



# ARCHER2 Quarterly Report

October– December 2023

EPCC

The University of Edinburgh



## Document Information and Version History

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<b>Reviewer(s)</b>	Alan Simpson

Version	Date	Comments, Changes, Status	Authors, contributors, reviewers
0.1	2023-12-21	Initial draft	Juan RH
0.2	2024-01-03	ARCHER2 CSE queries performance report, statistics and analysis added.	Xu Guo
0.3	2024-01-09	eCSE section	Chris Johnson
0.4	2024-01-11	First full version	Lorna Smith
0.5	2024-01-12	Reviewed	Alan Simpson
1.0	2024-01-15	Version for UKRI	Lorna Smith, Alan Simpson

## ARCHER 2 Quarterly Report

This section of the report covers the period October 2023 – December 2023 for the ARCHER2 service.

### ARCHER2 Executive Summary

- The eCSE11 call opened on 12 September 2023 with an expanded scope to include the development of software for GPU architectures. 12 proposals were funded.
- The ARCHER2 eCSE programme has now delivered 806 person months (PMs). The contractual requirement was for 798 PMs meaning that the programme has now delivered the required number of PMs.
- Funding has been obtained for a UKRI-wide GPU focussed eCSE programme; the eCSE team has been working to develop the documentation and making SAFE changes for this programme.
- During this quarter the CSE team has been preparing for the introduction of the GPU nodes on ARCHER2, developing documentation to support the user community. The ARCHER2 Reframe test suite has also been extended to include testing of GPU resources. Once available the team will test the GPU nodes and finalise support material for the user community.
- The team has expanded its coverage of /work filesystem monitoring to include monitoring of the metadata service and has been investigating the influence of user workloads on filesystem performance. The aim is to better understand the filesystem performance observed by users and identify address issues and improvements.
- The team has been working to develop a plan for *Capability days*, this plan has now been approved and we expect to run our first such day during this quarter. A large part of the machine will be available to users to test and explore capability jobs on ARCHER2 free of charge. The aim is to reduce barriers for users exploiting the full capabilities of ARCHER2.
- The team has been planning the ARCHER2 Celebration of Science which is due to run on the 7<sup>th</sup> and 8<sup>th</sup> March. Speakers from all the large consortia will present highlights of the science they have achieved on ARCHER2 and there will be a poster session with lightning talks.
- The ARCHER2 image competition closed this quarter and we again received a very high quality set of applications. The winners have been announced and the ARCHER2 calendar for 2024 was completed and distributed to people from the community.
- CSE had an active presence at Supercomputing 2023 (Denver, November 2023).
- CSE participated in Computing Insight UK, including contributing with colleagues from UCL to a Reframe workshop and a Women in HPC breakfast (organised by the WHPC N8 Chapter). EPCC had a booth at the event with the science output from ARCHER2 showcased through the ARCHER2 2024 calendar and science postcards.
- Women in HPC has entered into a collaboration with the ISC conference organisers to ensure diversity and inclusivity are at the core of conference planning, going forward.
- The outreach team had a booth at New Scientist Live at the ExCEL in London in October. Members of the public and schools visited the booth, which highlighted the value of Supercomputing to society.

## ARCHER2 Forward Look

- We are preparing to migrate to a new version of ISO 27001, the information security standard. The new version has a greater emphasis on addressing growing global cybersecurity challenges and improving digital trust reflecting the changes in information security risks since 2013 when the standard was last updated. Once the update work is completed, we will prepare for our next external audit against the new version in June 2024.
- The first call of the new GPU eCSE programme opens in January 2024 and will support projects developing software to run on GPU architectures. The eCSE team's focus for this quarter will be on delivering a successful call. The change of remit and expansion across all of UKRI makes this an exciting opportunity for many more people and the team will be looking to support new applications.
- The new GPU component of ARCHER2 has been delivered and the CSE team anticipates getting access during January. Our focus will be on testing the environment and finalising documentation to support the user community.
- During this next quarter the team will also be focused on developing bespoke training to enable users to make the efficient use of these GPU nodes.
- The team plan to run the first *Capability day* during this quarter and the team will be focused on preparing for this day, looking to support users to achieve the maximum benefit from these days.
- The team has also been working on an enhanced version of the ARCHER2 Benchmark Suite and a new version is expected to be published in 2024Q1.
- The team will continue to plan for the ARCHER2 Celebration of Science which is due to run on the 7<sup>th</sup> and 8<sup>th</sup> March. Speakers from all the large consortia will present highlights of the science they have achieved on ARCHER2 and there will be a poster session with lightning talks.

## ARCHER2 Centralised CSE Team

CSE activities over the period have focused on two aspects of the service. First, the team has been preparing for the imminent arrival of GPU nodes, which will allow users to test and develop the GPU capabilities of their scientific software. Second, we have been developing a better understanding of the performance of the work filesystem. Both activities are described in more detail below (in Continual Service Improvement Projects).

Alongside these activities, the CSE team has continued to engage with and support the science community, including participation in EPSRC HEC/ NERC Consortia and similar meetings:

- Michael Bareford presented at an introduction to the Unified Model course at Leeds University on 28<sup>th</sup> November.
- Kevin Stratford attended the UKCOMES Consortium meeting in Durham on 11th December, providing an update on opportunities in the GPU field.

Michael Bareford also developed and delivered a set of lightning talks on 22<sup>nd</sup> November, showcasing a diverse set technical topics and insights, based on previous CSI work, including:

- Running Python Code at Scale – addressing performance issues we have seen for users during the startup of large-scale, Python-based calculations.
- Realistic Machine Learning Benchmarking – showing how one can profile relatively complex workflows on ARCHER2, as is typical in machine-learning applications.
- Roofline Modelling – using the Intel Advisor toolset to get insight into the bottlenecks and pinch points in an application.
- OpenMP Offload – introducing a promising mechanism for developing portable software that can run equally well on CPU-based and GPU-based, computing resources.

A highlight of the period was the Supercomputing 2023 conference, hosted in Denver, Colorado, during 12<sup>th</sup>—17<sup>th</sup> November. As in previous years, the CSE team had an active representation, contributing to both the technical programme as well as training, outreach, and EDI topics:

- Adrian Jackson, Alan Simpson, and Andy Turner, presented on ‘Emissions and Energy Efficiency on Large-Scale High Performance Computing Facilities: ARCHER2 UK National Supercomputing Service Case Study’ at the Sustainable Supercomputing Workshop.
- Weronika Fillinger had a featured talk at the [Research Software Engineers in HPC \(RSE-HPC-2023\)](#) workshop: UNIVERSE-HPC – Toward a Sustainable RSE Training Ecosystem.
- Weronika Filinger also presented at the [Tenth SC Workshop on Best Practices for HPC Training and Education](#) workshop: [Understanding Community Perspectives on HPC Skills and Training Pathways](#).
- Jakub Adamski, a PhD student supervised by Oliver Brown, gave a presentation on “Energy Efficiency of Quantum Statevector Simulation at Scale”, at the Sustainable Supercomputing Workshop, based on the large-scale quantum simulations (described in the previous report).

ARCHER2 was also showcased on the EPCC booth. Outreach and EDI activities from SC’23 are described later in this report.

During 7<sup>th</sup>—8<sup>th</sup> December, members of the ARCHER2 team attended Computing Insight UK conference, hosted at the Manchester Convention Centre. ARCHER2 hosted a booth at the event and engaged with members of the UK HPC community along with representatives from industry, academia and students. This was an excellent opportunity to speak to ARCHER2 users, as well as undergraduate students taking part in the cluster competition, making them aware of the types of opportunities HPC can offer in terms of research and career opportunities.

In addition, we supported a workshop teaching users how to use Reframe, based on a framework under development predominantly at UCL. We have reported elsewhere on the use of Reframe to improve regression testing and system monitoring on ARCHER2. The UCL framework is focused more on performance benchmarking and promoting a community approach to collecting benchmarks and

automating them. We provided access to ARCHER2 for users during the workshop and presented content on using the Reframe test suite.

The CSE team also welcomed three new members during the reporting period: Jaffery Irudayasamy, Nathan Mannall and Evgenij Belikov.

## Continual Service Improvement (CSI) Projects

### Developing IO Performance Monitoring for ARCHER2 Work File System

Following on from activities described in the previous report, the CSE team has extended the I/O monitoring toolkit on ARCHER2 to include monitoring of the metadata service (previous efforts had focused on data read/write performance). Specifically, Luca Parisi and William Lucas used the IO500 benchmark suite (alongside the previously configured BenchIO suite) to expand the monitoring capabilities.

Based on this work, CSE has begun to log the performance of the file system over time and has identified several trends that warrant further investigation. For example, file-system performance looks to drop for the first few days of each month, which is currently understood to be due to system housekeeping operations (specifically, checking the integrity of the file-system RAID configuration). We are working with HPE to try to reduce the impact of this housekeeping.

This work has also fed into an investigation of a problem being reported by a small number of users, related to variable I/O performance for their applications. The CSE team (primarily Andy Turner) is evaluating the Dashan I/O tool (<https://github.com/darshan-hpc/darshan>) which can potentially provide fine-grain I/O monitoring with little or no impact on the overall performance of an application. At the time of writing, Darshan is being tested for CSE users but will be rolled out more widely, in due course, if initial testing is successful.

### Extension of Reframe Test Suite to GPU Compute Resources

Building on previously reported work to develop a Reframe test suite for ARCHER2, the CSE team has, during the period, extended the suite to test GPU resources. This has an immediate benefit for the Cirrus Tier-2 system, where the extensions have been developed, though is expected to be easy and quick to port to ARCHER2 once the new GPU nodes have been integrated.

The extensions have been folded into the main test suite, which is publicly available from the Service's GitHub repository - <https://github.com/EPCCed/epcc-reframe>.

### Running Python at Scale

The CSE team has been working with several users who see slow startup times when attempting to run large-scale Python applications. The underlying issue relates to the way that a Python application initialises itself, reading in code from many libraries based on the requirements of the application. When running many-process Python applications, the number of read operations this creates can become overwhelming and possibly impacts file-system performance both for the user running the application and for other users on the system.

Michael Bareford has investigated using a third-party application called Spindle (<https://github.com/hpc/Spindle>), which is intended to address this issue, and he has demonstrated Spindle can significantly improve startup times for affected applications. The work was presented at an ARCHER2 webinar in November and user documentation is in preparation.

### Integration of GPU Nodes into ARCHER2

At the time of writing, HPE is installing a small GPU test and development system on ARCHER2. The system is expected to be well-suited for communities to test and develop GPU capabilities within their key application software and, based on this use case, the CSE team has been preparing for the introduction of the system. This includes:

- Testing the HPE software stack that will support the GPU system.

- Developing user documentation.
- Contributing to and testing of the service implementation.

CSE is also preparing a webinar for users, which is expected to run in January 2024.

### **ARCHER2 Benchmark Suite**

The CSE team has continued to work to revise the application benchmark suite, previously developed during the ARCHER service (Further details available at: [http://archer.ac.uk/documentation/white-papers/benchmarks/UK\\_National\\_HPC\\_Benchmarks.pdf](http://archer.ac.uk/documentation/white-papers/benchmarks/UK_National_HPC_Benchmarks.pdf)) to reflect topical requirements of the UK HPC community and likely future ambitions over the next few years. As noted previously, the scope of the suite has been expanded to cover both traditional HPC simulation requirements as well as newer workflows based on machine-learning techniques, and to accommodate the use of both CPU and accelerator-based platforms. Furthermore, measurements will tackle both performance (i.e., time to solution) as well as energy use. A first public version should be available during 2024Q1.

## ARCHER2 Performance Report

This is the performance report for the ARCHER2 CSE Service for the period October 2023 – December 2023.

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

### 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 OY4: Service Threshold: >4.1 WD; Operating Service Level: >1.1 WD, ≤2.1 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 OY4: Service Threshold: >25.5 Working Days (WD); Operating Service Level: >10.5 WD, ≤15.5 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 OY4: Service Threshold: >56 Working Days (WD); Operating Service Level: >26 WD, ≤36 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 OY4: 7 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	Oct 2023		Nov 2023		Dec 2023		Q4 2023	
	Perf	Points	Perf	Points	Perf	Points	Perf	Points
ARCHER2_CSE_Level1 (MTR)	9.1WD	-2	9.1WD	-2	9.1WD	-2	9.1WD	-6
ARCHER2_CSE_Level2 (MTR)	1WD	-2	0.3WD	-2	0.1WD	-2	0.7WD	-6
ARCHER2_CSE_Level3 (MTR)	23WD	-0.5	13WD	-2	24WD	-0.5	22WD	-3
ARCHER2_CSE_TA (%)	100%	-1	100%	-1	100%	-1	100%	-3
Initial Response to Queries (%)	100%	-1	99.1%	-0.25	100%	-1	99.7%	-2.25
Query User Satisfaction (%)	100%	-2	96.6%	-2	100%	-2	98.9%	-6
Training Satisfaction (%)								
<b>Total</b>		-8.5		-9.25		-8.5		-26.25

90 query feedback responses were received on query resolution in the Reporting Period. 98.9% of responses had a score of “Good”, “Very Good” or “Excellent”. All feedback rated less than good is reviewed by management and improvement actions taken as appropriate.

## ARCHER2 CSE Queries

This section provides details of ARCHER2 CSE queries during the period from October 2023 – December 2023.

### 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.

Oct 2023					
Service level	Assigned	Resolved	Backlog	Correspondence	First Response
ARCHER2_CSE_Level1	55	56	0	3	0.4h
ARCHER2_CSE_Level2	80	91	17	11	0.3h
ARCHER2_CSE_Level3	2	6	6	50	0.3h
ARCHER2_CSE_TA	4	4	0	12	0.2h
Nov 2023					
Service level	Assigned	Resolved	Backlog	Correspondence	First Response
ARCHER2_CSE_Level1	36	36	0	3	0.4h
ARCHER2_CSE_Level2	66	51	32	12	0.3h
ARCHER2_CSE_Level3	0	1	5	18	0.2h
ARCHER2_CSE_TA	31	27	4	11	0.4h
Dec 2023					
Service level	Assigned	Resolved	Backlog	Correspondence	First Response
ARCHER2_CSE_Level1	56	56	0	3	0.7h
ARCHER2_CSE_Level2	48	56	24	11	0.3h
ARCHER2_CSE_Level3	0	5	0	29	0.7h
ARCHER2_CSE_TA	1	5	0	16	0.2h
Q4 2023					
Service level	Assigned	Resolved	Backlog	Correspondence	First Response
ARCHER2_CSE_Level1	147	148	0	3	0.5h
ARCHER2_CSE_Level2	194	198	24	11	0.3h
ARCHER2_CSE_Level3	2	12	0	38	0.5h
ARCHER2_CSE_TA	36	36	0	12	0.3h

## CSE Query Categories

A total of 394 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	Number resolved	% Queries
<b>ARCHER2_CSE_Level1</b>	Courses	148	37.6%
<b>ARCHER2_CSE_Level2</b>	3rd party software	48	12.2%
	eCSE applications/calls	30	7.6%
	Batch system and queues	28	7.1%
	Login, passwords and ssh	22	5.6%
	Compilers and system software	18	4.6%
	Software installation	11	2.8%
	Courses	9	2.3%
	Software errors	9	2.3%
	Data transfer	6	1.5%
	Access to services	5	1.3%
	Storage and compute resources	4	1.0%
	Porting, performance and scaling	3	0.8%
	Hardware issue	2	0.5%
	Other: Queries which do not fit within other categories	2	0.5%
	User behaviour: Queries relating to user behaviour	1	0.3%
<b>ARCHER2_CSE_Level3</b>	3rd party software	6	1.5%
	Software errors	4	1.0%
	Compilers and system software	1	0.3%
	Porting, performance and scaling	1	0.3%
<b>ARCHER2_CSE_TA</b>	Access to HPC	31	7.9%
	Pump-priming	3	0.8%
	UKRI Grant	2	0.5%
<b>Total</b>		394	100%

## ARCHER2 Training

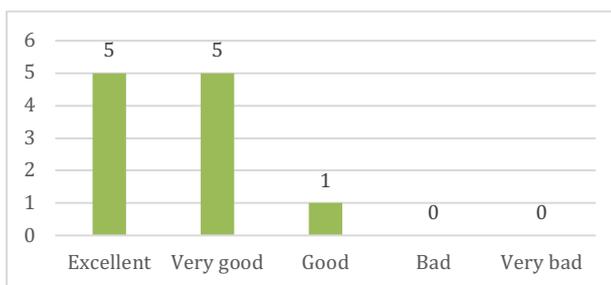
As part of ARCHER2, the service has been developing and delivering a training programme for the ARCHER2 community. During the fourth quarter of 2023, the CSE service has provided a total of 7.0 days of training, scheduled as follows:

Dates	Course	Location	Days	Attend
4 Oct	Building and installing packages with CMake	Online	0.5	32
1 Nov	Efficient Parallel IO	Online	1	23
8 Nov	The Science behind the Image Competition	Online	0.5	24
22 Nov	ARCHER2/Cirrus Code Performance lightning talks	Online	0.5	27
23-24 Nov	Single Node Performance Optimisation	Online	2	14
28-30 Nov	Study the Unified Model (contributor)	Leeds	0.5	23
7 Dec	ARCHER2 for Package Users	Online	1	5
8 Dec	ARCHER2 for Software Developers	Online	1	0

In addition to the courses listed in the table, a tutorial on ReFrame was offered as part of CIUK 2023, where ARCHER2 was used for the exercises.

On the feedback for online courses, attendees rate the course on a scale of 1-5 (“Very Bad”, “Bad”, “Good”, “Very Good”, and “Excellent”).

The average feedback using this metric was 4.4, i.e., better than “Very Good”. Users provided 11 responses, a response rate of 26%.



## ARCHER2 Embedded CSE Programme (eCSE)

Following completion of the eCSE call 11, all of the original ARCHER2 eCSE funding has been allocated. New funding has been secured to deliver a UKRI wide eCSE programme focused on developing software for GPUs, and the teams focus will now be on delivering this programme. The first of these calls will open in January 2024.

The eCSE call 11 (eCSE11) opened on 12 September 2023 and closed for technical evaluations on 10 October 2023 with final proposals due on 31 October 2023. As noted previously, the scope of this call included the development of software preparing for a future Exascale successor.

- The call received 16 proposals requesting a total of 189.8 person months (PMs)
- The call panel meeting was held on 5 December 2023 and 12 projects were accepted and awarded a total of 132.8 PMs

eCSE calls 1-11

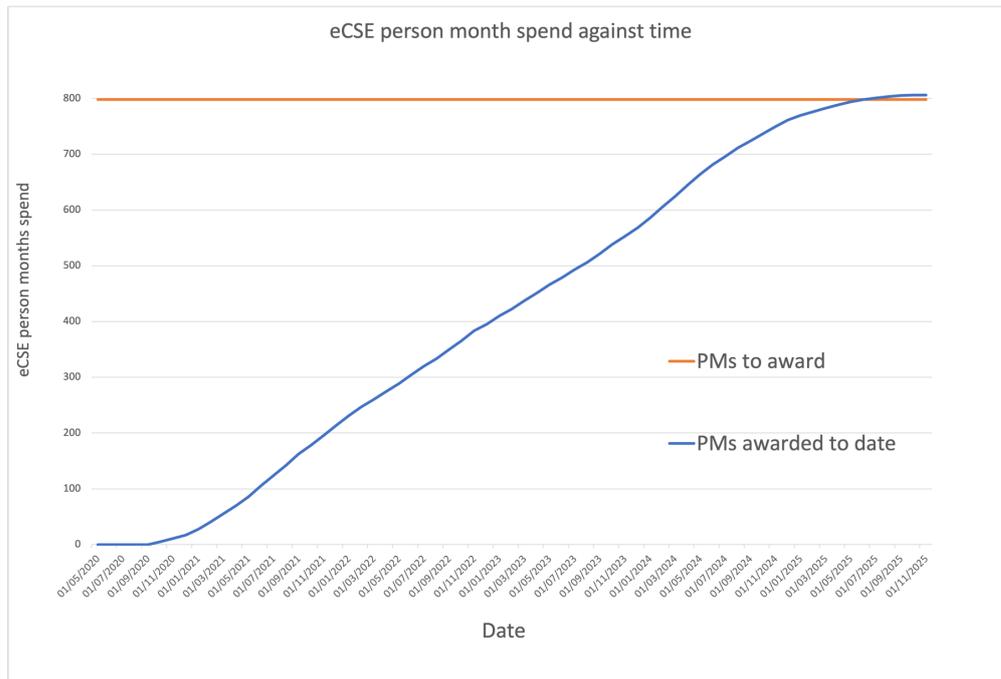
- The eCSE programme has awarded 806 PMs across 11 calls. The contractual requirement was the award of 798 PMs meaning that the programme has now exceeded the required number of PMs and no further ARCHER2 eCSE calls will be opened in the near future.

eCSE call	Call Dates	# Technical Evaluations Received	# Proposals Received (EPSRC,NERC)	# PM requested (EPSRC, NERC)	# Proposals accepted (EPSRC, NERC)	# PMs Awarded (EPSRC, NERC)
eCSE01	19/05/20 - 07/07/20	25	25 (25,0)	235 (235,0)	13 (13,0)	132 (132,0)
eCSE02	08/09/20 - 27/10/20	13	12 (9,3)	107 (87,20)	7 (4,3)	53 (33,20)
eCSE03	08/12/20 - 16/03/21	15	14 (10,4)	136 (105,31)	8 (6,2)	75 (56 <sup>1</sup> ,19)
eCSE04	20/04/21 - 08/06/21	13	11 (7,4)	109 (83,26)	7 (4,3)	60 (37,23)
eCSE05	07/09/21 - 26/10/21	10	9 (9,0)	85 (85,0)	5 (5,0)	47 (47,0)
eCSE06	09/12/21 - 15/03/22	7	6 (6,0)	61 (61,0)	5 (5,0)	58 (58 <sup>2</sup> ,0)
eCSE07	19/04/22 - 14/06/22	13	10 (10,0)	77 (77,0)	7 (7,0)	55 (55,0)
eCSE08	06/09/22- 25/10/22	17	12 (12,0)	144 (144,0)	7 (7,0)	82 (82 <sup>1</sup> ,0)
eCSE09	06/12/22- 14/03/23	12	12 (12,0)	146 (146,0)	6 (6,0)	67 (67,0)
eCSE010	18/04/23 - 13/06/23	5	5 (5,0)	59 (59,0)	4 (4,0)	44 (44,0)
eCSE011	12/09/23 - 31/10/23	16	16 (16,0)	59 (59,0)	12 (12,0)	133 (133,0)
<b>Total</b>		<b>146</b>	<b>132 (121,11)</b>	<b>1349 (1272,77)</b>	<b>81 (73,8)</b>	<b>806 (744,62)</b>

<sup>1</sup> In both cases this includes 2 PMs extra being awarded within the original budget of a project. This was due to the staff member involved in each case incurring lower costs than expected as the individual had opted out of the University pension scheme.

<sup>2</sup> This includes 6 PMs extra awarded for a member of staff on maternity leave.

The graph below shows the current person months awarded to eCSE projects to date (blue line) along with the total number to be awarded (orange line).



# ARCHER2 Community Engagement, Outreach, Collaboration and Impact

## Benefits Realisation

Benefits realisation reports are available on the SAFE and are being produced six-monthly to contribute to the business case for future investment in HPC and its science output.

## Blogs

Six blogs have been written in Q4 including Top 10 Tips for using HPC <https://www.archer2.ac.uk/news/2023/11/28/top-10-tips-hpc.html>.

## Community and Outreach Activities

### New Scientist Live 2023

EPCC ran an outreach stand at the New Scientist Live 2023 event, that ran during 6<sup>th</sup>—9<sup>th</sup> October at the ExCeL in London.

During the weekend, families were able to learn more about ARCHER2 and the vital role EPCC plays supporting it and its users. There were a variety of activities available for visitors – a ball-sorting exercise, various logic puzzles, and a wind-tunnel simulation running on Wee Archie. Visitors could speak with EPCC staff and students about the uses of ARCHER2, as well as delving into the technical specifications for visitors interested in more detail.

The team that travelled to London included Ben Morse, Chloe Brook, Chris Wood, Daniyal Arshad, Darren White, Luca Parisi, Ricardo Bastos, Rui Apóstolo, Shrey Bhardwaj, and Spyro Nita.

### Supercomputing 2023

CSE made various contributions to SC'23. Eleanor Broadway and Weronika Filingier organised a Birds of a Feather session entitled 'Designing HPC Outreach Activities'. The session, led by Weronika, aimed to bring the community together to create new HPC outreach activities using a template written and presented by Eleanor.

Weronika also ran two other BoF sessions at the conference:

- Learning Pathways BoF - [Pathfinding in HPC Education and Training](#)
- HPC Certification Forum BoF - [Updates from the HPC Certification Forum](#)

### ARCHER2 Image Competition

During November, we ran the now familiar ARCHER2 Image Competition, with winning science images to feature in the ARCHER2 social-media channels throughout 2024 as well as in the ARCHER2 wall calendar.

For the second time, we ran an image-competition webinar at the end of November at which five members of the ARCHER2 community had the chance to publicise their work in a series of lightning talks.

### Donation to Charity

£90 was donated to our chosen charity this quarter, Save the Children, with £1 donated for each CSE query feedback item or user survey response received.

### Other Contributions

Weronika Filinger was the Proceedings Chair for eScience'23 and also co-ran the RSE workshop - [Research Software Engineers in eScience: Sustainable RSE Ecosystems within eScience \(RSE-eScience-2023\)](#).

Looking to the future:

- George Beckett has been invited to sit on the review board for Birds of a Feather proposals for ISC'24.
- EPCC is participating as an independent partner in IHPCSS'24 in Kobe, Japan, funding 3 students and 2 staff members.

### Diversity and Inclusivity

We are pleased to announce that Women in HPC and ISC have officially entered a collaboration. This means that Women in HPC will have guaranteed contributions to the ISC conference, without the need to go through the usual application process, and that ISC will work closely with Women in HPC to promote and support diversity and inclusivity initiatives at the conference.

Eleanor Broadway has been very active in the organising and running of WHPC activities at the SC'23 conference in Denver, Colorado. Eleanor served as the WHPC SC'23 submissions co-chair for the WHPC workshop, which included advertising a call for participation, organising and designing a peer-review process, then curating the programme of early-career speakers. EPCC were also involved with aiding the on-site WHPC programme at SC'23 including distributing WHPC merchandise at the Exhibition Gala and participating in Diversity Day.

For 2024, Eleanor Broadway and Weronika Filinger are both helping to organise a programme of WHPC activities at the ISC'24 conference. Weronika is leading and overseeing the organisation of WHPC activities at ISC'24 as WHPC officially joins ISC24 in a collaboration partnership for the first time. Eleanor has accepted the role of WHPC poster chair with the WHPC posters now integrated into the official ISC24 poster programme (<https://www.isc-hpc.com/submissions-whpc-posters-2024.html>).

Additionally, Eleanor is, at the time of this report, acting as the Director of Chapters for WHPC while the incumbent director is on maternity leave.

### Quality Management, Information Security and Business Continuity

The round of internal audits is starting to ensure that we are applying best practice in quality management, information security and business continuity. Just before the Christmas break, a very interesting business continuity desktop exercise was run looking at how the ARCHER2 Service and the ACF datacentre it is housed in would best be run should the government implement power outages in a variety of patterns. Whilst there is no current expectation that this would happen, it helps us to plan in case and to identify any improvements that would help us optimally run the service under these circumstances.

We are also working to migrate to the latest version of the ISO 27001 information security standard, reflecting the many changes in information security threats that have arisen since that last upgrade of the standard in 2013.