ARCHER2 Quarterly Report

July – September 2022

EPCC

The University of Edinburgh

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0.1	2022-06-08	Initial draft	Lorna Smith
0.2	2022-10-04	Adding ARCHER2 CSE queries performance report, statistics and analysis	Xu Guo
0.3	2022-10-11	Added training report	Juan Rodriguez Herrera
0.4	2022-10-11	More complete draft version	Lorna Smith
0.5	2022-10-12	Additions on Centralised, CSI and Diversity	George Beckett
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ARCHER 2 Quarterly Report

This section of the report covers the period July 2022 – Sept 2022 for the ARCHER2 service.

ARCHER2 Executive Summary

- The CSE team had a strong presence at RSECon22 held in Newcastle (6-8/09/2022). We ran an audience led panel "Opportunities for RSEs to secure software development funding – benefit of the eCSE programme". The session was well attended with many questions asked for the panel to consider. Topics ranged from questions about the eCSE programme itself through to wider discussions about other programmes and training opportunities.
- The ARCHER2 website is now displaying the reports and highlights of several of the recently completed eCSE projects. Several of the technical reports now have a DOI within the ARCHER2 community.
- The CSE team have been monitoring job sizes on ARCHER2 to understand capability usage. Results demonstrate that ARCHER2 is already delivering significantly larger jobs than ARCHER or Tier-2.
- The CSE team have carried out a GPU evaluation on an HPE internal 16-node AMD GPU system to investigate suitability for training courses and for users to investigate porting applications for larger scale GPU systems, in preparation for the GPU component of ARCHER2.
- CSE presented at the HEC annual meetings held by MCC and the UKCTRF.
- The CSE team has made good progress to design and implement an automated package management system for science software with Spack.
- Staff are actively engaged in a variety of activities through the UKRI Net Zero project, looking at emissions and energy consumption on ARCHER2. This includes a recent blog article on Software power draw on ARCHER2.
- ARCHER2 staff completed a successful annual audit for ISO9001 (Quality) and ISO27001 (Information Security). We passed the document audit for ISO22301 (Business Continuity), with the certification audit to follow shortly.
- The eCSE08 call was opened on 6/09/2022 and closed for technical evaluations on 4/10/2022, receiving 17 submissions. This call offers an increase from 12 person months to 18 person months per project which we hope will provide researchers with the opportunity to carry out more in-depth improvements to software and to allow for an increase in the scope of a project's objectives.
- Alongside the eCSE08 call, a call for early career researchers was launched (closing on 4/10/2022). Successful candidates will be offered the opportunity to attend a panel meeting alongside those successful candidates remaining from the previous call.
- A total of 16 days of training have been delivered using the ARCHER2 system, including a series of two virtual tutorials on Arm Forge, a new tool available for all ARCHER2 users. A face-to-face course on Python was delivered in collaboration with ScotCHEM.
- We ran a half-day Python workshop at RSECon22 that used ARCHER2 as a platform and had around 50 attendees. The workshop title was "Make your Python code 10,000 times faster with parallel numpy!"
- The CSE training team is at the heart of planning for the next International High Performance Summer School programme in 2023, with EPCC hoping to become an official sponsor.
- The outreach team had a booth at New Scientist Live in London with a series of interactive activities to demonstrate the importance and relevance of Supercomputing to the general public.

ARCHER2 Forward Look

- We anticipate a major software upgrade over the next few months. The CSE team will be working closely with users to understand the impact of this on users and to work with all service stakeholders to minimise disruption.
- We look forward to welcoming another group of early career observers to the upcoming eCSE panel meeting. Over the coming weeks we will be adding more eCSE reports and highlights to the ARCHER2 website.
- A greater number of face-to-face courses will be scheduled for the upcoming months in several locations across the UK.
- The CSE team will continue to investigate variations in runtimes for a set of applications, looking to reduce this runtime variation to provide greater consistency for users.
- The ARCHER2 team will continue the Net Zero investigation of ARCHER2, producing a Case Study and recommendations for best practice for systems of this type. This covers a spectrum of work, from activities within the Advance Computing Facility to provide free cooling, to activities around energy consumption of applications, and how user behaviour may be influenced in this area.
- The ARCHER2 image competition closed during this last quarter. During this next quarter the images will be judged and we will work to produce material to showcase the high-quality science being carried out on ARCHER2. For example, through the calendar, blog posts and postcards for events and conferences.
- The team will attend CIUK in December, looking to collaborate and share knowledge with the RSE and HPC communities.
- The outreach team have been accepted for a drop-in session at the National Museum of Scotland during the Edinburgh Science Festival in April 2023. During this period we will be working on developing and improving our hands-on activities including a Minecraft activity and an activity around binary numbers.
- Supercomputing falls within this period and three CSE team members will be attending and representing ARCHER2. The service will be showcased on the EPCC booth and staff will participate in a series of workshops and events.
- Women In HPC has resumed a full programme of activities for Supercomputing 2022, as Covid-related restrictions continue to ease.

ARCHER2 Centralised CSE Team

This has been a productive period for the CSE team, with lots of opportunities to engage with the science community, in person as well as virtually. Here we highlight contributions across the different responsibilities of the team.

The CSE team was well represented at the **RSECon conference** and satellite events**,** held in Newcastle, during 6th—8th September, with seven team members involved in both the exhibition and technical programme:

- The team ran an ARCHER2 booth in the exhibition space
- David Henty presented entitled "Make your Python code 10,000 times faster with parallel numpy"
- Chris Johnson ran an eCSE panel discussion (discussed in more detail later in this report)
- Andrew Turner participated in the RSE Leaders Group Meeting (which ran as a satellite event on 5th September)
- Andrew Turner presented (along with A. Basden) on "HPC-JEEP: Energy Usage on ARCHER2 and the DiRAC COSMA HPC services", at the RSE HPC Champions/ ExCALIBUR RSE meeting" (satellite event on 9th September)

Holly Judge attended the **Materials Chemistry Consortium annual meeting** (virtual) on 18th July. She presented an update on the ARCHER2 service and received feedback from meeting participants. Also organised by the MCC, Andy Turner presented his work to understand and improve the performance of VASP on ARCHER2 (at the VASP online workshop on 13th September).

On a similar vein, William Lucas attended the **UK Consortium for Turbulent and Reactive Flows (UKCTRF) Annual Meeting** in Newcastle on 13 and 14 September. This was an opportunity to meet members of the consortium and discuss the ARCHER2 service and its use and impact on their work. At the meeting's start, William gave a presentation with updates and news from the CSE team.

Continuing to promote ARCHER2 to the community, Holly Judge attended the University of **Nottingham HPC conference** and presented on ARCHER2 applications (University of Nottingham, 7th September).

Earlier in the period, Andy Turner attended the **HPC-SIG Committee Meeting**, which was held in Newcastle on 24th August.

Continual Service Improvement (CSI) Projects

ARCHER2 GPU Evaluation

The CSE team (primarily, Michael Bareford, Larisa Stoltzfus, and Kevin Stratford) completed an initial evaluation of the Cray EX AMD GPU platform, a small instance of which is expected to be added to the ARCHER2 platform in a future upgrade. The team completed the evaluation on an HPE-internal system called Marvin4, in collaboration with the Centre of Excellence team.

The evaluation was generally positive. The CSE team successfully tested various aspects of the development, debugging/ profiling, and runtime environments and gained vital experience in preparation for the ARCHER2 service expansion. The team also ran several key, ARCHER2 applications including GROMACS, CP2K, and Ludwig and reported reasonable performance (compared to previous GPU evaluations). Issues were seen with several applications – notably, NAMD and LAMMPS – and the Centre of Excellence is investigating further, expecting to resolve these problems in the coming weeks.

Once the outstanding application issues are resolved, a full report will be prepared for the ARCHER2 Project Board and, potentially, wider distribution.

VASP Performance Evaluation on ARCHER2

The team, led by Andrew Turner, continues to investigate and monitor the performance of the VASP materials-science modelling software on ARCHER2. The performance of VASP is critical due to its high level of utilisation on ARCHER2 (typically, around 30% of all node hours consumed) and has been found, for some use cases, to be lower than would be expected based on the performance of similar software on ARCHER2. We have engaged with the Materials Chemistry Consortium, Materials Design Inc. (who distribute VASP commercially) and the VASP development team at the University of Vienna to try and understand the performance issues and find ways to improve the performance. Current analysis by the ARCHER2 CSE team has shown that a substantial fraction of the performance loss may be due to sub-optimal performance in numerical libraries (BLAS and FFTW) for routines and data sizes used by VASP, but further investigation is needed to understand the issues.

Evaluation of the Cray Containerised Programming Environment

The CSE team continues to participate in the HPE-run Containerised CPE early-access programme. Michael Bareford successfully trialled the containerized CPE (22.06) to build and run GROMACS 2022.2 successfully.

GROMACS is a good candidate for such trials as the build and run phases can be submitted as separate Slurm jobs.

Test runs were carried out on a 4-node, 1400k-atom (pair of hEGFR Dimers of 1IVO and 1NQL) benchmark. For the CCPE, the average performance of three runs was 27.4 ns/day. For an equivalent bare-metal setup, the average was 27.7 ns/day.

The experience has been fed back to HPE.

Package Management with Spack

Work has been progressing with the CSI project to bring Spack to ARCHER2 for use by both the CSE service and users. Updates to Spack have brought it more in-line with the newer Cray Programming Environment releases used on HPE Cray EX systems like ARCHER2 – the new module system and C and C++ compilers as well as expanded MPI communications layer options allow Spack to account for different ways for interacting with the system software. Previously, information about system-provided software had to be provided manually to Spack in order to use it. To automate this process, HPE now also provide a manifest file which provides the necessary information on installed software, their dependencies, and how to access and use them.

Evaluation on ARCHER2 by William Lucas and James Richings indicates that while this new workflow is promising, it is not yet complete. The HPE manifest, as provided, lists software under different targets and operating systems than identified by Spack, meaning they will not be automatically selected for use when building new software and sometimes causing dependency conflicts when their use is forced. Use of Spack in the immediate future would therefore require manual provision to it of external software details. Spack has however been used, in this manual way, to complete builds of some target applications, when using the Cray compilers. Using GCC and AOCC has resulted in errors in the build environment which require further examination to understand and fix.

Monitoring the ARCHER2 Power Management Hardware Counters

Some progress has been made with work to port the power-management monitoring framework previously in-use of ARCHER. With the help of the Centre of Excellence, the team has now identified and mapped the differences in hardware counters between the ARCHER XC-30 and the ARCHER2 EX platforms and is beginning work to update the interface code. This is expected to be progressed at speed in the next reporting period.

ARCHER2 Performance Report

This is the performance report for the ARCHER2 CSE Service for the Reporting Periods from July 2022 – Sept 2022.

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 OY3: Service Threshold: >4.2 WD; Operating Service Level: >1.2 WD, ≤2.2 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 OY3: Service Threshold: >26 Working Days (WD); Operating Service Level: >11 WD, ≤16 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 OY3: Service Threshold: >57 Working Days (WD); Operating Service Level: >27 WD, ≤37 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 OY3: 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	July 2022		Aug 2022		Sept 2022		Q3 2022	
	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)	0.3WD	-2	0.7WD	-2	1.2WD	-2	0.6WD	-6
ARCHER2_CSE_Level3 (MTR)	27WD	-0.5	21WD	-0.5	-	-	22WD	-1
ARCHER2_CSE_TA (%)	100%	-1	100%	-1	100%	-1	100%	-3
Initial Response to Queries (%)	100%	-1	100%	-1	98.9%	-7	99.7%	-2
Query User Satisfaction (%)	95.8%	-2	100%	-2	100%	-2	98.6%	-6
Training Satisfaction (%)	100%	-1	100%	-1	100%	-1	100%	-3
Total		-9.5		-9.5		-8		-27

70 query feedback responses were received on query resolution in the Reporting Period. 98.6% of responses had a score of “Good”, “Very Good” or “Excellent”.

ARCHER2 CSE Queries

This section provides details on ARCHER2 CSE queries during the Reporting Periods from July 2022 – Sept 2022.

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.

July 2022					
Service level	**Assigned**	**Resolved**	**Backlog**	**Correspondence**	**First Response**
ARCHER2_CSE_Level1	115	115	0	3	0.3hr
ARCHER2_CSE_Level2	50	52	28	15	0.3hr
ARCHER2_CSE_Level3	1	2	3	24	0.2hr
ARCHER2_CSE_TA	12	14	2	14	0.3hr
Aug 2022					
Service level	**Assigned**	**Resolved**	**Backlog**	**Correspondence**	**First Response**
ARCHER2_CSE_Level1	43	43	0	3	0.3hr
ARCHER2_CSE_Level2	38	46	19	16	0.3hr
ARCHER2_CSE_Level3	0	3	1	82	0.2hr
ARCHER2_CSE_TA	6	4	4	17	0.2hr
Sept 2022					
Service level	**Assigned**	**Resolved**	**Backlog**	**Correspondence**	**First Response**
ARCHER2_CSE_Level1	20	20	0	3	0.4hr
ARCHER2_CSE_Level2	46	39	26	15	0.3hr
ARCHER2_CSE_Level3	1	0	2	0	0
ARCHER2_CSE_TA	29	30	3	10	0.7hr
Q3 2022					
Service level	**Assigned**	**Resolved**	**Backlog**	**Correspondence**	**First Response**
ARCHER2_CSE_Level1	178	178	0	3	0.3hr
ARCHER2_CSE_Level2	134	137	26	15	0.3hr
ARCHER2_CSE_Level3	2	5	2	59	0.2hr
ARCHER2_CSE_TA	47	48	3	12	0.5hr

CSE Query Categories

A total of 368 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
ARCHER2_CSE_Level1	Courses	178	48.4%
ARCHER2_CSE_Level2	3rd party software	77	20.9%
	Batch system and queues	11	3.0%
	eCSE applications/calls	11	3.0%
	Software installation	6	1.6%
	Courses	5	1.4%
	Login, passwords and ssh	5	1.4%
	Access to services	4	1.1%
	Porting, performance and scaling	4	1.1%
	Data transfer	3	0.8%
	Compilers and system software	2	0.5%
	Hardware issue	2	0.5%
	Software errors	2	0.5%
	Storage and compute resources	2	0.5%
	Other	1	0.3%
	User behaviour	1	0.3%
	Website and documentation	1	0.3%
ARCHER2_CSE_Level3	Porting, performance and scaling	3	0.8%
	3rd party software	2	0.5%
ARCHER2_CSE_TA	Access to HPC	23	6.3%
	EPSRC Fellowship	10	2.7%
	UKRI Grant	10	2.7%
	Pump-priming	5	1.4%
Total		368	100.0%

One Technical Assessment was delayed due to a problem with the SAFE software – more details are provided in the SP Quarterly Report.

ARCHER2 Training

As part of ARCHER2, the service has been developing and delivering online a training programme for the ARCHER2 community. During the third quarter of 2022, the CSE service has provided a total of 16 days of training, scheduled as follows:

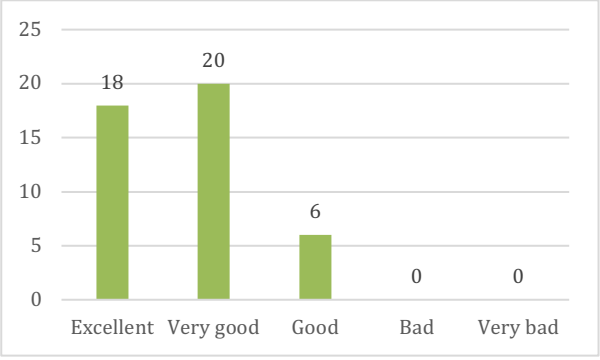
Dates	Course	Days	Attend
13 Jul 2022	Performance of Parallel IO on ARCHER2	0.5	29
18-21 Jul 2022	Data Carpentry	2	11
25 Jul 2022	Plotting and Programming with Python	1	18
26-27 Jul 2022	Reproducible computational environments using containers	2	18
26-27 Jul 2022	HPC Carpentry	2	13
27 Jul 2022	Performance of MPI+OpenMP on ARCHER2	0.5	34
28 Jul 2022	Goal-oriented mesh adaptation for Firedrake	0.5	17
3 Aug 2022	Automated service monitoring in the deployment of ARCHER2	0.5	17
17 Aug 2022	Performance of different routing protocols on ARCHER2: OpenFabrics and UCX	0.5	30
23 Aug 2022	Efficient Parallel IO	1	22
29 Aug 2022	Scientific Programming with Python	1	29
30-31 Aug 2022 6 Sep 2022	Introduction to OpenMP	3	9
31 Aug 2022	Debugging and Optimizing Parallel Codes with Arm Forge - Debugging and DDT	0.5	24
7 Sep 2022	Debugging and Optimizing Parallel Codes with Arm Forge - Performance optimization, MAP, and PR	0.5	19
14 Sep 2022	The MITgcm user's guide to ARCHER2	0.5	12

The Scientific Programming with Python course was delivered as part of the annual ScotChem Computational Chemistry Symposia. ScotCHEM is a federation of Scotland's university chemistry departments. A total of 29 delegates from all around Scotland attended the course in person and learnt more about the features that Python offers to develop software in order to solve computational chemistry challenges.

A series of two virtual tutorials was delivered by Beau Paisley, Principal Solution Architect from Arm. Beau provided an overview of Arm Forge, a cross platform, integrated environment for debugging and optimizing parallel codes at any scale. The virtual tutorials also included hands-on demonstrations of Arm DDT (parallel debugger), Arm Map (parallel profiler), and Arm Performance Reports. The tool suite is available for all ARCHER2 users.

David Henty, a member of the ARCHER2 CSE team, ran a half-day Python workshop at RSECon22 that used ARCHER2 as a platform. The workshop title was "Make your Python code 10,000 times faster with parallel numpy!". A total of 50 attendees benefited from this course.

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 4.27, i.e., better than "Very Good". Users provided 44 responses, a response rate of 36.67%.



ARCHER2 Embedded CSE Programme (eCSE)

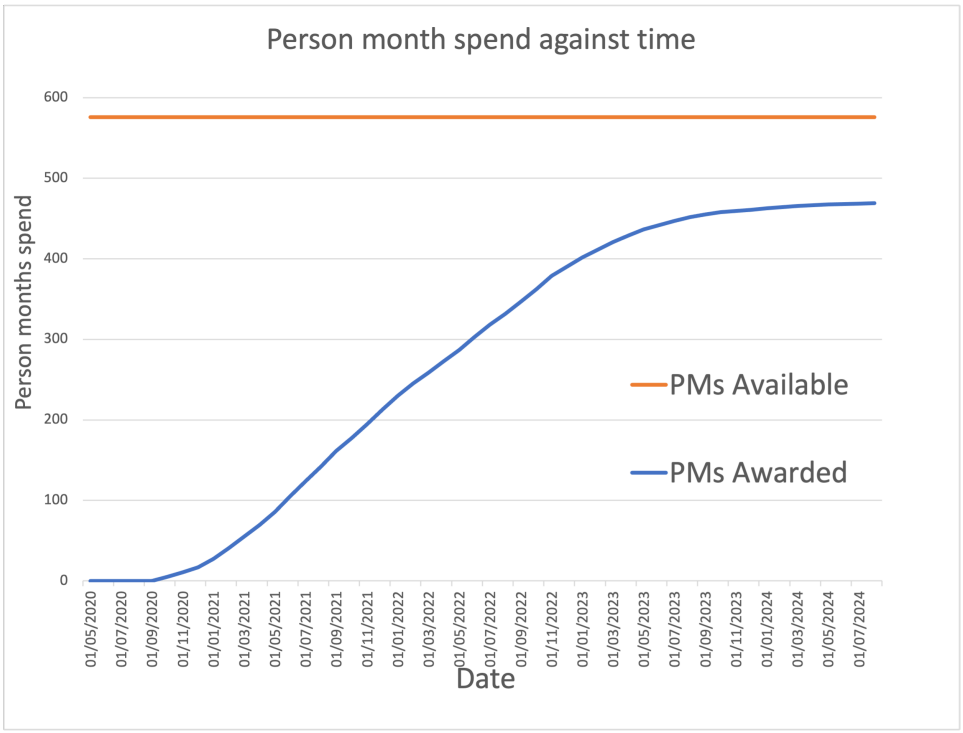
At RSECon22 (the sixth annual conference for research software engineers) held in Newcastle (6-8/09/2022) we ran an audience led panel "Opportunities for RSEs to secure software development funding – benefit of the eCSE programme". On our panel was Helen Chappell (University of Leeds) and Alison Kennedy (STFC Hartree Centre), present and former eCSE panel members respectively, and Neil Chue Hong of the Software Sustainability Institute. The panel was chaired by Chris Johnson (ARCHER2 eCSE function lead). The session was well attended with many questions asked for the panel to consider. Topics ranged from questions about the eCSE programme itself through to wider discussions about other programmes and training opportunities.

eCSE calls 1-8

- The panel meeting for the eCSE07 call took place on 12/07/2022. 7 of the 10 proposals were accepted to become projects with 77 person months awarded overall.
- For call 1 and from call 5 onwards, only proposals with software within the EPSRC remit have been eligible.
- Call 8 (eCSE08) opened on 6/09/2022 and closed for technical evaluations on 4/10/2022 receiving 17 submissions. The final deadline for the call is 25/10/2022.
    - For eCSE08, proposals are invited for up to 18 person months per project (an increase from 12). We hope that this increase in effort will provide researchers with the opportunity to carry out more in-depth improvements to software and to allow for an increase in the scope of a project's objectives.

eCSE call	Call Dates	# Technical Evaluations Received	# Proposals Received (EPSRC,NERC)	# PM required (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)	73 (54,19)
eCSE04	20/04/21 - 08/06/21	13	12 (9,3)	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)	49 (49,0)
eCSE07	19/04/21 - 14/05/22	13	**10 (10,0)**	**77 (77,0)**	**7 (7,0)**	**55 (55,0)**
eCSE08	06/09/22- 25/10/22	17	**N/A**	**N/A**	**TBD**	**TBD**
Total		**113**	**88 (78,10)**	**850 (733,77)**	**52 (44,8)**	**469 (407,62)**

The graph below shows the current person months awarded to eCSE projects to date (blue line) along with the number to be awarded for the first 4 years of ARCHER2 (orange line).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ARCHER2 Community Engagement, Outreach, Collaboration and Impact

Benefits Realisation, Blogs and Impact

Benefits realisation reporting is now in place, with a wide range of service statistics captured to showcase the value of the ARCHER2 service. These statistics range from information on the geographical location of eCSE participants, through data on publications, to usage statistics on e.g., scientific area.

The team has published a series of blogs within this quarter. Highlights include a blog explaining the process of preparing a technical assessment, to help the user community prepare strong eCSE proposals. A series of blogs have showcased the image competition winners, helping to publicise the image competition for 2022-2023. The most recent blog had a more technical focus, discussing the software power draw of ARCHER2, a result of our engagement with the UKRI Net Zero project.

The ARCHER2 image competition closed during this period, with a significant number of high quality images and videos submitted. We are currently in the process of reviewing these. Previous winning images have been created as postcards and have been used successfully at events such as RSECon and New Scientist Live.

Community and Outreach Activities

The ARCHER2 team attended **New Scientist Live** on the 7-9th October 2022 at the ExCel in London. We had a stand at the event, with many members of the public participating in activities around supercomputing to learn about the value of the service. As well as a set of activities utilising Wee Archie, we also had activities using python, hands-on algorithm activities and a set of puzzles to demonstrate logic and logic's relevance to computational science. The event was very well attended and reached a wide audience from all over the South of England.

The team attended the **Big Bang Fair** in Birmingham earlier this year, with saw audiences from all across the midlands, the north of England and parts of Wales. Coupled with New Scientist Live, the events cover a broad section of the country. In April 2023 we will have a drop-in session at the Edinburgh Science Festival, which will provide engagement opportunities across Scotland. This drop-in session at the Edinburgh Science Festival is at the National Museum of Scotland and we will provide hands-on activities including a Minecraft activity and binary number investigation.

Quality Management, Information Security and Business Continuity

We recently completed a successful annual audit for ISO9001 (Quality) and ISO27001 (Information Security). The team has also recently passed the document audit for ISO22301 (Business Continuity), with the certification audit to follow shortly. We ran a successful table-top BCDR test with a scenario based around a cybersecurity incident, which helped to identify our areas of best practice and areas for improvement.

Diversity and Inclusion

The **PEARC'22 conference (Practice and Experience in Advanced Research Computing)** took place in Boston during 10th—14th July. Weronika Filinger, as the co-chair of the Workforce Development, Training, Diversity, and Education track, scheduled and ran the track sessions during the conference. Overall, the track was very popular, and all presentations were well attended. Weronika was also asked to hand out the awards for the best paper and best student paper during the awards ceremony. The conference proceedings also include the papers from the workforce development track. Women in HPC

also ran a satellite networking session at PEARC'22, which attracted more than 50 women HPC professionals and facilitated discussions with HPC industry leaders.

EPCC has been involved in organising and running of the **International High Performance Computing Summer School** for many years. Due to the recent changes in funding, EPCC is working to become one of the official sponsors of the event, along with RIKEN and SCiNet, as well as the successors to the PRACE and XSEDE projects. The planning for the next year event has already begun. The first step is to analyse the student feedback to determine if any changes are needed. The evaluation of the 2022 IHPCSS used focus groups and surveys to assess students experience before, during and after the event. Nearly 100% of students rated their Summer School experience as successful. However, a number of comments were made about the accessibility and inclusivity of the event. The evaluation report prepared by the XSEDE external evaluation team included recommendations regarding inclusivity and scope which will be incorporated into wider internal discussions around how the shift in students' demographics should be reflected in the changes to the entry requirements, the scope and level of the content, and the balance between technical and non-technical sessions. There seems to be a demand for a more extensive and dedicated mentoring programme. David Henty and Weronika Flinger are actively engaged in the discussions and planning activities.

The **WHPC organisation** received several new chapter applications and Weronika Filinger as the EPCC chapter representative was involved in reviewing. Additionally, EPCC is actively supporting the efforts to select a new WHPC chair and other leadership positions within the organisation.

On August 19th the **ACM SIGHPC Education Chapter** announced the first recipient of the Educational Award for Outstanding Contribution to Computational Science Education, Dr Robert M. Panoff. The award recipient will be honoured at the award ceremony at the SC22 conference in Dallas - https://sighpceducation.acm.org/award_announce.html. Weronika Filinger was one of the committee members that set up the award and reviewed the nominations and selected the awardee. One of the key criteria recognised by the award is the project's ability to engage, serve and retain a diverse community of participants. The award is granted biennially: the next competition will be in 2024.

The bird of a feather submission, titled "Another step towards a sustainable HPC Outreach Ecosystem", has been accepted for the **Supercomputing Conference** in Dallas. EPCC has been involved in organising the outreach BoFs at SC for a number of years. This session has been proposed and planned by Weronika Filinger in collaboration with Julia Mullen (MIT LL, USA), Ann Backhaus (Pawsey, Australia), Karina Pesatova (IT4I, Czech Republic), Scott Callaghan (USC, USA), Mozhgan KAbiri Chimeh (NVIDIA, UK), Bryan Johnston (CHPC, South Africa), Elise Degen (Queen's University, Canada) and Dawn Hunter (TACC, USA). Outreach is the first step towards diversifying our community. Therefore, the goal of the session is to discuss how the HPC community could make the outreach efforts not only more sustainable, but also more inclusive. More details about the session can be found here - https://sc22.supercomputing.org/presentation/?id=bof183&sess=sess377.

Alongside this, Women in HPC has a strong programme of activities at SC'22 (https://womeninhpc.org/events/sc-2022), organising a Diversity Day campaign on the exhibition floor on the first day of the full conference, a workshop on Diversifying the HPC Community and Engaging Male Allies, and running a networking reception. George Beckett, in his role as treasurer of Women in HPC, has co-led the search for sponsorship to support the programme.