

Quick Reference

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

Collaborative Computational Projects: Community Building, Networking and Core Computational Science Support

Call type: Invitation for Proposals

Closing date: 16:00 on 10 October 2019

Funding Available: Up to £2.5m of funding and 15 FTE *per annum* of technical computational support is available to support approximately 7-10 CCPs for a duration of up to five years.

How to apply: Full Proposals.

Assessment Process: Full proposals will undergo peer review by an expert panel. Ahead of the panel meeting the panel will read the proposals and submit queries which will be responded to by the Principal Investigators (PI). At the expert panel meeting the proposals will be prioritised based upon both the proposal and the PI responses.

Key Dates:

Activity	Date
Call for Full Proposals opens	29 July 2019
Deadline for Full Proposals	10 October 2019
Request PI response	25 November 2019
Deadline for PI Response	2 December 2019
Expert Panel	9 December 2019
Funding decision	12 December 2019
Grant start date	March 2020

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Engineering and Physical Sciences
Research Council

Collaborative Computational Projects: Community Building, Networking and Core Computational Science Support

Call type: Invitation for Proposals

Closing date: 16:00 on 10 October 2019

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

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Summary

Collaborative Computational Projects (CCPs) are inclusive, community-wide initiatives bringing together engineering and physical sciences researchers and research software development expertise. CCPs comprise researchers and developers who collaborate on large-scale scientific software development projects, maintenance, distribution, training, and user support. They provide a focal point for communities to identify their scientific software requirements and take a strategic approach to software support in a particular field.

This call is to support a further cohort of CCPs, to underpin research and research communities within the EPSRC remit. These CCPs will contribute to the development of innovative, sustainable and robust software that will ensure researchers have the e-infrastructure and skills required to undertake world-leading research, both now and in the future. Core computational science support, provided by STFC's Computational Science Centre for Research Communities (CoSeC), is available to CCPs through this call.

Applications are invited from existing CCPs (where there remains scientific software requirements) and new CCPs in fields where this demand is significant and currently unmet.

Proposals focused on research and research communities outside of the EPSRC remit will not be accepted.

Up to **£2.5m** of funding and 15 FTEs *per annum* of technical computational support is available to support new and existing CCPs that underpin research and research communities within the EPSRC remit. EPSRC expects to support approximately 7-10 CCPs for a duration of up to five years.

The deadline for submission of proposals is **16:00 on 10 October 2019**.

Background

Collaborative Computational Projects (CCPs)

Collaborative Computational Projects (CCPs) are inclusive, community-wide initiatives that bring together engineering and physical sciences researchers and research software development expertise. These communities of researchers and developers work to undertake large-scale scientific software development projects, maintenance, distribution, training and user support, and exploitation of innovative, sustainable and robust software.

CCPs are central to the development of a software infrastructure for their communities by ensuring that users are supported across a diverse range of hardware, and have trust in robust and reliable software. Hundreds of UK researchers participate in the current EPSRC CCPs. Their extensive international and industrial links enable them to contribute to ensuring that the UK remains a world leader in computational science and engineering. CCPs provide a focal point for communities to identify their scientific software requirements and take a strategic approach to software support in, and across disciplines. In addition CCPs provide training in computational science both for specific software

packages and more generally in broadening the user base of computational techniques. As a result CCPs support thriving communities of practice making an important contribution to EPSRC's Software Infrastructure Strategy.

For further information on EPSRC supported CCPs please follow the link below:
<https://epsrc.ukri.org/research/ourportfolio/themes/researchinfrastructure/subthemes/einfrastructure/software/ccprojects/>

For a full list of CCPs funded by UKRI please follow the link below:
<http://www.ccp.ac.uk/>

Scope of Call

EPSRC's Software Infrastructure and E-Infrastructure strategies describe the importance of supporting software in order to ensure that physical scientists and engineers have the e-infrastructure and e-skills required to undertake world-leading research, both now and in the future. In particular, by:

- ensuring the software codes used by the community continue to be developed and maintained in a coordinated way, using a range of funding mechanisms;
- promoting the sharing and exploitation of software to maximise the impact of computational research;
- ensuring that codes which are developed and used by communities for computational research are of a high quality, are accessible and sustainable; and
- continuing to support the development of policy and best practice in the development of reliable and reproducible research software.

The strategy notes the importance of supporting vibrant sustainable computational research communities, and developing community-led strategies. Accordingly, EPSRC is now seeking to support a further cohort of CCPs to contribute to delivering our strategy. These could include existing CCPs (where there remains scientific software requirements) and new CCPs in fields where this demand is significant and currently unmet.

EPSRC particularly encourages applications to this call that include collaborations between computational scientists, computational mathematicians and ICT researchers.

Applicants should familiarise themselves with the following documents before preparing an application for this call.

1. EPSRC's e-Infrastructure strategy, available at:
<https://epsrc.ukri.org/files/research/einfrastructurestrategy2018/>
2. EPSRC's Software Infrastructure strategy, available at:
<https://epsrc.ukri.org/files/research/softwareinfrastructurestrategy2018/>

The objectives for this round of investment are to:

- Build leadership in the relevant computational and research communities through the development of communities of practice that are able to benefit from the full potential of computational science;

- Promote software sustainability (quality and longevity) of supported software to enable and underpin high-quality UK computational research, including long term and incremental software development and maintenance projects;
- Promote the sharing and exploitation of software to maximise the impact of computational research;
- Promote and enhance computational science training and skills development;
- Establish collaborative relationships with academic and industrial partners in the UK and internationally that benefit, and enhance the profile of, the UK's research and innovation community; and
- Encourage and support multidisciplinary research endeavours; and
- Ensure that the community proactively contributes to developments in E-Infrastructure through the collaborative development of algorithms, hardware and software.

Projects solely aiming to develop or create software will **NOT** be supported through this call, although the core support work may include support for on-going software development and maintenance. CCPs will be eligible to submit proposals to software calls run by the Research Infrastructure team at EPSRC in the future.

Applicants are reminded to contact EPSRC to discuss any queries relating to remit ahead of preparing and submitting a proposal.

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

Funding available

CCPs funded through this call must focus on supporting research communities within the EPSRC's remit. Applicants are reminded to contact EPSRC to discuss any queries relating to remit ahead of preparing and submitting a proposal.

As CCPs are community-centric initiatives, applicants must be able to demonstrate that their proposals are inclusive of the communities they are targeting, and that there is a demonstrable demand for the activities being proposed. Applicants are encouraged to – where appropriate – foster links between research communities and enable multi-disciplinary working across research and innovation communities supported by UKRI.

Funding available through this is available for two categories of activities:

- Community building and networking initiatives
- Core computational science support

Community building and networking activities

Maintaining and distributing code, training, and sharing best practice are important roles performed by CCPs, together with capturing community requirements and developing a vision and future strategy for supporting the research base, including the development of multi-disciplinary research and developing appropriate links with other research communities that have the potential to benefit from computational science.

Activities undertaken by CCPs should be outward looking, leading to a wide user base. CCPs should aim to reach out to all potential users in the relevant community including industrial users. CCPs should also consider what level of international collaboration is appropriate for them and the benefits that may result from working with other CCPs.

- **Investigator salaries:** Principle Investigators can request funds to cover their salary costs for the time spent setting up, managing and co-ordinating the CCP. Requests can be made for Co-Investigator time, however this should be restricted to individuals that are have significant responsibility for the management and co-ordination of the CCP. Time spent by the PI and Co-Is on the co-ordination of the CCP is not expected to form the majority of the cost of the proposal.
- **Administrative support:** Funding for administrative support can be requested to help in the co-ordination of the network. Costs should be reasonable and normally form a small part of the request for funding. Coordination activities can also be provided by CoSeC, as detailed in Annex 1.
- **Workshop and meeting costs:** Including funding for CCP workshops and events, working group meetings, cross-CCP activities and community training.
- **Travel and subsistence:** Including support of international activities and exchanges.
- **Dissemination and communication activities:** Including web-based dissemination and impact activities such as collecting and publishing case studies.
- **Industrial outreach:** Including short-term pilot projects and secondments.

Core Computational Science Support

Core support through the Service Level Agreement that EPSRC holds with STFC's Computational Science Centre for Research Communities (CoSeC) can be applied for as part of this call. Support available includes:

- Development and maintenance of community software including development and implementation of methods and algorithms, distribution and license management.
- Expert technical advice.
- Training in computational methods and specific software packages.
- Support for the organisation of networking, coordination, and training activities.

All Applicants applying to the call need to carefully consider if they require core support from CoSeC. If applicants require further information on the support available from CoSeC they need to contact the CoSeC Director, Barbara Montanari (barbara.montanari@stfc.ac.uk; +44(0)1235 778134) directly. Please see Annex 1 for further details on CoSeC.

All applicants requesting core support from CoSeC **must** contact the CoSeC Director before **1 September 2019** to discuss their requirements and work plan for their FTEs. Applicants are expected to develop their proposal in collaboration with CoSeC. CoSeC will provide applicants with a technical assessment that must be submitted as part of their application. The technical assessment will cover:

- Whether the work proposed is deemed feasible/achievable;
- Whether the resourcing is adequate for the work plan; and
- Whether CoSeC is currently able to provide the requested resource and expertise required to carry out the work.

There is no requirement to contact CoSeC for those applicants who do not request CoSeC support in their proposal.

It is not necessary to enter the level of core support requested on the proposal form as there is no proposal cost associated with the core support. However the level and type of support requested should be clearly stated in the Case for Support along with information on the proposed work that will be undertaken. Any requested core support should be clearly aligned with the scientific needs and interests of the research community. **The level of core support requested should also be clearly stated and justified in the Justification of Resources.**

Applicants are reminded that a total of 15 FTEs per annum of core support is available.

Further information and contact details for CoSeC are provided at the end of this document in in **Annex 1**.

Work plan prioritisation

Applicants must include information on what CCP activities would be prioritised if a **lower** than requested level of **grant funding** or **core support** was available.

This prioritisation of activities should be addressed at the end of the Case for Support document and clearly stated and explained in the Justification of Resources document. The diagrammatic work plan should also show which activities would be prioritised in a lower funding scenario.

In order to maximise the impact of the CCP portfolio, EPSRC reserves the right to negotiate levels of resources provided to any of the CCPs with applicants following the assessment of proposals. Negotiations will be guided by the recommendations of the evaluation panel and will take into account the available budget, availability of computational science core support, and disciplinary coverage.

Start Dates

Grants awarded from this call to existing CCPs (i.e. any proposal substantially continuing and building directly upon the networking and core support work of a CCP currently being funded by EPSRC) may not start until after the end date of their current EPSRC funded CCP grant. The proposed start date must be immediately after the existing project's end date.

Grants awarded to new CCP's will be expected to start in March 2020.

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.

In accordance with these commitments, successful applicants will be required to work with EPSRC and their CCP network to ensure that any access arrangements to their activities are inclusive and incorporate good practice.

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://sfдора.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

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

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/>

Please ensure sufficient time to create Je-S accounts for Investigators who do not currently have one.

How to apply

Submitting an application

You should prepare and submit your proposal using the Research Councils' Joint electronic Submission (Je-S) System (<https://je-s.rcuk.ac.uk/>).

When adding a new proposal, you should select:

- Council 'EPSRC'
- Document type 'Standard Proposal'
- Scheme 'Standard'
- On the Project Details page you should select the 'CCP Networking 2019' call.

Note that clicking 'submit document' on your proposal form in Je-S initially submits the proposal to your host organisation's administration, not to EPSRC. Please allow sufficient time for your organisation's submission process between submitting your proposal to them and the call closing date. EPSRC must receive your application by **16:00 on 10 October 2019**.

Guidance on the types of support that may be sought and advice on the completion of the research proposal forms are given on the EPSRC website (<https://epsrc.ukri.org/funding/applicationprocess/>) which should be consulted when preparing all proposals.

Guidance on writing an application

Your application must include the following:

Case for Support (8 pages in total). To include the following sections:

- **Track Record (up to two sides of A4):**

A track record of the project team should be included indicating their skills and expertise in software development, their experience and standing in the research domain that the CCP is in and their experience in co-ordinating and managing networking and community based activities.

Information on key research groups that have been involved in the development of the proposal can also be included in the track record.

- **Description of proposed CCP and its context (up to six sides of A4):**

The case for support should include details on the following areas:

- a detailed description of the aims and objectives of the proposed CCP and its scientific remit;
- an explanation should be given of how the proposed CCP will contribute to addressing an unmet need for software training and development in the research community;
- information should be provided on the programme of work covering the networking activities and community engagement of the CCP;
- an explanation of the national importance of the proposed CCP and how it aligns to EPSRC priorities should also be included in this section;
- a work plan for the core support, prepared in collaboration with STFC's CoSeC (if CoSeC support is requested);
- an explanation of the role that the Investigators and any advisory bodies will have during the course of the project; and
- critical success factors against which the CCP activities can be assessed in future.

Information on EPSRC's portfolio and Balancing Capability strategy can be found here:

<https://epsrc.ukri.org/research/ourportfolio/balancing-capability/>

Pathways to impact document (up to two sides of A4)

For general advice on preparing a pathways to impact document, see:

<https://epsrc.ukri.org/funding/applicationprocess/preparing/impactguidance/>

In addition, the applicant should address the following **specific** issues in this section:

- **Participants and Beneficiaries:** The CCP's long-term strategy for wide community engagement, including appropriate links with industrial and international users and other CCPs, should be expanded upon in the Pathways to Impact document. Information on groups and individuals who have either been consulted during the writing of the bid, or who have agreed to participate in CCP activities can also be included here.
- **Software Sustainability:** A specific section of the pathways to impact document should be dedicated to detailing the proposed management plan of any software outputs (including documentation and other related material) that will be produced by the CCP. This should include information on who is responsible for releasing the software, the revision control process to be used, the licensing of outputs and information on the use of repositories or other access mechanisms.

Justification of the resources requested (up to two sides of A4)

- All resources requested must be fully justified, including the level of requested core support.
- Information and costs associated with the “Work plan prioritisation” should be included at the end of the justification of resources.

Work plan (up to one side of A4)

- The diagrammatic work plan should clearly show which activities would be prioritised in a lower funding scenario.

CVs (up to two sides of A4 each)

- For named post-doctoral researchers, visiting researchers and researcher co-investigators, where applicable. No CVs will be accepted for PI and Co-Is.

Statements of support from any project partners (no page limit)

- Letters of support from all project partners should be included as an attachment.

Letters of Support

- A Technical Assessment from CoSeC must be submitted where core support from CoSeC has been requested (see Annex 1).
- No other letters of support will be accepted unless there is a direct and clear monetary or in kind contribution to a specific aspect of the proposal from an organisation that cannot be listed as a project partner.

Additional documentation will not be accepted after the deadline. Please note that proposals not accompanied by the correct documentation will be rejected.

Applicants should use the Ethical Information section on the Je-S form to demonstrate to peer reviewers that they have fully considered any ethical issues concerning the material they intend to use, the nature and choice, current public perceptions and attitudes towards the subject matter or research area. EPSRC will not fund a project if it believes that there are ethical concerns that have been overlooked or not appropriately accounted for. All relevant parts of the Ethical Information section must be completed. 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.

Further guidance on completing the Je-S form can be found at <https://je-s.rcuk.ac.uk/Handbook/pages/GuidanceonCompletingaStandardG/EthicalInformation.htm>. 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/>).

Please note that on submission to EPSRC **all** non-PDF documents uploaded onto Je-S are converted to PDF, the use of non-standard fonts may result in errors or font conversion, which could affect the overall length of the document.

For advice on writing proposals see:

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

Assessment

Assessment process

Full proposals will undergo review by an expert panel. Proposals will go out to the expert panel ahead of the panel meeting to allow the panel to review the applications. The panel may raise questions regarding each application and the Principal Investigators will be invited to submit a response to these. Requests for these responses will be made before **25 November 2019** and responses must be returned before **2 December 2019**. These Principal Investigators responses will be considered with all other documentation at the panel meeting.

Feedback from the panel meeting will be provided to applicants.

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 proposals will be assessed against the following criteria:

- **Quality (Primary):** the prospective contribution of the proposed CCP to building leadership in the relevant research and computational communities. In particular taking into consideration:
 - the quality of the proposed networking activities for widening participation, promoting skill development in the community and encouraging collaboration (as detailed in the objectives);
 - the contribution of the proposed CCP to underpinning and enabling communities to conduct research of the highest quality; and
 - the quality of the software development and maintenance work proposed by the CCP including the core support activities addressing a scientific need (if requested).
- **Impact (Secondary):** the quality of the pathway to impact statement and the quality of the proposed management plan for any software outputs produced by the CCP.
- **Applicants (Secondary):** Strength and appropriateness of the applicants, including the applicants' track record and ability to deliver the proposed work.
- **Resources and management (Secondary):** the suitability of the requested resource and the proposed work plan and management arrangements.

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. EPSRC reserves the right to modify or add to these on award as required:

GAC 1 Networking

This grant is awarded on the understanding that, in addition to the core research programme, the project will undertake a wider networking role with the research and user community outside its membership. This may involve coordination of activities such as meetings, workshops or seminars on behalf of the EPSRC. A dedicated website must be set up within six months of the start of the grant and regularly maintained to provide a resource for engagement with the wider community.

This grant is expected to further develop the network including its academic and user (e.g. policy, business, NGO) membership throughout the period of funding in order to maximise its impact on a wide range of disciplines. As part of the grant; networks must identify ambitious 'real-world' challenges, which require a multi-disciplinary approach and will form an agenda for future research in the area.

GAC 2 Management Structure

The Grant Holder should have established an appropriate management structure with clear lines of responsibility and authority to oversee the day-to-day running of the project. This should be in place within six months of the start date of the grant. The terms of reference and management structure, including the Director, co-Director and senior investigators must be approved by EPSRC in advance. As must any changes to this structure. The Project Officer will be EPSRC's main contact with the project, and must receive all meeting minutes of the management committees. EPSRC reserve the right to attend any meetings.

GAC 3 Review

In addition to the requirements set out in standard UKRI grant conditions RGC 7.4 Research Monitoring and Evaluation, 7.5 Disclosure and Inspection, EPSRC reserve the right to instigate a review of all or part of the grant at any stage during the lifetime of the award as well as after the grant has finished. Any such review will assess the performance of the grant in line with the peer reviewed body of work, published scheme assessment criteria and Key Performance Indicators/milestones and deliverables. EPSRC will give the Grant Holder due notice of the date of any review and will provide details of the Terms of Reference and documentation required.

Repeatedly Unsuccessful Applicant policy

Submissions to this call will **not** count towards the Repeatedly Unsuccessful Applicants Policy. Further information about the policy can be found at:

<https://epsrc.ukri.org/funding/howtoapply/basics/resubpol/rua/>

Key dates

Activity	Date
Call for Full Proposals opens	29 July 2019

Deadline for Full Proposals	10 October 2019
Request PI response	25 November 2019
Deadline for PI Response	2 December 2019
Expert Panel	9 December 2019
Funding decision	12 December 2019
Grant start date	March 2020

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

Contacts

Requests for help and advice concerning the writing and costing of your proposal should be addressed to your institutional Research Office in the first instance. Please ensure sufficient time is allowed ahead of the closing date to accommodate your Research organisation's submission process.

If you have any questions about preparing and submitting your proposal using Je-S, please contact the Je-S helpdesk (JeSHelp@rcuk.ac.uk, 01793 444164).

For other queries not addressed in the call document please contact:

Sarah King (Sarah.King@epsrc.ukri.org; +44(0)1793 444415)

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Change log

Name	Date	Version	Change
Sarah King	26/6/19	1	N/A
Sarah King	26/7/19	2	Updated to incorporate comments from Peer Review and Theme Lead
Kieran Jarrett	1/8/19	3	Updated annex 1 to clarify funding of non-EPSRC CCPs supported by CoSeC.

Je-S attachments Check List

Standard:

Attachment Type	Maximum Page length	Mandatory/Optional	Extra Guidance
Case for Support	Eight pages	M	Comprising up to two A4 sides for a track record, and six A4 sides describing proposed research and its context.
Pathways to Impact	Two pages	M	
Workplan	One page	M	
Justification for Resources	Two pages	M	
CVs	Two pages each	As Required by EPSRC	For named and visiting researchers, and researcher co-investigators only.
Project Partner Letters of Support	No page limits	As Required by EPSRC	Must be included from all named project partners. Must be on headed paper, and be signed and dated within six months of the proposal submission date.
Letters of Support	No page limits	As Required by EPSRC	In exceptional circumstances a maximum of three letters can be submitted. Note: one letter of support will contain the CoSeC technical assessment.
Proposal Cover Letter	No page limit	Optional	The cover letter can be used to highlight any important information to EPSRC. This attachment type is not seen by

			reviewers or panel members.
Other attachment	No page limit	As required, at EPSRC request only	This can be used for a document that does not fit under any of the headings above. This attachment type is not seen by reviewers or panel members.

Please ensure you adhere to the above attachment requirements when submitting your proposal. Any missing, over length or unnecessary attachments may result in your proposal being rejected.

Annex 1: Core Support from CoSeC in STFC's Scientific Computing Department

The [Scientific Computing Department](#) (SCD) of the [Science and Technology Facilities Council](#) (STFC) provides computational science support for a number of scientific communities funded by [EPSRC](#), and organised in [Collaborative Computational Projects](#) (CCPs) and [High End Computing](#) (HEC) Consortia. This programme of work is carried out by staff at the Daresbury and Rutherford Appleton Laboratories under a Service Level Agreement (**SLA**) with EPSRC. This is therefore often referred to as the SLA Programme or STFC/Daresbury core support. The nature of the support provided differs depending on the needs of the communities:

- **Development of theory, algorithms, and software:** This is a key element of support for many current projects, resulting in long-term, continued expansion and updating of the software programs. It may include the consolidation of existing codes into a more sustainable community software package.
- **Maintenance, distribution, license management, dissemination and demonstration of software**
- **User support and training:** This includes individual support and training as well as help to organise events such as summer schools and study weekends, and contribute to the teaching and preparation of training materials.
- **Collaboration on scientific projects:** This is often offered to the CCP community members who are not experts in the specific computational methods or software.
- **Porting, optimisation, and benchmarking for HPC and new architectures:** The core support benefit from access to the wide range of cutting-edge computer architectures present in SCD.
- **Management of scientific data:** This includes activities such as, for example, the development of visualisation and workflow management tools, database and archiving, and verification and validation activities.
- **Co-ordination and networking support:** Assist the CCP Chair with planning and reporting of the project, and provide administrative support for community activities such as scientific and executive meetings and visitor programmes. Support is also available for project websites.

CoSeC, the [Computational Science Centre for Research Communities](#), brings together these activities with those in support of CCP4 (funded by BBSRC with contribution from MRC) and CCP-EM (funded by MRC with contribution from BBSRC). Further information about the policy can be found at: <https://www.scd.stfc.ac.uk/Pages/CoSeC.aspx>

The core support team are embedded in the Department and can access specialist expertise in the relevant fields such as computational mathematics, software engineering, data management, machine learning, etc. Some relevant activities are summarised here:

The Software Outlook Programme

This activity, funded by EPSRC under the SLA, deals with novel and emerging HPC technologies that underpin software development in other parts of the

programme. This includes evaluation of new programming techniques that are essential for the timely and cost-effective exploitation of current and near-future systems and demonstrating how specific software technologies can be applied to existing applications.

The following activities are funded under mechanisms other than the SLA:

ANVIL: Research Software Testing Platform

ANVIL is a platform for running software tests on a range of platforms in an automated manner. A range of open source compilers, tools and libraries are available through the ANVIL platform

Physical Science Database Service

The Physical Science Data-science Service is a new National Research Facility supported by EPSRC as an evolution of the current Chemical Database Service. Hosted by the University of Southampton and STFC, the PSDS aims to support UK researchers across the physical sciences by enabling access to data resources, both commercial and open source.

Further, it will act as a hub for coordinating and integrating data, so that users can efficiently use data in combination to further their analysis.

Computational Mathematics Group

SCD's Computational Mathematics group has particular strengths in the fields of numerical linear algebra and continuous optimization. The Group has a threefold mission: to support the mathematical needs of STFC's experimental Facilities and associated bodies; to develop and distribute library-quality mathematical software; and to carry out world-leading research in the field of numerical analysis.

The Scientific Machine Learning Group (SciML Group)

The Scientific Machine Learning (SciML) Group within STFC focusses on the development and application of machine learning techniques for advancing fundamental science. In doing that, the group works with various facilities within STFC, various universities, and US labs, covering different domains of science, including particle physics, space, environmental, molecular and material sciences the group is also spearheading the development of a novel benchmarking suite for assessing machine learning ecosystems applied to scientific data.

Contact

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