiRAC community means that many DiRAC codes are under active development and may not be as efficient or scalable as more mature codes. Further, results obtained in a timely manner with a sub-optimal code will often have greater impact than results delayed by extended periods of code optimisation work. However, while it is recognised that new HPC users, or users of new codes, may not have sufficient resources or experience to provide full details of code efficiency, applicants will be required to demonstrate that their operational plan is as efficient as possible and that the architecture requested is the most appropriate for the work.

12.2. In cases of similarly ranked proposals, applicants who demonstrate more efficient use of DiRAC resources either in terms of actual code efficiency or more efficient operational strategies will be given preference.

12.3. The resources being offered in this call are based on new CPUs (AMD Rome, Intel Icelake) and GPUs (Nvidia A100) Intel Skylake. Scaling and efficiency information based on existing DiRAC services will be accepted. *If you are able to provide data from systems using the same (or similar) hardware as the new DiRAC services, please note that your request is based on these figures.*

13.   Requesting exclusive use of a DiRAC system

13.1. Some projects may include (or may consist entirely of) sub-projects which require usage of an entire DiRAC machine, or significant fraction of a machine, for a period of longer than two days. This mode of use must be explicitly justified in the proposal, and a detailed timeline for the sub-project must be included. The technical assessment of such sub-projects will include an assessment of the efficiency of machine use.

13.2. If the request is approved, a fixed start date for the sub-project exclusive usage will be agreed to enable re-scheduling of other users to other machines during the period of unavailability. Time lost due to failure to meet the approved start deadline will not be compensated.

13.3. No more than two DiRAC machines will be operating in this mode at any one time. Where this mode of operation directly impacts on another project (e.g. due to technical requirements which mean it cannot be moved to another machine) it may be necessary to sub-divide periods of exclusive use or reserve a fraction of the cores for other projects. In cases where multiple project proposals with overlapping scientific goals are received, if appropriate the RAC may invite the applicants to consider merging their proposals.

14.   Project Reporting

14.1. All projects (Thematic, Short and Seedcorn) will be required to submit reports at the end of the project describing the use of the computing allocation, use of the storage allocation, progress against objectives, achievements and publications. In addition Thematic Projects will be required to complete annual progress reports. Report templates will be provided and you will be notified when the reports are due.

14.2. The annual progress report for Thematic Projects will be assessed by the appropriate RAC sub-panel against the original peer-reviewed milestones. Confirmation of resource allocations to a Thematic Project in subsequent allocation periods will be conditional on the approval of their progress report. The report should include explicit justification for any significant deviations from the science proposed in the original work plan, and any delays should be accounted for. Thematic Projects which are deemed not to be progressing satisfactorily may have their allocations in subsequent allocation periods reduced and/or may be required to submit interim reports at six month intervals. The RAC may solicit expert Reviewers' reports in cases where scientifically significant changes to the original milestones for a Thematic Project are proposed in the annual report.

14.3. Failure to submit a satisfactory project annual report or project final report will result in subsequent proposals from the group being marked down (see paragraph 10.1, section d).

15.   Storage Policy

15.1. Please note the following information regarding the DiRAC Storage Policy:

Quota - an amount of disk that you cannot exceed.

Allocation - an amount of disk that you are guaranteed to have access to.

/home - this will be small and have quotas applied of, say, 10GB. This is for storing code, key input files, etc. but is not a working space.

/scratch or /work - this is the main working area available to all compute nodes and is quota'd by having separate volumes/file systems, one per project. The amount of space allocated to scratch can be over-allocated, hence it is a quota rather than an allocation. It is left to the users to manage their data within the limits of the set quota. However, each DiRAC site reserves the right to sweep of files which have not been accessed for a given amount of time. This is at the discretion of each site.

/data (medium term) - this is for storing results awaiting final post processing or on which more work may be required prior to publication and transfer back to the user's own institution. These will be quota'd to reduce the risk of significant overutilisation. Sweeping will be used here as well, as it is not a permanent archive, but will be on a much longer access time, say 9 months.

Archive: This is tape storage. Applicants must specify what data products they wish to

have backed up to tape. Note that DiRAC is not currently able to provide long-term data storage/curation.

Note that not all DiRAC sites have all categories of storage types described above available. DiRAC will endeavour to assign storage aligned to the categories requested but this may not be technically possible.

Annex 1: Availability of DiRAC systems for RAC 15

DiRAC Service	DiRAC system	CPU/GPU type	Resources Available			UNITS
			Year 1 (Q2 2023-Q1 2024)	Year 2 (Q2 2024-Q1 2025)	Year 3 (Q2 2025-Q1 2026)	
Data Intensive Service - Cambridge	CSD3_CPU	Intel cascade lake / Intel icelake	104.44*	128.29*	189.33*	Mcore-h
						Mcore-h
						Mcore-h
	CSD3_GPU	Nvidia A100	0.22			MGPU-h
Data Intensive Service - Leicester	DIaL	Intel skylake	70.73	100.28	100.92	Mcore-h
	DIaL-3	AMD Rome	150.04	122.94	179.40	Mcore-h
	SuperDome (6 TB RAM)	Intel skylake	1.26	1.01	1.01	Mcore-h
	3 Fat nodes (1.5TB RAM)	Intel skylake	0.95	0.76	0.76	Mcore-h
Extreme Scaling Service - Edinburgh	Tursa_GPU	Nvidia A100	1.03	0.25	3.14	MGPU-h
	Tursa_CPU	AMD Rome	5.73	4.38	5.38	Mcore-h
Memory Intensive Service - Durham	Cosma7 (16 GB/core)	Intel skylake	25.43	12.10	74.72	Mcore-h
	Cosma8 (7.8 GB/core)	AMD Rome	74.63	32.30	274.49	Mcore-h
	2 Fat nodes (4 TB RAM)	AMD Rome	1.91	1.52	1.52	Mcore-h

* figures across all CSD3_CPU systems listed

Year 1 = 1st April 2023 (Q2) – 31st March 2024 (Q1)
Year 2 = 1st April 2024 (Q2) – 31st March 2025 (Q1)
Year 3 = 1st April 2025 (Q2) – 31st March 2026 (Q1)

Annex 2: Summary of DiRAC-3 hardware

Service	CPU nodes	GPU nodes	Fat nodes	Network	Storage
Data Intensive – Cambridge	268 nodes each with: o 2x 38-core Intel Icelake CPUs o 512 or 256 GB RAM **Total: 20,368 cores**	21 nodes each with: o 4x A100-80GB Nvidia GPUs o 1TB RAM o 2x 64-core AMD Milan CPUs **Total: 84 GPUs**	N/A	3:1-blocking, 200Gb/s	3.5 PB disk
Data Intensive – Leicester	200 nodes each with: o 2x 64-core AMD Rome CPUs o 512 TB RAM **Total: 25,600 cores**	N/A	N/A	3:1-blocking, 200Gb/s	4 PB disk
Extreme Scaling – Edinburgh	6 nodes, each with: o 2x AMD Rome CPUs o 256 GB RAM **Total: 768 cores**	112 nodes, each with: o 4x A100-40GB Nvidia GPUs o 2x AMD Rome CPUs o 1 TB RAM **Total: 448 GPUs**	N/A	Non-blocking, 200Gb/s	4 PB disk
Memory Intensive – Durham	360 nodes each with: o 2x 64-core AMD Rome CPUs o 1 TB RAM **Total: 46,080 cores**	N/A	2x 4TB with AMD CPUs	Non-blocking, 200Gb/s	5.3 PB disk; 20 PB tape; 1.1 PB SSD (checkpointing)