ARCHER2 CSE Quarterly Report

January–March 2026

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CSE Quarterly Report

This section of the report covers the period January—March 2026 for the ARCHER2 service.

Executive Summary

- CSE met or exceeded all the Performance Metrics.
- CSE contributed to a very successful ARCHER2 Celebration of Science.
- The PowerSched evaluation has progressed to its final phase, with results so far presented at the Celebration of Science.
- Work has begun to upgrade the development environment on the GPU Development System.
- The Spack Version 1.0 software-management suite was rolled out to users.
- A series of eCSE talks was given at the ARCHER2 Celebration of Science (19 – 20 March 2026). These talks focussed on projects from the GPU eCSE programme. The eCSE programme also featured in an interactive session focussing on diversity within the eCSE programme.
- A total of 18.5 days of training has been delivered as part of the ARCHER2 CSE training programme.
- Women in HPC welcomed new chapters from Canada and the Middle East/ North Africa regions

Forward Look

- The ARCHER2 team is one of only 13 exhibits selected for the Royal Society Summer Science Exhibition.
- The CSE team will work with HPE Centre of Excellence staff to complete the evaluations of PowerSched and a new node image for the GPU Development System.
- The 2026 annual training programme will be finalised.
- CCP9 and the CSE team is organising a hackathon on directive-based GPU acceleration of Fortran codes.
- CSE will present a session on “Research software development funding calls” at the Durham HPC Days meeting.
- Women in HPC will run a rich and diverse programme of EDI activities as part of the ISC’26 main programme.
- Preparations for the annual ISO external audits for ISO 9001 - Service Delivery, ISO 27001 - Information Security, and ISO 22301 - Business Continuity and Disaster Recovery.

ARCHER2 Centralised CSE Team

A highlight of the period has been the ARCHER2 Celebration of Science event, held in Edinburgh during 19th—20th March. The CSE team made significant contributions to both the organisation and the programme of the event, including identifying suitable speakers from the publications list created by London Economics in their evaluation of ARCHER2, with a goal to find high-impact science, covering the range of research on ARCHER2. CSE staff also contributed by chairing sessions, contributing discussion topics, and running an ARCHER2 stall with exhibits such as the ARCHER2 virtual tour.

Within the technical programme, CSE staff used the poster session to highlight more of the science undertaken on ARCHER2, including:

- "Understanding weather and climate dynamics using high-resolution global cloud resolving models", Diego Canul-Reyes, Marc Imberger, Evgenij Belikov, Vanesa Magar, Alfredo Peña, Neil P. Chue Hong.
- "An investigation of Powersched on ARCHER2", Holly Judge, Douglas Shanks, Evgenij Belikov, Kevin Stratford.
- "Environmental Sustainability at the Advanced Computing Facility", Lorna Smith and Paul Clark.

Also, in the period, the annual UK Turbulence HEC Meeting was held in Edinburgh during 26th—27th March and the CSE team was invited by the consortium to run a stand at the event. Alongside a decommissioned ARCHER2 blade and a display of previous submissions to the ARCHER2 image competition, the VR tour of the ARCHER2 computer and plant rooms at the ACF has proved to be popular. Further, William Lucas (UKTC Consortium Contact) gave a service update take as part of the meeting programme.

The Materials Chemistry HEC ran a VASP workshop, 19th—21st January, London, to which Andy Turner (as Consortium Contact) presented on "VASP GHG emissions efficiency" (online).

Other contributions include:

- Andy Turner contributed to a session on emissions training development, on 25th February (Imperial College).

- Andy Turner (with Kieran Leach), presented to Materials Design Inc, about MedeA Workflow software on UK national facilities (6th March, online).

- Andy Turner participated in the "UKRI DRI: New Approaches to Skills" meeting on 11th March, at UCL, London.

Continual Service Improvement (CSI) Projects

PowerSched

A further round of testing has been completed by CSE during the period, following improvements to PowerSched made by HPE and the developers at HLRS, in response to initial feedback. These results were shared at the Celebration of Science event and, building on these, CSE anticipate wrapping up testing in the coming period, with an evaluation of PowerSched's ability to capping the power draw of a group of nodes. Power capping has the potential to provide a light-touch control to help mitigate the impacts of warm weather on the ARCHER2 cooling system during the summer months.

Updates to the ARCHER2 GPU Development System

Building on the capabilities of the bespoke node-image-distribution system developed by HPE for the ARCHER2 Software Update in late 2025, CSE has begun a new collaborative project with HPE to update the base software on the GPU Development System nodes. Previously, this had been constrained by a dependence on the Cray System Management environment, meaning the user-facing development software (drivers and tools) had become outdated and less useful for building up competence in GPU-based computations.

During the period, HPE created several newer node images – in particular, featuring a much newer version of AMD's GPU software (ROCm) – which has then been tested by CSE and a small number of

experienced ARCHER2 users. At the time of writing, testing is progressing well and the team is optimistic that the updates may be fully rolled out in the coming period.

Spack Version 1.0 Deployment

As noted in the previous report, the Spack developers published Version 1.0 of their software-management suite in December 2025, paving the way to a more stable Spack experience. The CSE team has updated the centrally supported Spack deployment on ARCHER to Version 1.0 (mirroring similar work on the recently announced Cirrus National Compute Resource (NCR)), plus took advantage of recent improvements to enable user-module creation within Spack, which means users can install local copies of software package and integrate them into their module environment, in the same way that CSE do for centrally supported software.

Performance Report

This is the performance report for the ARCHER2 CSE Service for the Reporting Period. The metrics were specified by EPSRC in Schedule 2.2 of ARCHER2 CSE Service Contract, as follows.

CSE Query Metrics

- **ARCHER2_CSE_Level1 (MTR)**: The Median Time to Resolution, as measured by Working Days (WDs), of all CSE queries falling within Level 1 resolved by the Contractor in the Reporting Period. *MTR applicable to OY5: Service Threshold: >4 WD; Operating Service Level: >1 WD, ≤2 WD.*
- **ARCHER2_CSE_Level2 (MTR)**: The Median Time to Resolution, as measured by Working Days (WD), of all CSE queries falling within Level 2 resolved by the Contractor in the Reporting Period. *MTR applicable to OY5: Service Threshold: >25 Working Days (WD); Operating Service Level: >10 WD, ≤15 WD.*
- **ARCHER2_CSE_Level3 (MTR)**: The Median Time to Resolution, as measured by Working Days (WD), of all CSE queries falling within Level 3 resolved by the Contractor in the Reporting Period. *MTR applicable to OY5: Service Threshold: >55 Working Days (WD); Operating Service Level: >25 WD, ≤35 WD.*
- **ARCHER2_CSE_TA (%):** The percentage of the total number of Technical Assessments (TAs) assigned to the Contractor in the Reporting Period completed prior to the commencement of the applicable TA Target Completion Date after the assignment of such Technical Assessment to the Contractor. *TA Target Completion Date in OY5: 6 WD; Service Threshold: <90.00%; Operating Service Level: 95.00-97.49%.*
- **Initial Response to Queries (%):** The percentage of the total number of CSE queries assigned to the Contractor in the Reporting Period responded to within 3 Working Hours. *Service Threshold: <96.00%; Operating Service Level: 98.00 – 98.99%.*
- **Query User Satisfaction (%):** The percentage of the total number of query satisfaction surveys completed in each Reporting Period, rating the quality of the resolution of Queries by the Contractor as “Good”, “Very Good” or “Excellent”. *Operating Service Level: 82.00 – 87.99%.*
- **Training User Satisfaction (%):** The percentage of all training satisfaction surveys completed in each Service Period, rating the Contractor as “Good”, “Very Good” or “Excellent”. *Operating Service Level: 88.00%-92.99%.*

Metric	Jan 2026		Feb 2026		Mar 2026		Q1 2026	
	Perf	Points	Perf	Points	Perf	Points	Perf	Points
ARCHER2_CSE_Level1 (MTR)	0.1WD	-2	0.1WD	-2	0.1WD	-2	0.1WD	-6
ARCHER2_CSE_Level2 (MTR)	0.4WD	-2	0.7WD	-2	0.9WD	-2	0.7WD	-6
ARCHER2_CSE_Level3 (MTR)	27WD	0	11WD	-2	1	-1	15WD	-2
ARCHER2_CSE_TA (%)	100%	-1	100%	-1	100%	-1	100%	-3
Initial Response to Queries (%)	100%	-1	100%	-1	100%	-1	100%	-3
Query User Satisfaction (%)	100%	-2	100%	-2	100%	-2	100%	-6
Training Satisfaction (%)	100%	-1	100%	-1	100%	-1	100%	-3
Total		-9		-11		-9		-29

Table 1: CSE Service Performance during January—March 2026

Forty query feedback responses were received on query resolution in the Reporting Period. 100% of responses had a score of “Good”, “Very Good” or “Excellent”.

CSE Queries

This section provides details on ARCHER2 CSE queries during the Reporting Period.

CSE Query Statistics

The metrics were specified by EPSRC in Schedule 2.2 of ARCHER2 CSE Service Contract.

- **Assigned:** The number of CSE queries assigned to the Contractor within each query resolution category in the Reporting Period.
- **Resolved:** The number of CSE queries resolved by the Contractor within each query resolution category in the Reporting Period.
- **Backlog:** The number of CSE queries assigned to the Contractor that remained unsolved within each query resolution category in the Reporting Period.
- **Correspondence:** The average number of pieces of correspondence generated for CSE queries in each query resolution category.
- **First Response:** The average time taken for the Contractor to first respond to the Originator of the CSE query.

Jan 2026					
Service level	**Assigned**	**Resolved**	**Backlog**	**Correspondence**	**First Response**
ARCHER2_CSE_Level1	21	19	2	2	0.3h
ARCHER2_CSE_Level2	29	19	20	15	0.2h
ARCHER2_CSE_Level3	2	1	3	33	0.2h
ARCHER2_CSE_TA	7	7	0	7	0.7h
Feb 2026					
Service level	**Assigned**	**Resolved**	**Backlog**	**Correspondence**	**First Response**
ARCHER2_CSE_Level1	78	80	0	2	0.2h
ARCHER2_CSE_Level2	24	30	14	12	0.3h
ARCHER2_CSE_Level3	0	2	1	40	0.3h
ARCHER2_CSE_TA	2	2	0	7	0.2h
Mar 2026					
Service level	**Assigned**	**Resolved**	**Backlog**	**Correspondence**	**First Response**
ARCHER2_CSE_Level1	77	77	0	2	0.2h
ARCHER2_CSE_Level2	38	35	17	12	0.3h
ARCHER2_CSE_Level3	1	0	2	0	-
ARCHER2_CSE_TA	1	1	0	4	0.3h
Q1 2026					
Service level	**Assigned**	**Resolved**	**Backlog**	**Correspondence**	**First Response**
ARCHER2_CSE_Level1	176	176	0	2	0.2h
ARCHER2_CSE_Level2	91	84	17	13	0.3h
ARCHER2_CSE_Level3	3	3	2	38	0.3h
ARCHER2_CSE_TA	10	10	0	7	0.5h

CSE Query Categories

A total of 273 queries were resolved by the ARCHER2 CSE service in the Reporting Period. Resolved CSE queries in the Reporting Period fell into the following categories:

Service level	Category	N. Resolved	% Queries
ARCHER2_CSE_Level1	Courses	176	64.5%
ARCHER2_CSE_Level2	3rd party software	25	9.2%
	Batch system and queues	14	5.1%
	Software errors	10	3.7%
	Software installation	8	2.9%
	Data transfer	5	1.8%
	Porting, performance and scaling	5	1.8%
	Compilers and system software	4	1.5%
	Storage and compute resources	4	1.5%
	Other	3	1.1%
	Courses	2	0.7%
	Login, passwords and ssh	2	0.7%
	Access to services	1	0.4%
	Hardware issue	1	0.4%
ARCHER2_CSE_Level3	3rd party software	1	0.4%
	Batch system and queues	1	0.4%
	Software installation	1	0.4%
ARCHER2_CSE_TA	Pump-priming	5	1.8%
	Access to HPC	4	1.5%
	Grant	1	0.4%
Total		273	100.0%

Training

As part of ARCHER2, the service has been developing and delivering a training programme for the ARCHER2 community. During the first quarter of 2026, the CSE service has provided a total of 18.5 days of training, scheduled as follows:

Dates	Course	Location	Days	Attend
22-23 Jan	Data Carpentry	Cardiff	2	15
4 Feb	Getting started with ReFrame on ARCHER2	Online	0.5	9
18 Feb	Quantum Computing without a Quantum Computer	Online	0.5	32
23-24 Feb	Data Analysis and Visualisation in Python	Online	2	5
25-27 Feb	GPU Programming with Kernels	Online	3	12
26 Feb	Green Software Use on HPC	London	1	19
2-4 Mar	Introduction to Modern Fortran	Online	3	15
3 Mar	Using bash. Some handy features.	Online	0.5	35
9, 11, 13, 16, 18 Mar	GPU programming with OpenMP	Online	2.5	12
11 Mar	Revealing hidden nanobubble behaviour with MD sim.	Online	0.5	11
18 Mar	Fortran Unit Testing Tools	Online	0.5	17
23-24 Mar	Reproducible comp. env. using containers	Online	2	12
25 Mar	ARCHER2 Outreach and Public Engagement	Online	0.5	17

Most courses were delivered online, except for Data Carpentry and Green HPC. Attendance was particularly high for the Bash and Quantum webinars, indicating strong interest in those topics. Longer technical courses, such as GPU programming and Fortran, also attracted steady participation, demonstrating continued demand for advanced HPC and programming.

On the feedback for online courses, attendees rated a course on a scale of 1–5 ("Very Bad", "Bad", "Good", "Very Good", and "Excellent").

The average feedback using this metric was 4.2: that is, better than "Very Good". Users provided 43 responses: a response rate of 48%. Please note that the feedback from the Software Carpentry course has not been included due to its proximity to the date of this report.

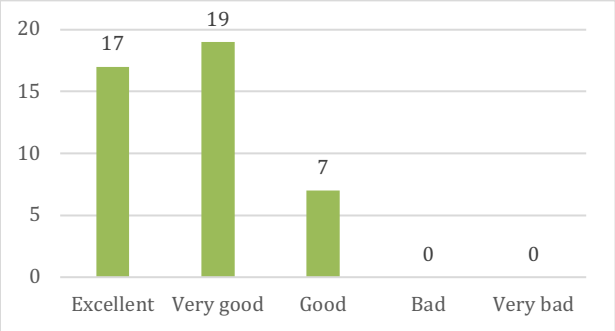

Table 2: Participant feedback for online training courses held during the period.

Embedded CSE Programme (eCSE)

The eCSE team has continued to collect final reports from completed ARCHER2 eCSE projects during the period, and to publish summaries of these on the ARCHER2 website.

At the time of writing, three ARCHER2 eCSE projects are on-going and all should be finished by August 2026. All twelve GPU eCSE projects are on-going. A number of eCSE projects were showcased at the ARCHER2 Celebration of Science.

Looking forward, a session on "Research software development funding calls" has been accepted for the Durham HPC Days (15th–19th June). This will include information and discussion on eCSE-like funding and the extent to which it meets the needs of the computational research community.

Community Engagement, Outreach, Collaboration and Impact

Benefits Realisation

Two new case studies have been published during the period:

- 'Engineering clean water by freezing: Using vibrations for desalination' investigating the use of freeze desalination to produce clean fresh water.
- Simulations to Safer Designs: Accelerating the Deployment of Advanced Nuclear Reactors investigating the behaviour of nuclear reactors under adverse conditions to improve safety.

A London Economics report has been published on the impact of the ARCHER2 service, concluding that every pound invested in ARCHER2 delivered an eightfold return: that is, £4.2bn for the UK economy. This was covered in an ARCHER2 News item.

Blogs

Four blogs have been published this quarter.

Community and Outreach Activities

The Outreach team demonstrated some of their outreach activities to participants at ARCHER2 Celebration of Science, including:

- Spintronics—mechanical electrical circuit toy, we use to demonstrate how logic gates work.
- VR tours—tour of ARCHER2 at the ACF and visualisations of wind turbine simulations.

On 25th March, the CSE team delivered at Outreach and Public Engagement webinar giving an overview of what, why and how. It included a brief introduction to the different types of outreach and engagement aimed at a variety of groups, plus included live demos of activities we are taking to events over the rest of the year.

Looking to the future, the ARCHER2 team has been accepted as one of a small number of exhibitors at the 2026 Royal Society Summer Science Exhibition (30th June—5th July, London). At this prestigious event, we will showcase the value of supercomputing to the public. Our booth will also consider the environmental cost of running these services and how this cost is being addressed. Over the course of the week, attendees will be able to take part in a series of activities. There is a fun, hands-on, hook the duck activity introducing supercomputing. There is a fast interactive game allowing participants to utilise their own data centre to regenerate their own island while working to reduce the environmental cost of running their services. Finally, attendees will utilise VR to dive into the centre of scientific simulations from the service, showcasing the societal value of these services.

Diversity and Inclusivity

As of early 2026, the Women in HPC (WHPC) initiative, led by EPCC, has expanded to support 33 local community groups spanning 6 continents. Growth has continued with the addition of new representation in the MENA region and in Canada, alongside renewed engagement from established chapters. This momentum has been driven by the continuation of twice-monthly Global Committee meetings, starting in November 2025 and led by Eleanor Broadway, to drive collaboration and support across the international network.

WHPC has strengthened external partnerships through collaboration with the European High Performance Computing Joint Undertaking, supporting career development and community building through outreach and storytelling from women in HPC.

In celebration of International Women's Day (March 8th) and Women's History Month (March), Eleanor led a global WHPC campaign to amplify community voices, alongside a special edition initiative recognising 9 influential women in HPC. These activities increased visibility and fostered a strong sense of belonging across the community.

Looking ahead to the ISC High Performance conference, Eleanor is leading the renewed partnership between the ISC Group and WHPC to deliver diversity and inclusion initiatives for all conference attendees. Preparations for ISC 2026 include an expanded programme with new community-led initiatives for WHPC Moderators and meet-ups, and continued support of early-career poster presenters through travel fellowships. In the current period, the Women in HPC poster track attracted strong engagement, with 24 submissions and a competitive 40% acceptance rate.

Outside of this, Eleanor has been selected as part of the inaugural cohort of EDI Hub+ Inclusion Advocates, which will connect her into the EPSRC ecosystem of EDI best practice and advice to better deliver work with WHPC and other endeavours. Eleanor has also been invited to join the ISC Steering Committee for ISC 2027 to advocate for women in HPC and contribute to the shaping of the future conference.

Most recently, an interactive session at the ARCHER2 Celebration of Science enabled open discussion on EDI topics, covering event inclusivity, web accessibility, training, and the eCSE programme led by members of the ARCHER2 team. Attendees actively contributed feedback, helping shape more inclusive practices for the ARCHER2 team.

Quality Management, Information Security and Business Continuity

EPCC is preparing for the annual, external audit for the three ISO standards we hold:

- ISO 9001 for quality service delivery.
- ISO 27001 for information security.
- ISO 22301 for business continuity and disaster recovery.

The external audit spends 10 days with us while we produce the evidence to show what we have been doing to improve our service and how we have complied with the standards.

This year we are starting to prepare to implement a fourth standard, ISO 14001. This is an environmental standard and reflects the importance we put on minimising our impact on the environment. This is especially important when running a datacentre which is a major consumer of electricity. The standard covers a diverse range of topics, ranging from badgers and bats in the datacentre grounds, through the cleaning products used by the cleaners to of course the clean energy we use.